

**Environmental Law Section
Annual Meeting**

THURSDAY, JANUARY 28, 2016
New York Hilton Midtown
1335 Avenue of the Americas, New York City

EPA Update — 5:00 – 6:00 p.m.
Annual Business Meeting — 6:00 – 6:30 p.m.
With Cocktail Reception to Follow

Environmental Law Section Members and Guests
Murray Hill East, 2nd Floor

FRIDAY, JANUARY 29, 2016
New York Hilton Midtown
1335 Avenue of the Americas, New York City

Annual Meeting Program
8:30 a.m. – 12:25 p.m.
East Ballroom, 3rd Floor

Executive Committee Meeting
2:15 p.m. – 4:30 p.m.
Regent Sutton South, 2nd Floor

Luncheon — 12:30 p.m. – 2:00 p.m.
Murray Hill, 2nd Floor

IMPORTANT INFORMATION

Under New York's MCLE rule, this program has been approved for a total of **4 MCLE credits** which consist of **3.5 credits in Professional Practice and .5 credit in Ethics**. *This program is NOT a transitional program and does not qualify for newly admitted attorneys.*

Discounts and Scholarships: New York State Bar Association members may apply for a discount or scholarship to attend this program based on financial hardship. Under that policy, any member of our Association who has a genuine financial hardship may apply in writing not later than two working days prior to the program, explaining the basis of his/her hardship, and if approved, can receive a discount or scholarship, depending on the circumstances. To apply for a discount or scholarship, please send your request in writing to Lori Nicoll, lnicoll@nysba.org or to New York State Bar Association, One Elk Street, Albany, New York 12207. *Written scholarship requests must be received before January 13th.*

SECTION CHAIR

Michael J. Lesser, Esq.

Sive, Paget & Riesel P.C., New York City

THURSDAY, JANUARY 28, 2016

Speakers: **Mary McHale, Esq.**, Assistant Regional Counsel, Air Branch, U.S. Environmental Protection Agency Region 2
Chris Saporita, Esq., Assistant Regional Counsel, Water and General Law Branch, U.S. Environmental Protection Agency Region 2
Marla E. Wieder, Esq., Assistant Regional Counsel, New York/Caribbean Superfund Branch and Regional Criminal Enforcement Counsel, U.S. Environmental Protection Agency Region 2

Please join us for an engaging and efficient overview of EPA activities and legal developments in 2015 in the world of federal Superfund, water, air and climate change practice.

FRIDAY, JANUARY 29, 2016

PROGRAM CO-CHAIRS

Susan H. Brailey, Esq., Former Westchester Co. Assistant District Attorney and Former Chief of the Environmental Crimes Unit, Law Offices of Susan H. Brailey, Katonah
Dan Chorost, Esq., Principal, Sive, Paget & Riesel P.C., New York City
John Parker, Esq., Director, New York City Watershed Program Riverkeeper, New York City
Nicholas M. Ward-Willis, Esq., Principal Member, Keane & Beane, P.C., White Plains

BREAKFAST IS ON YOUR OWN. COFFEE/TEA/WATER WILL BE AVAILABLE.

8:30 – 9:25 a.m. *Navigating the Challenges of the Clean Water Rule* (1.0 credit in Professional Practice)

Presenters: **Philip M. Bein, Esq.**, Watershed Inspector General, New York State Attorney General's Office, Albany
Kathy Robb, Esq., Partner, Hunton & Williams LLP, New York City
Reed Super, Esq., Principal, Super Law Group, LLC, Brooklyn

Moderator: **John Parker, Esq.**, Director, New York City Watershed Program Riverkeeper, New York City



- 9:25 – 10:15 a.m. Trends in Urban Environmental Criminal Enforcement** (1.0 credit in Professional Practice)
- Presenters:** **Lt. Liza Bobseine**, Division of Law Enforcement, NYS Department of Environmental Conservation Region 2 Office, Long Island City
Michael S. Bogin, Esq., Principal, Sive, Paget & Riesel P.C., New York City
Hugh L. McLean, Esq., Assistant Attorney General, Criminal Enforcement and Financial Crimes Bureau, Office of the NYS Attorney General, New York City
- Moderator:** **Susan H. Brailey, Esq.**, Former Westchester Co. Assistant District Attorney and Former Chief of the Environmental Crimes Unit, Law Offices of Susan H. Brailey, Katonah
- 10:15 – 10:25 a.m. Refreshment Break**
- 10:25 – 11:55 a.m. New York Solar Energy Law** (1.5 credits in Professional Practice)
- Part One: New York State Solar Policy and Law**
 REV program; NY-SUN; Community solar
- Presenters:** **Noah Shaw, Esq.**, General Counsel, NYSERDA, Albany
David Sandbank, Director, NY-Sun at NYSERDA, Albany
- Moderator:** **Dan Chorost, Esq.**, Principal, Sive, Paget & Riesel P.C., New York City
- Part Two: Current Solar Legal Issues**
 Technology fundamentals; Basic ownership structures; Leasing; PPAs; Outright purchase; Commercial solar transactions; Residential solar transactions; SEQRA, land use and zoning issues; Model solar ordinances; Municipal procurement.
- Presenters:** **Jessica A. Bacher, Esq.**, Executive Director, Adjunct Professor of Law, Land Use Law Center, Pace University School of Law
Devin McDougall, Esq., Associate, Sive, Paget & Riesel P.C., New York City
Leo Wiegman, Executive Director, Sustainable Westchester, Ossining
- Moderator:** **Nicholas M. Ward-Willis, Esq.**, Principal Member, Keane & Beane, P.C., White Plains
- 12:00 – 12:25 p.m. Biblical Origins of Environmental Law Ethics** (.5 credit in Ethics)
- Presenter:** **Lawrence P. Schnapf, Esq.**, Schnapf, LLC, New York City
- Moderator:** **Alita J. Giuda, Esq.**, Of Counsel, Couch White, LLP, Albany
- 12:30 – 2:00 p.m. Luncheon – Murray Hill, 2nd Floor**
- Keynote Speaker:** **Hon. Thomas P. DiNapoli**, New York State Comptroller
- 2:15 – 4:30 p.m. Executive Committee Meeting – Regent Parlor, Sutton Parlor South, 2nd Floor**



Accommodations for Persons with Disabilities: NYSBA welcomes participation by individuals with disabilities. NYSBA is committed to complying with all applicable laws that prohibit discrimination against individuals on the basis of disability in the full and equal enjoyment of its goods, services, programs, activities, facilities, privileges, advantages, or accommodations. To request auxiliary aids or services or if you have any questions regarding accessibility, please contact Lori Nicoll at 518-487-5563.



For overnight room accommodations, please call the New York Hilton Midtown at 1-800-445-8667 and identify yourself as a member of the New York State Bar Association. Room rates are \$260.00 for single/double occupancy. **Reservations must be made by December 21, 2015.** You also can reserve your overnight room on the web at www.nysba.org/am16accomm.



For registration questions call 800-582-2452. You can fax registration form to 518-463-5993. For questions about this specific program, contact Lori Nicoll at 518-487-5563.

Environmental Law Section

Friday, January 29, 2016
 New York Hilton Midtown
 1335 Avenue of the Americas, New York City

Annual Meeting Program – 8:30 a.m.
 East Ballroom, 3rd Floor

Luncheon – 12:30 p.m.
 Murray Hill, 2nd Floor

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Navigating the Challenges of the Clean Water Rule

Presenters:

Philip M. Bein, Esq.

Kathy Robb, Esq.

Reed Super, Esq.

Moderator:

John Parker, Esq.

**Kathy Robb
Hunton & Williams LLP
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**EPA and the Corps' Definition of "Waters of the United States"
Under the Clean Water Act May 27, 2015 Final Rule**

Current as of December 17, 2015

- I. In the Beginning Cuyahoga River 1952**
 - A. Clean Water Act regulates "navigable waters," defined in the statute as "waters of the United States" (33 USC §§ 1344(a), 1362,(7), 1362(12))
 - B. Definition covers all sections of the Act (including NPDES 402 and Dredge and Fill 404 programs)
 - C. EPA and the Corps also have promulgated from time to time regulations that define "waters of the United States" (33 CFR § 328.3(Corps); 40 CFR § 232(q) (EPA))

- II. Prior Corps Regulatory Definitions of Waters of the U.S.**
 - A. 1974: "Navigable waters" means "those waters of the United States which are subject to the ebb and flow of the tide, and/or are presently, or have been in the past, or may be in the future susceptible for use for purposes of interstate or foreign commerce." (33 CFR § 1362(7))
 - B. 1977: "Navigable waters" includes "isolated wetlands and lakes, intermittent streams, prairie potholes and other waters that are not part of a tributary system to interstate waters or navigable waters of the United States, the degradation or destruction of which could affect interstate commerce." (33 CFR § 323.2(a)(5))
 - C. "Wetlands" means "[t]hose areas that are inundated or saturated with surface or groundwater at a frequency and duration sufficient to support, and that under normal

circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.” (33 CFR § 323.2(c))

- D. 1986: "Waters of the U.S." include intrastate waters used by migratory birds, and waters which are used to irrigate crops in interstate commerce. (33 CFR § 323.2(a)(5))

III. Regulations History and Currently in Effect

- A. Mid-1980s: EPA and Army Corps (40 CFR § 232.2(q); 33 CFR § 328.3)

- “Waters of the United States” include:
 - Waters susceptible for use in interstate or foreign commerce
 - Interstate waters
 - All “other waters,” the use, degradation or destruction of which could affect interstate or foreign commerce
 - Impoundments of waters otherwise within federal jurisdiction
 - Tributaries of jurisdictional waters
 - Territorial seas
 - Wetlands adjacent to jurisdictional waters
- “Waters of the United States” do not include:
 - Waste treatment systems
 - Prior converted croplands

- B. 1986, 1988: EPA and Army Corps provide in regulatory preambles that the following are not “waters of the United States” (53 Fed. Reg. 20765 (June 6, 1988); 51 Fed. Reg. 41217 (Nov. 13, 1986))

- “Non-tidal drainage and irrigation ditches excavated on dry land”
- “Artificial lakes or ponds created by excavating

and/or diking dry land to collect and retain water and which are used exclusively for such purposes as stock watering, irrigation, settling basins, or rice growing”

- “Artificial reflecting or swimming pools or other small ornamental bodies of water created by excavating and/or diking dry land...”
- “Waterfilled depressions created in dry land incidental to construction activity and pits excavated in dry land for the purpose of obtaining fill, sand or gravel unless and until the construction or excavation operation is abandoned and the resulting body of water meets the definition of waters of the United States”

IV. *SWANCC*

A. *Solid Waste Agency of Northern Cook County v. U.S. Army Corps of Engineers*, 531 U.S. 159 (2001):

- “Migratory Bird Rule” invalid
- Text of CWA does not allow holding that Corps’ jurisdiction “extends to ponds that are *not* adjacent to open water.”

B. Explaining *U.S. v. Riverside Bayview Homes, Inc.*, 474 U.S. 121 (1985):

- “Corps had 404(a) jurisdiction over wetlands that actually abutted on a navigable waterway”, *SWANCC*, 531 U.S. at 167.
- “Significant nexus” between wetlands and navigable waters.
- No opinion expressed on regulation of “discharge of fill materials into wetlands that are not adjacent to bodies of open water.”

V. *Rapanos and Carabell*

A. *Rapanos v. United States* and *Carabell v. United States*, 547

U.S. 715 (2006)

- Wetlands adjacent to non-navigable tributaries of navigable water are regulated
 - Kennedy “significant nexus” test
 - 4-1-4 split decision
- B. All Justices agree CWA protects more than traditionally navigable waters.
- C. Two tests for protection of waters at issue:
- Scalia Plurality test: (Scalia, Alito, Thomas, Roberts)
 1. CWA protects “relatively permanent waters;” and
 2. Wetlands with a “continuous surface connection” to relatively permanent waters or traditionally navigable waters.
 3. In a footnote, plurality says it does not mean to exclude “seasonal” water from protections.
 - Kennedy: “Significant nexus” test for some adjacent wetlands.
- D. Dissent (Stevens, Ginsburg, Souter, Breyer): Would regulate all tributaries and adjacent wetlands.
- E. Kennedy “Significant Nexus” Test from *Rapanos*:
- “[W]etlands possess the requisite nexus, and thus come within the statutory phrase “navigable waters,” if the wetlands, either alone or in combination with similarly situated lands in the region, significantly affect the chemical, physical, and biological integrity of other covered waters more readily understood as “navigable.” When, in contrast, wetlands’ effects on water quality are speculative or insubstantial, they fall outside the zone fairly encompassed by the statutory term “navigable waters.”

VI. EPA and the Corps Post-SWANCC and *Rapanos*

- A. Post-SWANCC:
- EPA and the Corps had issued an “Advanced Notice of Proposed Rulemaking (ANPRM) on the Clean Water Act Regulatory Definition of “Waters of the United States” 68 Fed. Reg. 1991 (Jan. 15, 2003) attaching a “Joint Memorandum” providing guidance on SWANCC
- B. Post-Rapanos:
- EPA and Corps memorandum “Clean Water Act Jurisdiction Following the U.S. Supreme Court’s Decision in *Rapanos v. U.S.* & *Carabell v. U.S.*,” December 2, 2008
- C. April 2011 EPA Guidance Letter on Waters of the United States
- Intended to clarify how EPA and the Corps would identify protected waters after the SWANCC and *Rapanos* decisions
 - Intended to supercede the 2003 and 2008 EPA/Corps memoranda
 - Significantly broadened EPA jurisdiction
 - After comment from virtually every sector that a rulemaking was required, the 2011 guidance was withdrawn from interagency review in September 2013 and the 2014 Proposed Rule was developed; the 2008 guidance remains in effect

VII. The April 14, 2014 Proposed Rule

- A. On April 14, 2014, EPA and Corps published a proposed rule to redefine the “waters of the United States” (“WOTUS”) subject to regulation under the Clean Water Act (79 Fed. Reg. 22188-22274 (April 21, 2014))
- Discharges to WOTUS require CWA permits
 - WOTUS must meet Water Quality Standards
 - Citizens may sue to enforce the CWA

B. The definition:

- Traditional navigable waters
- Interstate waters
- Territorial seas
- Impoundments of 1-3, 5
- All tributaries of 1-4
- “Waters” (including wetlands) adjacent to 1-5
- Other waters that have a significant nexus to 1-3

C. Affected All CWA Programs

- The proposed rule replaced the definition of “navigable waters” and “waters of the United States” in the regulations for all CWA programs, in particular sections 311, 401, 402, and 404:
 - 33 C.F.R. § 328.3: Section 404
 - 40 C.F.R. § 110.1: Oil Discharge Rule
 - 40 C.F.R. § 112.2: Spill Prevention, Control and Countermeasure Plan
 - 40 C.F.R. § 116.3: Designation of hazardous substances
 - 40 C.F.R. § 117.1(i): Notification of discharge of hazardous substances required
 - 40 C.F.R. § 122.2: NPDES permitting and Storm Water
 - 40 C.F.R. § 230.3(s) and (t): Section 404
 - 40 C.F.R. § 232.2: Section 404 exemptions
 - 40 C.F.R. § 300.5: National Contingency Plan for oil discharges

- 40 C.F.R. § 300, Appendix E to Part 300, 1.5: Structure of plans to respond to oil discharges
- 40 C.F.R. § 302.3: Petroleum exclusion
- 40 C.F.R. § 401.11: Effluent limitations

VIII. CWA §404(f)(1)(A)

- Exclusion of “normal farming and ranching activities”
- The “interpretative rule” was withdrawn effective January 29, 2015 (EPA and DOD Notice of Withdrawal, 80 Fed. Reg. 6705 (Feb. 6, 2015))

IX. The May 27, 2015 Final rule

- A. On May 27, 2015, EPA and Corps issued a final rule to redefine the “waters of the United States” (“WOTUS”) subject to regulation under the Clean Water Act
- B. The Rule became effective August 28, 2015.
- C. The Sixth Circuit stayed effectiveness of the rule nationwide on October 9, 2015
- D. The Clean Water Rule Definition
 - Traditional navigable waters (TNW)
 - Interstate waters
 - Territorial seas
 - Impoundments of otherwise jurisdictional waters
 - Tributaries (newly defined)
 - Adjacent Waters (newly defined)
 - Enumerated regional features with a “significant nexus” to 1-3 waters
 - Geographic: Waters in the 100-year flood plain of 1-3 waters, or within 4,000 feet of the high tide line

or ordinary high water mark of 1-5 waters if there is a significant nexus

E. Jurisdictional Waters:

- Discharge Prohibition (§ 301)
- Standards/TMDL (§ 303)
- NPDES Permits (§ 402)
- Dredge & Fill Permits (§ 404)
- Certifications (§ 401)

F. Excluded Waters – Not Jurisdictional

- Waste Treatment Systems
- Prior Converted Cropland
- Some Ditches
 - Ephemeral and intermediate flow AND not relocated tributary
- Ditches that do not flow to 1-3
- Certain Features
 - Pools
 - Puddles
- Groundwater
- Certain Stormwater Control Features created in dry land
- Certain wastewater recycling and groundwater recharge facilities

G. Tributaries: New Definitions

- Definition relies on bed, banks, OHWM which can be seen even in features without ordinary flow
- Agencies can assert jurisdiction over perennial, intermittent, and ephemeral streams

- Allows assertion of jurisdiction over ephemeral drainages that flow for only a few hours or days following a rain event
- Areas where there are historical indicators of prior existence of bed, bank, or OHWM even where these are not now present (for example, stream gauge data, elevation data, historical records)
- Areas that met tributary definition at one time
- Waters are tributaries regardless of manmade or natural breaks of any length

H. Ditches

- Exempt Ditches
 - Ditches with ephemeral flow that are not a relocated tributary or excavated in a tributary
 - Ditches with intermittent flow that are not a relocated tributary, excavated in a tributary, or drain wetlands
 - Ditches that do not flow, directly or through another water, into a 1-3 water
- Ditches That Would be Jurisdictional
 - Ditches, including roadside ditches, that have perennial flow
 - Ditches that have intermittent flow and are a relocated tributary, excavated in a relocated tributary, or drain wetlands
 - Ditches that have ephemeral flow and are a relocated tributary or excavated in a tributary
- Applicants will be required to prove that their ditches do not excavate or relocate a tributary, using topographical maps, historic photos, and the

like

I. Adjacent Waters: New Definitions

- The final rule defines the “adjacent waters” category with a definition of “neighboring”, which means:
 - All waters located within 100 feet of the OHWM of a 1-5 water;
 - All waters located within the 100-year floodplain of a 1-5 water and not more than 1,500 feet from the OHWM of such water; and
 - All waters located within 1,500 feet of the high tide line of a 1-3 water.
- The entire water is adjacent if any part of the water is bordering, contiguous, or neighboring.
 - If a portion of a water is located within 1500 feet of OHWM and within the 100-year floodplain, the entire water is jurisdictional.
 - This is true even if there are berms, roads, or other barriers between the 1-5 water and the feature at issue. Man-made levees and similar structures do not isolate adjacent waters.
- Waters outside the scope of these “neighboring” distance thresholds can still be jurisdictional through a case-by-case significant nexus analysis.
- The “adjacent” definition provides that waters being used for “established normal farming, ranching, and silviculture activities (33 U.S.C. 1344(f)) are not adjacent.” However, the preamble notes that waters in which normal farming, ranching, and silviculture activities occur may still

be determined to have a significant nexus on a case-specific basis under sections (a)(7) and (a)(8).

J. Case Specific/Significant Nexus WOTUS

- Under (a)(7), 5 subcategories of waters (prairie potholes, Carolina bays, Delmarva bays, Pocosins, Western vernal pools, and Texas coastal prairies wetlands) are jurisdictional where they are determined, on a case-specific basis to have a significant nexus to a 1-3 water.
- Under (a)(8), all waters located within the 100-year floodplain of a 1-3 water and all waters located within 4,000 feet of the high tide line or OHWM of a 1-3 water are jurisdictional.
- If any portion of the water is within the 100-year floodplain or within 4,000 feet of the high tide line or OHWM, and the water is determined to have a significant nexus, the entire water is a water of the U.S.
- Significant nexus “means that a water, including wetlands, either alone or in combination with other similarly situated waters in the region, significantly affect the chemical, physical, or biological integrity of the water identified in paragraphs (a)(1)-(3) of this section.”
 - The term “in the region” means the watershed that drains to the nearest 1-3 water
 - For an effect to be significant, it must be “more than speculative or insubstantial.”
 - Waters are similarly situated when they “function alike and are sufficiently close to function together in affecting downstream waters.”

- The effect on downstream waters will be assessed by evaluating functions identified in the regulation

K. Exclusions

- The final rule excludes:
 - Waste treatment systems, including ponds or lagoons designed to meet the requirements of the CWA;
 - Prior converted cropland;
 - Certain ditches: (i) ditches with ephemeral flow that are not a relocated tributary or excavated in a tributary; (ii) ditches with intermittent flow that are not a relocated tributary, excavated in a tributary, or drain wetlands; (iii) ditches that do not flow, either directly or through another water, into an (a)(1) through (3) water;
 - Artificially irrigated areas that would revert to dry land if application of water ceases;
 - Artificial, constructed lakes and ponds created in dry land (e.g., farm and stock watering ponds, irrigation ponds, settling basins, fields flooded for rice growing, log cleaning ponds, or cooling ponds);
 - Artificial reflecting pools or swimming pools created in dry land;
 - Small ornamental waters created in dry land;
 - Water filled depressions created in dry land incidental to mining or

construction activity, including pits excavated for obtaining fill, sand, or gravel that fill with water;

- Erosional features, including gullies, rills, and other ephemeral features that do not meet the definition of tributary, non-wetlands swales, and lawfully constructed grassed waterways;
 - Puddles;
 - Groundwater, including groundwater drained through subsurface drainage systems;
 - Stormwater control features constructed to convey, treat, or store stormwater that are created in dry land; and
 - Wastewater recycling structures constructed in dryland; detention and retention basins built for wastewater recycling; and water distributary structures built for wastewater recycling.
- Waters that meet the exclusions are not “waters of the U.S.,” even if they otherwise fall within one of the categories in (a)(4) through (8) of the rule.

L. “Dry Land” Requirement

- The agencies declined to provide a definition of “dry land” in the regulation because they “determined that there was no agreed upon definition given geographic and regional variability.” The preamble states that “dry land” “refers to areas of the geographic landscape that are not water features such as streams, rivers, wetlands, lakes, ponds, and the like.” Final Rule at 173.

- Many features will not qualify for exclusion because they were not created in dry land.

X. Judicial Review

- The preamble asserts the Agencies' position that, pursuant to CWA § 509, challenge to the final rule must occur in the Circuit Courts of Appeals. Final Rule at 195.
- Threshold Question: Review of Final Rule in district courts under the APA (28 USC 1331) or original jurisdiction on petition for review in courts of appeals (33 USC 1369(b)(1))?
- EPA – Documents Related to the Proposed Definition of "Waters of the United States" Under the Clean Water Act

<http://www2.epa.gov/uswaters/documents-related-proposed-definition-waters-united-states-under-clean-water-act>

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IN THE UNITED STATES COURT OF APPEALS
FOR THE SIXTH CIRCUIT

| | | |
|---|----------------------------|---|
| <p>IN RE: ENVIRONMENTAL PROTECTION AGENCY AND DEPARTMENT OF DEFENSE, FINAL RULE: CLEAN WATER RULE: DEFINITION OF “WATERS OF THE UNITED STATES,” 80 FED. REG. 37,054 PUBLISHED ON JUNE 29, 2015 (MCP No. 135).</p> | <p>: : : :</p> | <p>Docket No. 15-3751 and related cases: 15-3799, 15-3817, 15-3820, 15-3822, 15-3823, 15-3831, 15-3837, 15-3839, 15-3850, 15-3853, 15-3858, 15-3885, 15-3887</p> |
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**MOTION BY STATES OF NEW YORK, CONNECTICUT, HAWAII,
MASSACHUSETTS, OREGON, VERMONT, AND WASHINGTON,
AND THE DISTRICT OF COLUMBIA, TO INTERVENE IN
SUPPORT OF RESPONDENTS IN DOCKET NO. 15-3751
AND IN EACH OF THE RELATED CASES**

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PRELIMINARY STATEMENT

Under Rule 15(d) of the Federal Rules of Appellate Procedure, the states of New York, Connecticut, Hawaii, Massachusetts, Oregon, Vermont, and Washington, and the District of Columbia (collectively, Proposed Intervenor States or States), hereby move for leave to intervene in support of respondents United States Environmental Protection Agency (EPA), the United State Army Corps of Engineers (Army Corps), and their officers in Docket No. 15-3751 and in each of the related petitions: Docket Nos. 15-3799, 15-3817, 15-3820, 15-3822, 15-3823, 15-3831, 15-3837, 15-3839, 15-3850, 15-3853, 15-3858, 15-3885, and 15-3887.

In these 14 petitions, petitioners challenge the promulgation of the Clean Water Rule by EPA and the Army Corps. *See* 80 Fed. Reg. 37054 (June 29, 2015). The Rule defines the term “waters of the United States” as used in the federal Clean Water Act, 33 U.S.C. § 1251 *et seq.*, thereby establishing the scope of protection under the Act.

Proposed Intervenor States support the Clean Water Rule because it protects their water quality, assists them in administering water pollution programs by dispelling confusion about the Act’s reach, and

prevents harm to their economies by ensuring adequate regulation of waters in upstream states. The States respectfully request that the Court grant this motion based on their strong direct and substantial interests in the outcome of the petitions.¹

Counsel for movants contacted counsel for all petitioners and respondents in the petitions concerning their position on this motion. Respondents EPA and Army Corps have stated that they do not oppose the motion, as have the petitioners in the following 12 petitions: Docket Nos. 15-3751, 15-3799, 15-3817, 15-3820, 15-3822, 15-3823, 15-3831, 15-3837, 15-3839, 15-3850, 15-3853, and 15-3858. Counsel for petitioners in Docket No. 15-3887 stated that they do not object to the States' intervention provided that it does not delay the briefing schedule. Counsel for petitioners in Docket No. 15-3885 stated that they take no position on the States' intervention but reserve the right to oppose following their review of this motion.

¹ The District of Columbia supports the rule overall because of the environmental benefits it will provide in improving water quality, but it maintains its concerns that were articulated in comments provided to EPA on November 17, 2014 by the Department of Energy & Environment (formerly known as the District Department of the Environment).

A. The Clean Water Act and “Waters of the United States”

In 1972, Congress determined that America’s waters were “severely polluted” and “in serious trouble,”² and that “the federal water pollution control program . . . has been inadequate in every vital respect.” *Milwaukee v. Illinois*, 451 U.S. 304, 310 (1981). In “dramatic response to accelerating environmental degradation of rivers, lakes, and streams in this country,” *Natural Resources Defense Council v. Costle*, 568 F.2d 1369, 1371 (D.C. Cir. 1977), Congress enacted amendments to the Federal Water Pollution Control Act, known commonly as the “Clean Water Act,” 33 U.S.C. § 1251 *et seq.*, with the sole “objective . . . ‘to restore and maintain the chemical, physical, and biological integrity of the Nation’s waters.’ In order to achieve that objective, Congress declared that ‘it is the national goal that the discharge of pollutants into the navigable waters be eliminated by 1985.’” *Costle v. Pac. Legal Found.*, 445 U.S. 198, 202 (1980) (internal citations omitted).

² S. Rep. No. 92-414, (1972), reprinted in 1 Environmental Policy Division, Congressional Research Service, *A Legislative History of the Water Pollution Control Act Amendments of 1972* at 1425 (U.S. G.P.O. 1973); H. Rep. No 92-911, at 66 (1972), reprinted in I 1972 Leg. Hist., at 753.

The Act represents “a partnership between the States and the Federal Government.” *Arkansas v. Oklahoma*, 503 U.S. 91, 101-02 (1992). The Act establishes minimum pollution controls that are applicable nationwide, and states may not adopt or enforce controls that are less stringent than those promulgated under the Act. See 33 U.S.C. § 1370(1). The Act’s nationwide pollution controls protect downstream states from pollution originating outside their borders. They serve to prevent the ‘Tragedy of the Commons’ that might result if jurisdictions could compete for industry and development by allowing more water pollution than their neighboring states. *NRDC*, 568 F.2d at 1378 (citing *NRDC v. Train*, 510 F.2d 692, 709 (D.C. Cir. 1975)).

The Act’s regulatory scope applies to “navigable waters,” defined as “the waters of the United States, including the territorial seas.” 33 U.S.C. § 1362(7). But the Act does not define “waters of the United States,” despite the importance of that term.

The absence of a clear and appropriate definition of “waters of the United States” can undermine the Act’s objective of restoring and maintaining the health of the Nation’s waters. Without such a definition, the scope of many programs central to the Act may be

difficult to determine and waters may go unprotected. For example, the Act protects wetlands from destruction, and enhances downstream water quality, by prohibiting discharges of dredge or fill material unless authorized by the Army Corps in a Section 404 permit or by a state that chooses to administer the Section 404 program. 33 U.S.C. §§ 1311(a), 1344. As noted by Justice Kennedy in his concurrence in *Rapanos v. Army Corps*, the filling of wetlands

may increase downstream pollution, much as a discharge of toxic pollutants would. Not only will dirty water no longer be stored and filtered [by the wetlands] but also the act of filling and draining may itself cause the release of nutrients, toxins, and pathogens that were trapped, neutralized, and perhaps amenable to filtering or detoxification in the wetlands.

547 U.S. 715, 775 (2006). But this program applies only to discharges into the “waters of the United States.”

Similarly, the Act broadly prohibits pollutant discharges unless authorized by a National Pollutant Discharge Elimination System (NPDES) permit generally issued by the states and in some cases by EPA. 33 U.S.C. §§ 1311(a), 1342. In fact, the NPDES program is “the primary means” for achieving the Act’s ambitious water quality objectives, and serves as “a critical part of Congress’ ‘complete

rewriting' of federal water pollution law." *Arkansas*, 503 U.S. at 101-02 (quoting *Milwaukee*, 451 U.S. at 317). But the Act's pollution prohibition and NPDES program apply only to discharges into the "waters of the United States."

In addition, the Act requires states to set water quality standards for waters within their borders and empowers states to issue or withhold "water quality certifications" needed for applicants for federal licenses or permits to conduct activities that may result in discharges into those waters. 33 U.S.C. § 1341. But states can only protect their waters by performing these functions when the involved waters are deemed "waters of the United States."

Since the Act's creation, the Army Corps and EPA have interpreted "waters of the United States" pursuant to agency practice and regulation. At times the federal agencies' interpretation has been upheld by the courts, while at other times it has not. *Compare United States v. Riverside Bayview Homes, Inc.*, 474 U.S. 121 (1985), *with Solid Waste Agency of N. Cook County v. Army Corps*, 531 U.S. 159 (2001) *and Rapanos*, 547 U.S. at 739 (plurality opinion).

In *Rapanos*, all members of the Court agreed that the Act’s jurisdiction extends beyond “traditional navigable waters,” also known as “navigable in fact” waters, *i.e.*, waters capable of navigation. But as to non-traditional navigable waters, no single interpretation of “waters of the United States” commanded a majority of the Supreme Court. In *Rapanos*, the plurality interpreted “waters of the United States” to include: (1) relatively permanent, standing or continuously flowing bodies of water that are connected to traditional navigable waters, and (2) wetlands with a continuous surface connection to relatively permanent waters. *Rapanos*, 547 U.S. at 739, 742. The plurality opinion also stated that waters that might dry up in a drought, or seasonal rivers which have continuous flow during some months of the year, are not necessarily excluded from the Act’s jurisdiction. *Id.* at 732 n.5.

In contrast, Justice Kennedy’s concurrence in the judgment, which was needed to secure a majority, endorsed a “significant nexus test” in which wetlands (and presumably other waters such as tributaries) would qualify as “waters of the United States” if they “possess a significant nexus to waters that are or were navigable in fact or that

could reasonably be so made.” *Rapanos*, 547 U.S. at 759 (internal quotations omitted). According to Justice Kennedy, wetlands have the requisite significant nexus if “either alone or in combination with similarly situated [wet]lands in the region, [they] significantly affect the chemical, physical and biological integrity of other covered waters more readily understood as ‘navigable.’” *Id.* at 780.

In the wake of *Rapanos*, a complex and confusing split developed among the federal courts regarding which waters are “waters of the United States” and therefore within the Act’s jurisdiction. The federal circuits have embraced at least three distinct approaches in instances of uncertain jurisdiction, with some courts adopting Justice Kennedy’s significant-nexus test (*see, e.g., United States v. Gerke Excavating Inc.*, 464 F.3d 723 (7th Cir. 2006)), some holding that waters are within the Act’s jurisdiction if *either* the plurality or significant-nexus test is satisfied (*see, e.g., United States v. Donovan*, 661 F.3d 174 (3d Cir. 2011)), and some tending to defer to the agencies’ fact-based determinations (*see, e.g., Precon Dev. Corp. v. Army Corps*, 633 F.3d 278 (4th Cir. 2011)).

B. Promulgation of the Clean Water Rule

In April 2014, EPA and the Army Corps published a proposed rule to define “waters of the United States,” and made the rule available for an extended public comment period. 79 Fed. Reg. 22188 (Apr. 21, 2014). After receiving over one million comments, most of which supported the rule, the agencies published the final rule on June 29, 2015. *See* 80 Fed. Reg. 37054.

The rule clarifies the scope of “waters of the United States” that are protected under the Act, and reduces the agencies’ reliance on time-consuming, inefficient, and potentially inconsistent case-by-case jurisdictional determinations. In issuing the rule, EPA and the Army Corps relied on “the text of the statute, Supreme Court decisions, the best available peer-reviewed science, public input, and the agencies’ technical expertise and experience in implementing the statute.” 80 Fed. Reg. at 37055. The agencies assessed whether upstream waters have a “significant nexus” to downstream waters “in terms of the CWA’s objective to ‘restore and maintain the chemical, physical, and biological integrity of the Nation’s waters.’” *Id.* at 37055. In doing so, the agencies relied substantially on a comprehensive report prepared by

EPA's Office of Research and Development, entitled "Connectivity of Streams and Wetlands to Downstream Waters: A Review and Synthesis of the Scientific Evidence" (Science Report), and review of this report by EPA's Science Advisory Board. The Science Report itself is based on a review of more than 1200 peer-reviewed publications. The Report and review by the Science Advisory Board concluded that tributary streams, and wetlands and open waters in floodplains and riparian areas, are connected to and strongly affect the chemical, physical, and biological integrity of downstream traditional navigable waters, interstate waters, or the territorial seas. *Id.* at 37057.

The agencies' current procedures for determining whether waters are within the Act's jurisdiction often entail detailed and time-consuming case-by-case analyses that can be inconsistent. The rule reduces the agencies' reliance on case-by-case analyses by establishing categories of jurisdictional waters that fall within the scope of the "water of the United States." These categories consist of: (1) traditional navigable waters, (2) interstate waters, (3) the territorial seas, (4) impoundments of jurisdictional waters, (5) tributaries, and (6) adjacent waters (which consist primarily of wetlands). The Rule also establishes

three categories of potentially jurisdictional waters, which fall within the scope of “waters of the United States” if a case-by-case analysis determines that they have a significant nexus to traditional navigable waters, interstate waters, or the territorial seas. These case-by-case waters are: (i) certain similarly situated regional waters (Prairie potholes, Carolina and Delmarva bays, pocosins, western vernal pools in California, and Texas coastal prairie wetlands) that drain to a water in categories 1 through 3 above; (ii) waters within the 100-year floodplain of a water in categories 1 through 3 above; and (iii) waters within 4,000 feet of the high tide line or ordinary high-water mark of a water in categories 1 through 5 above.

C. Challenges to the Rule

After publication of the rule, opponents of the rule filed various actions in federal district courts and petitions for review in eight circuit courts seeking to invalidate it. On July 28, 2015, the judicial panel on multidistrict litigation randomly selected the Sixth Circuit to hear the consolidated petitions.

ARGUMENT

PROPOSED STATE INTERVENORS' MOTION TO INTERVENE SHOULD BE GRANTED BECAUSE THEY HAVE A DIRECT AND SUBSTANTIAL INTEREST IN THE LEGALITY OF THE CLEAN WATER RULE

Rule 15(d) of the Federal Rules of Appellate Procedure (FRAP) requires that a party moving to intervene state its interest and the grounds for intervention. Intervention under Rule 15(d) is granted where the moving party's interests in the outcome of the action are direct and substantial. *See, e.g., Bales v. NLRB*, 914 F.2d 92, 94 (6th Cir. 1990) (granting Rule 15(d) intervention to party with "substantial interest in the outcome"); *Yakima Valley Cablevision, Inc. v. FCC*, 794 F.2d 737, 744-45 (D.C. Cir. 1986) (intervention allowed under Rule 15(d) because petitioners were "directly affected by" agency action). The decision to allow intervention should be guided by practical considerations and the "need for a liberal application in favor of permitting intervention." *Nuesse v. Camp*, 385 F.2d 694, 702 (D.C. Cir. 1967).

The Supreme Court has suggested that "the policies underlying intervention [under Rule 24 of the Federal Rules of Civil Procedure] may be applicable in appellate courts." *Auto Workers v. Scofield*, 382

U.S. 205, 216 n.10 (1965). And other courts of appeals have looked to Rule 24 of the Federal Rules of Civil Procedure for standards governing intervention. *See Sierra Club v. EPA*, 358 F.3d 516, 517-18 (7th Cir. 2004). Under Rule 24(a), a motion to intervene as of right is granted if: (1) it is timely; (2) the movant has a substantial legal interest in the subject matter of the case that will be impaired in the absence of intervention; and (3) the parties already before the court do not adequately represent that interest. *United States v. Michigan*, 424 F.3d 438, 443 (6th Cir. 2005). As with FRAP 15(d), Rule 24 should be “broadly construed in favor of potential intervenors.” *Purnell v. City of Akron*, 925 F.2d 941, 950 (6th Cir. 1991).

Under any interpretation of the applicable standards, the Proposed Intervenor States’ motion should be granted.

First, this motion is timely in seeking to intervene in each of the petitions (other than Docket No. 15-3751) because it is brought within 30 days after the petitions for review were filed in this Circuit. *See* FRAP 15(d). The States have separately brought a motion to extend their time to move to intervene in Docket No. 15-3751.

Next, the Proposed Intervenor States have a substantial and direct

interest in the subject of this action, namely the validity of the Clean Water Rule. That interest manifests itself in three principal ways. *First*, the rule protects the waters of Proposed Intervenor States. The rule is grounded in peer-reviewed scientific studies that confirm fundamental hydrologic principles. Water flows downhill, and connected waters, singly and in the aggregate, transport physical, chemical and biological pollution that affects the function and condition of downstream waters, as demonstrated by the Scientific Report on which EPA and the Army Corps rely. The health and integrity of watersheds, with their networks of tributaries and wetlands that feed downstream waters, depend upon protecting the quality of upstream headwaters and adjacent wetlands. Moreover, watersheds frequently do not obey state boundaries, with all of the lower forty-eight states having waters that are downstream of the waters of other states. Thus, coverage under the Act of ecologically connected waters secured by the Rule is essential to achieve the water quality protection purpose of the Act, and to protect Proposed Intervenor States from upstream pollution occurring outside their borders.

Second, by clarifying the scope of “waters of the United States,” the

rule promotes predictability and consistency in the application of the law, and in turn helps clear up the confusing body of case law that has emerged in the wake of the Supreme Court's *Rapanos* decision. The Rule accomplishes this by reducing the need for case-by-case jurisdictional determinations and, where such determinations are needed, by clarifying the standards for conducting them. Each of the Proposed Intervenor States implements programs under the Act. Thus, the rule is of direct benefit to movants because it helps alleviate administrative burdens and inefficiencies in carrying out those programs. In addition, the rule would help the States in administering the federal dredge-and-fill program if they choose to do so. *See* 33 U.S.C. §1344 (allowing States to implement a permitting program for dredge and fill material).

Third, the rule advances the Act's goal of securing a strong federal "floor" for water pollution control, thereby protecting the economic interests of Proposed Intervenor States and other downstream states. The Rule allows movants to avoid having to impose costly, disproportionate, and economically harmful limits on in-state pollution sources to waters within their borders, in order to offset

upstream discharges that would otherwise go unregulated if the upstream waters are deemed to fall outside the Act's jurisdiction and are not otherwise regulated by upstream states. The Rule protects the economies of Proposed Intervenor States because it serves to "prevent the 'Tragedy of the Commons' that might result if jurisdictions can compete for industry and development by providing more liberal limitations than their neighboring states." *NRDC*, 568 F.2d at 1378 (quoting *Train*, 510 F.2d at 709).

In summary, Proposed Intervenor States have direct and substantial interests in the outcome of these petitions, and invalidation of the rule would impair and impede these interests.

Moreover, while respondent federal agencies and the States both support the rule, their interests are distinct. As this Court has recognized, the required showing of inadequacy is "minimal because it need only be shown that there is a *potential* for inadequate representation." *United States v. Michigan*, 424 F.3d at 443 (quotations omitted; emphasis in original). EPA and the Army Corps cannot be assumed to adequately represent the interests of Proposed Intervenor States. *See Forest Conserv. Council v. U.S. Forest Serv.*, 66 F.3d 1489,

1499 (9th Cir. 1995) (the interests of one governmental entity may not be the same as those of another governmental entity). For example, EPA and the Army Corps may seek to settle or resolve the petitions and other related cases brought by non-parties to the petitions in ways that might be adverse to the States' interests, or may rely upon legal doctrines that otherwise undermine their interests. Under this Court's precedents, "[i]nterests need not be wholly 'adverse' before there is a basis for concluding that existing representation of a 'different' interest may be inadequate." *Purnell v. Akron*, 925 F.2d 941, 950 (6th Cir. 1991). Indeed, "it may be enough to show that the existing party who purports to seek the same outcome will not make all of the prospective intervenor's arguments." *Grutter v. Bollinger*, 188 F.3d 394, 400 (6th Cir. 1999) (emphasis in original). Because of the unique interests and role of the States in implementing the Act's programs, EPA and the Army Corps cannot be expected to make the same arguments in support of the Rule as the States would. Under these standards, the motion to intervene should be granted.

CONCLUSION

For the reasons stated above, the Proposed Intervenor States respectfully request that this Court grant their motion to intervene in these proceedings.

Dated: Albany, New York
August 28, 2015

Respectfully submitted,

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**Applying for Admission to
Sixth Circuit Bar*

IN THE UNITED STATES COURT OF APPEALS
FOR THE SIXTH CIRCUIT

Docket No. 15-3751

| | | |
|---|---|---|
| <p>IN RE: ENVIRONMENTAL PROTECTION AGENCY AND DEPARTMENT OF DEFENSE, FINAL RULE: CLEAN WATER RULE: DEFINITION OF "WATERS OF THE UNITED STATES," 80 FED. REG. 37,054 PUBLISHED ON JUNE 29, 2015 (MCP No. 135).</p> | <p>: : : :</p> | <p>and related cases: 15-3799, 15-3817, 15-3820, 15-3822, 15-3823, 15-3831, 15-3837, 15-3839, 15-3850, 15-3853, 15-3858, 15-3885, 15-3887</p> |
|---|---|---|

CERTIFICATE OF SERVICE

I certify under penalty of perjury that on August 28, 2015, I served through the ECF system all counsel of petitioners and respondents who have filed notices of appearance in the above captioned cases with a copy of the MOTION BY STATES OF NEW YORK, CONNECTICUT, HAWAII, MASSACHUSETTS, OREGON, VERMONT, AND WASHINGTON, AND THE DISTRICT OF COLUMBIA, TO INTERVENE IN SUPPORT OF RESPONDENTS IN DOCKET NO. 15-3751 AND IN EACH OF THE RELATED CASES, dated August 28, 2015.

By: /s/ Philip Bein

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IN THE UNITED STATES COURT OF APPEALS
FOR THE SIXTH CIRCUIT

STATE OF OHIO, *ET AL.*,
Petitioners,

v.

U.S. ARMY CORPS OF ENGINEERS, *ET AL.*,
Respondents.

No. 15-3799

and related proceedings:

No. 15-3822

No. 15-3853

No. 15-3887

**OPPOSITION TO A STAY PENDING REVIEW
BY THE STATES OF NEW YORK, CONNECTICUT, HAWAII,
MASSACHUSETTS, OREGON, VERMONT, AND WASHINGTON,
AND THE DISTRICT OF COLUMBIA**

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PRELIMINARY STATEMENT

Intervenor States support the Clean Water Rule issued by the Environmental Protection Agency (“EPA”) and the Army Corps of Engineers (together, “the Agencies”), and oppose the motion of Petitioner States for a nationwide stay of the Rule. The Rule defines the term “waters of the United States” as used in the Clean Water Act, 33 U.S.C. § 1251 *et seq.*, thereby establishing the scope of protection under the Act. *See* 80 Fed. Reg. 37054 (June 29, 2015). The motion should be denied because Petitioner States fail to show that they will likely succeed on the merits or that the balance of equities favors a stay—particularly since the Intervenor States support the Rule and would be significantly harmed by a stay.

ARGUMENT

THIS COURT SHOULD DENY THE MOTION FOR A STAY

As a threshold matter, this Court has not yet determined whether it has jurisdiction. Petitioner States have filed two motions in this Court: one for a stay pending review, and another to dismiss their petitions for lack of jurisdiction. Briefing on jurisdiction will not be complete until November 4, 2015. Thus, a stay should be denied at this point because of the pending jurisdictional question. In any event,

Petitioner States have not carried their heavy burden to establish that a stay is justified here.

A stay is an “extraordinary remedy,” *Cuomo v. U.S. Nuclear Reg. Comm’n*, 772 F.2d 972, 978 (D.C. Cir. 1985), amounting to “an ‘intrusion into the ordinary processes of administration and judicial review.’” *Nken v. Holder*, 556 U.S. 418, 427 (2009) (quotations omitted). A “stay is not a matter of right, even if irreparable injury might otherwise result,” but rather, “an exercise of judicial discretion.” *Nken*, 556 U.S. at 433 (quotations omitted); *see also Ohio State Conference of N.A.A.C.P. v. Husted*, 769 F.3d 385, 387 (6th Cir. 2014). In analyzing a stay request, courts consider the likelihood of success on the merits and three equitable factors: whether the movant will suffer irreparable injury; whether the stay would cause substantial harm to others; and whether the public interest would be served by the stay. *Nken*, 556 U.S. at 434; *see also Husted*, 769 F.3d at 387. Here, the equitable factors cut strongly against a stay and the Petitioner States are unlikely to succeed on the merits.

POINT I

THE EQUITIES CUT AGAINST A STAY BECAUSE THE BENEFITS OF THE RULE FAR OUTWEIGH ITS POTENTIAL ADMINISTRATIVE COSTS

The equitable factors here militate strongly against granting a stay because the Petitioner States have shown no likelihood of irreparable injury, and because a stay would significantly harm the public, the Intervenor States, and indeed the Petitioner States themselves. It is pure speculation to assert that the alleged meager increase in states' administrative costs will outweigh the significant environmental and administrative benefits the Rule will bring.

A. The Rule Will Have Significant Environmental and Economic Benefits.

Environmental Benefits. The “defacement of the environment” is an appropriate factor to consider in weighing a stay. *Env'tl Def. Fund v. TVA*, 468 F.2d 1164, 1183 (6th Cir. 1972). Here, it weighs strongly against a stay. The Rule enhances environmental protection by better tailoring the Act's reach to cover those waters that significantly contribute to the “chemical, physical, and biological integrity” of downstream waters—as suggested by Justice Kennedy's concurrence in *Rapanos v. United States*, 547 U.S. 715, 780 (2006). To the extent that

the Rule's improved tailoring increases the number of waters deemed to be protected by the Act, environmental benefits will likewise increase.

The Clean Water Act represents Congress's considered judgment about the measures that need to be taken, and costs to be incurred, to remedy America's "severely polluted" waters."¹ Upstream waters, singly and in the aggregate, transport pollution that affects the function and condition of downstream waters, as demonstrated by the robust Scientific Report on which the Agencies rely. In addition, "[p]eer-reviewed science and practical experience demonstrate that upstream waters, including headwaters and wetlands, play a crucial role in controlling sediment, filtering pollutants, reducing flooding, providing habitat for fish and other aquatic wildlife, and many other vital chemical, physical, and biological processes in downstream waters." EPA, Response to Comments, Topic 9, at 13.² Thus, identifying all of the

¹ S. Rep. No. 92-414, (1972), reprinted in 1 Environmental Policy Division, Congressional Research Service, *A Legislative History of the Water Pollution Control Act Amendments of 1972* at 1425 (U.S. G.P.O. 1973); H. Rep. No 92-911, at 66 (1972), reprinted in I 1972 Leg. Hist., at 753.

² This brief cites several documents supplemental to the Rule, available at <http://www2.epa.gov/cleanwaterrule/documents-related-clean-water-rule>.

upstream waters that have a significant impact on downstream waters—and thus are covered—is crucial for water-quality protection.

For example, the Act enhances downstream water quality by prohibiting discharges of dredge or fill material unless authorized by a permit. 33 U.S.C. §§ 1311(a), 1344. As noted by Justice Kennedy in his concurrence in *Rapanos*, filling wetlands “may increase downstream pollution, much as a discharge of toxic pollutants would.” 547 U.S. at 775. Petitioner States make no attempt to argue that filling a wetland is a less significant or irreparable injury than the costs of administering a program that protects that wetland.

Similarly, the Act prohibits pollutant discharges into covered waters unless the discharge is authorized by a National Pollutant Discharge Elimination System (NPDES) permit. 33 U.S.C. §§ 1311(a), 1342. Again, Petitioner States make no attempt to argue that the discharge of a pollutant into a water-body is a less significant injury than the costs of administering a program that protects it.

The Agencies relied on a massive collection of scientific research, public input, and their own extensive expertise to implement the Act’s protections against the injuries caused by wetland destruction and

pollution. *See* 80 Fed. Reg. at 37,055. The Petitioner States offer no evidence that the Agencies overestimated the environmental significance of the Rule. And they are wrong to say that the Agencies “justified the Rule as providing greater predictability . . . rather than cleaner waters.” (Mot. at 20.) The basis for asserting jurisdiction over the waters in question is precisely that they have a “significant nexus” to downstream waters—a nexus defined in terms of the jurisdictional waters’ effect on “the chemical, physical, and biological integrity of the Nation’s waters.” *Id.* at 37,055.

Protection of Downstream States. A second category of benefits Petitioner States ignore is the economic and environmental injuries that water pollution inflicts on downstream states. Watersheds do not respect state boundaries. All of the lower forty-eight states have waters that are downstream of other states’ waters. By protecting states from upstream pollution that originates outside their borders, the Act protects states against harms they cannot avoid without federal help.

If the Act did not protect downstream states against pollution from upstream states, downstream states would have to regulate their own in-state pollution sources more strictly, to offset pollution from out-of-

state sources. But stricter regulation of in-state sources could unfairly threaten states' economies. The Rule protects states' economic interests by "prevent[ing] the 'Tragedy of the Commons' that might result if jurisdictions can compete for industry and development by providing more liberal limitations than their neighboring states." *NRDC v. Costle*, 568 F.2d 1369, 1378 (D.C. Cir. 1977) (quotes omitted).

The Benefits of Avoiding Uncertainty. A third category of benefits that Petitioner States ignore is the resources—including administrative costs—that the Rule will conserve by clearly defining the scope of "waters of the United States." The Rule promotes predictability and consistency in the application of the law. It helps clear up the confusing body of case law that has emerged in the wake of *Rapanos*. The Rule reduces the need for case-by-case jurisdictional determinations and, where such determinations are needed, clarifies the standards for conducting them. It therefore saves administrative costs at the federal level, for the state agencies that have to make judgments under the Act, and for private parties who may be subject to the Act's coverage.

B. The States' Estimates of Administrative Costs Are Speculative and Exaggerated.

The Petitioner States argue that they will suffer irreparable harm because the Rule will force them to incur administrative costs, but the costs they invoke are too speculative and insubstantial to justify staying the Rule. (Mot. at 17-18.) In evaluating harms, this Court looks to their substantiality, their likelihood, and the adequacy of the proof provided. *Mich. Coal. of Radioactive Material Users v. Griepentrog*, 945 F.2d 150, 154 (6th Cir. 1991). The Petitioner States have not identified any substantial, likely injury, because their claims of harm are based on speculation about the extent to which the Rule will increase coverage under the Act, and about the administrative costs they will incur.

Speculation About an Increase in Territory Covered. State Petitioners claim in conclusory fashion that there will be a large “potential” geographic increase in the Act’s coverage in their states. (ECF No. 16 at 46 ¶ 6.) But the Agencies estimate only that the Rule will lead to “an estimated increase of between 2.84 and 4.65 percent in positive jurisdictional determinations annually.” 80 Fed. Reg. at 37,101. Moreover, State Petitioners’ claims about the potential geographic increase is speculative and unsupported by the record. As the Army

Corps noted, “No analysis was made to determine the actual number of acres of waters that would be [covered] and for this reason it is not possible to estimate the number of acres that would be captured by this increase in positive jurisdictional determinations.” Environmental Assessment at 22. Petitioners’ claims therefore fail to support a stay, because “the harm alleged must be both certain and immediate, rather than speculative or theoretical.” *Mich. Coal.*, 945 F.2d at 154.

In fact, there is reason to think that the Rule will decrease the number of covered waters in certain categories. For example, the definition of “tributary” is more restrictive: while the old definition required only that a water have an ordinary high-water mark, the new definition requires both an ordinary high-water mark and a “bed and banks.” (See p. 15, below.) So in at least this respect, the Rule reduces the total number of waters that qualify nationwide.

Speculation About Administrative Costs. As for specific costs, the States claim they will have to identify newly jurisdictional waters and determine whether they are subject to an already-existing water-quality standard. But review of water-quality standards is required only once every three years. 40 C.F.R. § 131.20(a); see 33 U.S.C.

§ 1313(c)(1). And while waters that do not meet the water-quality standards require the issuance of a total maximum daily load (“TMDL”), nothing in the Act sets a hard deadline for the issuance of a TMDL. *S.F. Baykeeper v. Whitman*, 297 F.3d 877, 885 (9th Cir. 2002). The State Petitioners therefore do not establish that a stay is necessary *before* this Court reviews the merits of their claims—much less before it reviews their argument that the Court lacks jurisdiction altogether.

Even less persuasive are the Petitioner States’ claims that they will have to incur costs associated with certifications under § 401 of the Act for dredge-and-fill permits, and NPDES permit applications. They can simply charge fees to offset much or all of these costs, as many states do. *See, e.g.*, Ga. Code Ann. § 12-5-23; Ga. Comp. R. & Regs. § 391-3-6-.22. They make no contention that the fees they are allowed to charge are inadequate to cover the costs of these programs. Moreover, states can simply waive the 401 certification. *See* 33 U.S.C. § 1341(a)(1). And in any event, the Petitioner States do not actually allege that they will receive any such applications—merely that they may incur costs “[i]f individual permit applications are filed on a previously non-

jurisdictional water body.” (McClary Decl., ECF No. 16 at P000007.)
Such speculation cannot establish irreparable harm.

C. State Sovereignty Is Not At Stake Here

The Petitioner States have also not identified any way in which the Rule harms them by infringing their sovereignty. As discussed below, their Constitutional claims are without merit. And when the Petitioner States argue that they will “lose their sovereignty over intrastate waters” (Mot. at 16), they appear to mean only that the federal law will protect certain of their waters that they might prefer to leave federally unregulated. The States’ policy disagreement with an otherwise-valid federal regulation does not constitute a loss of sovereignty—particularly since numerous states support the federal regulation and believe that it protects their vital interests.

POINT II

PETITIONERS ARE UNLIKELY TO SUCCEED ON THE MERITS

A. The Final Rule Was a Logical Outgrowth of the Proposed Rule

Under the Administrative Procedure Act, agencies “may issue rules that do not exactly coincide with the proposed rule as long as the final rule is the ‘logical outgrowth’ of the proposed rule.” *Fertilizer Inst.*

v. EPA, 935 F.2d 1303, 1311 (D.C. Cir. 1991). “Under the ‘logical outgrowth’ test . . . , the key question is whether commenters ‘should have anticipated’ that EPA might” issue the final rule it did. *City of Portland v. EPA*, 507 F.3d 706, 715 (D.C. Cir. 2007).

State Petitioners claim that the final Rule is not a “logical outgrowth” because it includes distance-based limitations in its definitions of “adjacent waters” and in its case-by-case procedures. But Petitioners were on notice that distance-based limitations were contemplated. The preamble to the proposed rule sought public input on the proposed definition of “adjacent waters,” and requested comments on “other reasonable options for providing clarity,” including those “establishing specific geographic limits” such as “distance limitations.” 79 Fed. Reg. at 22,208/1, 22,209/1-2; *see* 80 Fed. Reg. at 37,088-37,091 (discussing public comments on distance-based limitations). It should be no surprise that when the Agencies solicited comments on how to achieve “greater clarity, certainty, and predictability” in case-by-case determinations, distance-based limitations were among the logical options. *Id.* at 22,214; *see also* 80 Fed. Reg. at 37,057 (noting that many commenters and stakeholders “urged EPA to improve upon the 2014

proposal, by providing more bright line boundaries”). The Rule is a logical outgrowth of the proposed rule.

B. The Agencies Were Not Arbitrary and Capricious in Setting Distance Limitations

The distance limitations for the Act’s reach are not arbitrary and capricious. As Chief Justice Roberts observed, the Agencies are to be “afforded generous leeway by the courts in interpreting the statute . . . [including] plenty of room to operate in developing *some* notion of an outer bound to the reach of their authority.” *Rapanos*, 547 U.S. at 758. The record reflects the importance of distance. *See* Technical Support Document at 112 (“Spatial proximity is one important determinant of the magnitude, frequency and duration of connections between wetlands and streams that will ultimately influence the fluxes of water, materials and biota between wetlands and downstream waters.”); *see also* 80 Fed. Reg. at 37,085-86 (discussing scientific basis for including waters located within distance limitations). And “bright-line tests are a fact of regulatory life,” necessary for administrative practicality. *Macon Cty. Samaritan Mem. Hosp. v. Shalala*, 7 F.3d 762,

768-69 (8th Cir. 1993). It would be inappropriate to second-guess these expert and highly technical judgments at this early juncture.

C. The Rule Is Consistent With Justice Kennedy’s Opinion In *Rapanos*

Tributaries. The Rule does not run afoul of Justice Kennedy’s opinion by including “tributaries” within the “waters of the United States.” Justice Kennedy made clear that even minor tributaries can reasonably lie within the Act’s jurisdiction. He observed that the standard for tributaries implemented by the Agencies at the time of *Rapanos* required the presence of an ordinary high-water mark, and stated that this standard “presumably provides a rough measure of the volume and regularity of flow,” and therefore “may well provide a reasonable measure of whether specific minor tributaries bear a sufficient nexus with other regulated waters.” 547 U.S. at 781.

Significantly, the Rule takes a more exacting approach to jurisdictional tributaries than that approved by Justice Kennedy. The Rule defines a tributary as a water that contributes flow to a traditional navigable water and possesses “the physical indicators of a bed and banks *and* an ordinary high water mark.” 33 C.F.R. § 328.3(c)(3)

(emphasis added). Thus, in at least this respect, the Rule's requirement that a tributary have a bed and bank, in addition to an ordinary high water mark, tends to *reduce* jurisdiction over such waters when compared to agency practice at the time of *Rapanos*. Compare Rule, 33 C.F.R. § 328.3(c)(3)(iii) (requiring a bed and bank) *with* Army Corps, Regulatory Guidance Ltr. No. 05-05, Dec. 7, 2005 at 3 (an ordinary high-water mark can be demonstrated by evidence other than the presence of bed and banks).

State Petitioners wrongly attribute to Justice Kennedy the view “that the CWA cannot cover all ‘continuously flowing stream[s] (however small)’ or waters sending only the merest ‘trickle[s]’ into navigable waters.” (Mot. at 13.) The quoted language is from an early portion of Justice Kennedy’s opinion that was not addressing what tributaries the “CWA cannot cover,” but instead pointing out an internal inconsistency in the plurality opinion’s views on wetlands. Justice Kennedy observed that the plurality’s requirement of a continuous surface-water connection would “permit applications of the statute [to remote wetlands connected with a continuously flowing stream (however small)],” even though such wetlands could be “as far

from traditional federal authority as are the waters [the plurality] deems beyond the statute's reach." 547 U.S. at 776-77. Similarly, the language about the "merest trickle" also points to inconsistency in the plurality opinion. *Id.* at 769. But neither quote endorses any limitation on the Act's applicability to tributaries; Justice Kennedy was merely setting the stage for his own significant-nexus test.

Adjacent Waters. State Petitioners are also wrong in claiming that the Rule's coverage of adjacent waters (typically wetlands) fails Justice Kennedy's test. Justice Kennedy opined that the Act could not apply to all wetlands adjacent to certain tributaries, such as "drains, ditches, and streams remote from any navigable-in-fact water and carrying only minor water volumes toward it." *Id.* at 782. But the Rule excludes many of the adjacent wetlands that were of concern to Justice Kennedy. It does so by reducing the number of "tributaries" deemed covered, thus reducing coverage of wetlands adjacent to them. *See* 80 Fed. Reg. at 37,058 col.3. To be a tributary, there now must be evidence showing a bed and bank as well as an ordinary high-water mark. *Id.* at 37,058. As determined by the Agencies based on an extensive scientific record, "sufficient volume, duration, and frequency of flow are required

to create a bed and banks and ordinary high water mark.” 80 Fed. Reg. at 37,066. Thus, under the Rule’s definition, tributaries do not carry “only minor water volumes,” as the Petitioner States argue, and jurisdiction over wetlands adjacent to them does not fail Justice Kennedy’s test.

Similarly, the Rule addresses Justice Kennedy’s concerns by excluding minor and remote waters from its definition of tributaries, thereby excluding wetlands adjacent to them from the Act’s reach. Among these exclusions are three categories of “ditches” that have low flow or are remote from navigable-in-fact waters, 33 C.F.R. § 328.3(b)(3)(i), (ii), and (iii); certain stormwater-control features (including “drains”), *id.* § 328.3(b)(6); and limits on certain adjacent waters to those found within specific distances of other waters—which excludes “remote” waters from the Act’s reach, *id.* § 328.3(c)(1), (2).

Case-by-Case Coverage. In addition to establishing categories of waters that automatically qualify as waters of the United States, the Rule sets guidelines for making case-by-case determinations. 33 C.F.R. § 328.3(c)(5). These guidelines are on all fours with Justice Kennedy’s significant-nexus test. They require an evaluation of nine aquatic

functions to determine whether any function performed by particular waters, whether taken alone or in combination with other functions, contributes significantly to the chemical, physical or biological integrity of nearby downstream waters. *Id.*

Contrary to State Petitioners' assertion, when Justice Kennedy discussed the Act's objectives to "restore and maintain the chemical, physical, and biological integrity" of the Nation's waters, 547 U.S. at 780 (citing 33 U.S.C. § 1251(a)), he never asserted that *each* of these three statutory objectives must be served before a water lies within the Act's protections. Regardless, the nine functions assessed under the Rule generally serve all three objectives. For example, "contribution of flow," cited by State Petitioners, can affect the integrity of downstream waters in multiple respects: physically, by helping to sustain the volume of water in larger waters; chemically, by changing the dissolved-oxygen composition of the water column; and biologically, by supplying downstream waters with organic matter that sustains the food web. *See* 80 Fed. Reg. at 37,068. Moreover, contrary to State Petitioners' claim, the Agencies' discussions of the biological process of "dispersal" in the Rule's preamble and in the Science Report do not contravene *SWANCC*

v. Army Corps, 531 U.S. 159 (2001). The Agencies never endorse jurisdiction under the Act based upon dispersal involving migratory birds living in hydrologically unconnected waters, such as the isolated former sand and gravel pits at issue in *SWANCC*.

D. The Rule Does Not Violate the Constitution

Under *SWANCC* and Justice Kennedy’s opinion in *Rapanos*, the application of the Act to waters that lack a significant nexus to traditional navigable waters raises constitutional difficulties and federalism concerns. *Rapanos*, 47 U.S. at 776. But “the power conferred by the Commerce Clause [is] broad enough to permit congressional regulation of activities causing air or water pollution, or other environmental hazards that may have effects in more than one State.” *Hodel v. Va. Surface Mining & Reclamation Ass’n*, 452 U.S. 264, 282 (1981). As explained above and in much more detail in the preamble to the Rule, the categories of waters covered by the Rule all bear a significant nexus to traditional navigable waters and that conclusion is supported by voluminous, peer-reviewed scientific evidence.

The Rule does not offend the Tenth Amendment because such federal regulation of private activity to prevent pollution does not create

a cognizable harm to state sovereignty. *See Hodel*, 452 U.S. at 284-93. The Rule does not present constitutional or federalism difficulties because the Agencies applied the significant-nexus test in defining the Act's reach, and because the Rule addresses water pollution affecting more than one State. As Justice Kennedy explained, the Act's policy of respecting the "responsibilities and rights" of states, *see* 33 U.S.C. § 1251(b), encompasses respect for state water-pollution policies favoring federal action to "protect[] downstream States from out-of-state pollution that they cannot themselves regulate." 547 U.S. at 777.

As discussed above, the Rule is important to the Intervenor States because it protects their waters from interstate pollution, facilitates implementation of their own water programs, and protects their related economic interests. Accordingly, the Rule actually furthers the Tenth Amendment and federalism by protecting the interests of states. *See United States v. Wash. Suburban San. Comm'n*, 654 F.2d 802, 807 (D.C. Cir. 1981) (Tenth Amendment challenge to Act does not lie where it would cause injury to states).

CONCLUSION

The motion for a nationwide stay of the Clean Water Rule pending this Court's review should be denied.

Dated: Albany, New York
September 23, 2015

Respectfully submitted,

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STATE OF NEW YORK

NOV 13 2014

VIA EMAIL: ow-docket@epa.gov

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Dear Deputy Assistant Administrator Kopocis and Assistant Secretary Darcy:

RE: Definition of "Waters of the United States" Under the Clean Water Act Proposed Rule:
Docket ID No. EPA-HQ-OW-2011-0880

The New York State Departments of Environmental Conservation (DEC) and Agriculture and Markets (DAM) offer the following comments to the proposed national rulemaking Definition of "Waters of the United States" Under the Clean Water Act (79 Fed. Reg. 22188, April 21, 2014), hereinafter, "proposed rule." DEC and DAM appreciate the purpose of the joint rulemaking by the Environmental Protection Agency and the U.S. Army Corps of Engineers as an attempt to clarify what types of bodies of water will be regulated by the Clean Water Act. As a pollution prevention statute, Congress wrote the CWA to extend beyond waters that are actually navigable to include the headwater streams, lakes, and wetlands.

However, after an in-depth analysis of the proposed rule, and as discussed below, DEC and DAM find that the proposed rule does not achieve its goal of providing clarity. Therefore, we request that EPA and the Army Corps significantly revise and renotice its proposed rule for public comment. This should occur only after consultation with states and recognize the significant regional differences of water resources across the country. A one-size-fits-all approach to redefining regulated waters will only lead to legal challenges, cause unnecessary harm to farmers, and could lead to other unintended consequences while at the same time not achieving the Administration's stated goal.

Early Consultation with States for a Successful Rulemaking Process

We recognize and appreciate that EPA and, to a lesser extent, the Army Corps, made some efforts to reach out to the states and regulated entities both before releasing the proposed rule and during the comment period. However, meaningful early consultation to identify the regulatory impacts to states and local governments did not occur. There is concern among the regulated community that the Waters of the United States regulation could result in amendments to already-approved permits, and/or make it more difficult and time consuming to obtain a future permit.

Under the proposed rule, we cannot determine its impact on existing or future projects since the normal processes for outreach and comment were not followed, including necessary consultation with the states and local governments. For example, the proposed rule could be easy to implement, with little change in existing DEC permitting activities. Alternatively, depending upon EPA/USACE interpretation of the regulation, it is also possible that the federal agencies could place new requirements on projects which could slow their implementation. If so, many initiatives, including the implementation of projects to restore areas affected by Superstorm Sandy could be affected.

Additionally, there is little to no regional flexibility in the proposed rule. The geography of the northeast is different than that of the southwest, for example. New York State, with its rocky terrain and multitude of glacial lakes is a complicated environment that requires a tailored permitting process. New York State already has some of the strongest water quality programs in place, and could work with EPA/USACE to craft New York-specific guidance which would clearly apply to New York's waters. This approach is consistent with the way in which EPA has handled other water quality issues under the CWA.

New York has long supported early, meaningful, and substantial state involvement in the development and implementation of environmental statutes and related rules, and the EPA and the Army Corps should consider restarting the effort to redefine waters of the U.S. with state agency partners fully engaged as co-regulators prior to and during the rulemaking process. A partnership with the states should be an essential component of revising and renoticing this rule.

New York State Places a Priority on Its Natural Resources and Its Agricultural Industry

New York has long been a national leader on environmental quality and natural resource protection. Water systems under the jurisdiction of the proposed rule, including wetlands, are valued in New York for their myriad environmental benefits, including resiliency. As discussed in the preliminary report released by the NYS2100 Commission after Superstorm Sandy¹, “(n)atural features, such as wetlands and streams, should be protected.”²

Almost 36,000 farms in New York State produce high quality fruits, vegetables and dairy products which are sold to markets around the world, and we are committed to safeguarding their economic and environmental viability. Under the proposed rule, the redefinition of navigable is an expansion of the waters of the U.S. to now include many lands as part of jurisdictional ‘waters’ to be regulated. As a result, activities that have been unregulated may now be regulated or must fall into a specific exemption. Ambiguous or contradictory definitions for what types of bodies of water to be regulated will negatively harm the farming community, even if they support the overall goal of stemming the flow of all types of water pollution – confusion can

1 Recommendations to Improve the Strength and Resilience of the Empire State's Infrastructure (“Report”)

2 Report, p. 128

carry significant costs. Our farmers are the backbone of our state economy, but they operate on the thinnest of margins. If farmers are expected to implement any new regulations and rules, they must be well thought out and understandable. Farmers cannot be expected to change their operational practices year after year.

Given the high value which New York State places upon the agricultural industry and water systems, *effective* federal initiatives that compliment New York's natural resource protection measures are a priority for the State.

Need for Clarity in the Waters of the US Rulemaking

The proposed rule lacks the clarity needed to be effective. As currently drafted, the rule leaves too much room for interpretation and case-by-case evaluations of whether certain waterbodies are jurisdictional under the CWA. This will ultimately lead to discrepancies, both among states and potentially, within individual states, in the interpretation of its provisions. If adopted, the proposed rule will likely result in legal challenges, continuing the uncertainty over CWA jurisdiction.

The lack of clarity in the proposed rule prevents New York State from providing meaningful comments about the impacts of the proposal. Specifically, the following terms are undefined or not clearly defined in the proposed rule, leaving wide latitude for interpretation and prompting legal challenges:

- Tributary;
- Upland;
- Adjacent waters;
- Shallow subsurface hydrologic connections as "neighboring" waters;
- Floodplain; and
- Significant nexus.

We recommend that a significantly revised rule clearly defines these terms and provide examples of what EPA and the Army Corps believe are encompassed by them. This will enable the states to better understand the intent of EPA and the Army Corps and successfully implement the rule. The regulated community will also be able to better understand the rule's requirements.

Ensure a Level Playing Field for All States

In revising the proposed rule, we encourage EPA and the Army Corps to ensure a level playing field for all states and regulated entities. For example, New York already has in place strong programs to protect waters and wetlands. The federal rule should set a strong regulatory floor which will ensure that all states have a strong basis for protecting water quality and habitats, while also ensuring that local economies can thrive. As long as states remain consistent with a strong national program, the option for the development of EPA-approved regional or state

alternative guidance on jurisdictional waters, as EPA has done in other water quality regulations, may be useful in better defining the waters of the United States. This approach would help ensure flexibility in a manner that best meets the needs of the states that will be involved in implementing this rule.

We request EPA and the Army Corps work with our Departments to rethink this proposal in a way which recognizes New York's sound water quality programs and provides the level national playing field that we need.

We strongly urge EPA and the Army Corps to significantly revise the proposed rule, taking into account the points articulated above. By doing so, EPA and the Army Corps will have the opportunity to ensure that the new proposed rule provides New York with an early and meaningful engagement in the process; ensure clarity and flexibility to states who will be involved in its implementation; afford a fair and level playing field for all potentially regulated entities; and ensure that the goals of the CWA are met.

Sincerely,



Joseph J. Martens
Commissioner
Department of Environmental
Conservation



Richard A. Ball
Commissioner
Department of Agriculture and Markets

IN THE UNITED STATES COURT OF APPEALS
FOR THE SIXTH CIRCUIT

STATE OF OHIO, *ET AL.*,
Petitioners,

v.

U.S. ARMY CORPS OF ENGINEERS, *ET AL.*,
Respondents.

No. 15-3799

and related proceedings:

No. 15-3822

No. 15-3853

No. 15-3887

OPPOSITION TO A STAY PENDING REVIEW
BY THE STATES OF NEW YORK, CONNECTICUT, HAWAII,
MASSACHUSETTS, OREGON, VERMONT, AND WASHINGTON,
AND THE DISTRICT OF COLUMBIA

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PRELIMINARY STATEMENT

Intervenor States support the Clean Water Rule issued by the Environmental Protection Agency (“EPA”) and the Army Corps of Engineers (together, “the Agencies”), and oppose the motion of Petitioner States for a nationwide stay of the Rule. The Rule defines the term “waters of the United States” as used in the Clean Water Act, 33 U.S.C. § 1251 *et seq.*, thereby establishing the scope of protection under the Act. *See* 80 Fed. Reg. 37054 (June 29, 2015). The motion should be denied because Petitioner States fail to show that they will likely succeed on the merits or that the balance of equities favors a stay—particularly since the Intervenor States support the Rule and would be significantly harmed by a stay.

ARGUMENT

THIS COURT SHOULD DENY THE MOTION FOR A STAY

As a threshold matter, this Court has not yet determined whether it has jurisdiction. Petitioner States have filed two motions in this Court: one for a stay pending review, and another to dismiss their petitions for lack of jurisdiction. Briefing on jurisdiction will not be complete until November 4, 2015. Thus, a stay should be denied at this point because of the pending jurisdictional question. In any event,

Petitioner States have not carried their heavy burden to establish that a stay is justified here.

A stay is an “extraordinary remedy,” *Cuomo v. U.S. Nuclear Reg. Comm’n*, 772 F.2d 972, 978 (D.C. Cir. 1985), amounting to “an ‘intrusion into the ordinary processes of administration and judicial review.’” *Nken v. Holder*, 556 U.S. 418, 427 (2009) (quotations omitted). A “stay is not a matter of right, even if irreparable injury might otherwise result,” but rather, “an exercise of judicial discretion.” *Nken*, 556 U.S. at 433 (quotations omitted); *see also Ohio State Conference of N.A.A.C.P. v. Husted*, 769 F.3d 385, 387 (6th Cir. 2014). In analyzing a stay request, courts consider the likelihood of success on the merits and three equitable factors: whether the movant will suffer irreparable injury; whether the stay would cause substantial harm to others; and whether the public interest would be served by the stay. *Nken*, 556 U.S. at 434; *see also Husted*, 769 F.3d at 387. Here, the equitable factors cut strongly against a stay and the Petitioner States are unlikely to succeed on the merits.

POINT I

THE EQUITIES CUT AGAINST A STAY BECAUSE THE BENEFITS OF THE RULE FAR OUTWEIGH ITS POTENTIAL ADMINISTRATIVE COSTS

The equitable factors here militate strongly against granting a stay because the Petitioner States have shown no likelihood of irreparable injury, and because a stay would significantly harm the public, the Intervenor States, and indeed the Petitioner States themselves. It is pure speculation to assert that the alleged meager increase in states' administrative costs will outweigh the significant environmental and administrative benefits the Rule will bring.

A. The Rule Will Have Significant Environmental and Economic Benefits.

Environmental Benefits. The “defacement of the environment” is an appropriate factor to consider in weighing a stay. *Env'tl Def. Fund v. TVA*, 468 F.2d 1164, 1183 (6th Cir. 1972). Here, it weighs strongly against a stay. The Rule enhances environmental protection by better tailoring the Act's reach to cover those waters that significantly contribute to the “chemical, physical, and biological integrity” of downstream waters—as suggested by Justice Kennedy's concurrence in *Rapanos v. United States*, 547 U.S. 715, 780 (2006). To the extent that

the Rule's improved tailoring increases the number of waters deemed to be protected by the Act, environmental benefits will likewise increase.

The Clean Water Act represents Congress's considered judgment about the measures that need to be taken, and costs to be incurred, to remedy America's "severely polluted" waters."¹ Upstream waters, singly and in the aggregate, transport pollution that affects the function and condition of downstream waters, as demonstrated by the robust Scientific Report on which the Agencies rely. In addition, "[p]eer-reviewed science and practical experience demonstrate that upstream waters, including headwaters and wetlands, play a crucial role in controlling sediment, filtering pollutants, reducing flooding, providing habitat for fish and other aquatic wildlife, and many other vital chemical, physical, and biological processes in downstream waters." EPA, Response to Comments, Topic 9, at 13.² Thus, identifying all of the

¹ S. Rep. No. 92-414, (1972), reprinted in 1 Environmental Policy Division, Congressional Research Service, *A Legislative History of the Water Pollution Control Act Amendments of 1972* at 1425 (U.S. G.P.O. 1973); H. Rep. No. 92-911, at 66 (1972), reprinted in 1 1972 Leg. Hist., at 753.

² This brief cites several documents supplemental to the Rule, available at <http://www2.epa.gov/cleanwaterrule/documents-related-clean-water-rule>.

upstream waters that have a significant impact on downstream waters—and thus are covered—is crucial for water-quality protection.

For example, the Act enhances downstream water quality by prohibiting discharges of dredge or fill material unless authorized by a permit. 33 U.S.C. §§ 1311(a), 1344. As noted by Justice Kennedy in his concurrence in *Rapanos*, filling wetlands “may increase downstream pollution, much as a discharge of toxic pollutants would.” 547 U.S. at 775. Petitioner States make no attempt to argue that filling a wetland is a less significant or irreparable injury than the costs of administering a program that protects that wetland.

Similarly, the Act prohibits pollutant discharges into covered waters unless the discharge is authorized by a National Pollutant Discharge Elimination System (NPDES) permit. 33 U.S.C. §§ 1311(a), 1342. Again, Petitioner States make no attempt to argue that the discharge of a pollutant into a water-body is a less significant injury than the costs of administering a program that protects it.

The Agencies relied on a massive collection of scientific research, public input, and their own extensive expertise to implement the Act’s protections against the injuries caused by wetland destruction and

pollution. *See* 80 Fed. Reg. at 37,055. The Petitioner States offer no evidence that the Agencies overestimated the environmental significance of the Rule. And they are wrong to say that the Agencies “justified the Rule as providing greater predictability . . . rather than cleaner waters.” (Mot. at 20.) The basis for asserting jurisdiction over the waters in question is precisely that they have a “significant nexus” to downstream waters—a nexus defined in terms of the jurisdictional waters’ effect on “the chemical, physical, and biological integrity of the Nation’s waters.” *Id.* at 37,055.

Protection of Downstream States. A second category of benefits Petitioner States ignore is the economic and environmental injuries that water pollution inflicts on downstream states. Watersheds do not respect state boundaries. All of the lower forty-eight states have waters that are downstream of other states’ waters. By protecting states from upstream pollution that originates outside their borders, the Act protects states against harms they cannot avoid without federal help.

If the Act did not protect downstream states against pollution from upstream states, downstream states would have to regulate their own in-state pollution sources more strictly, to offset pollution from out-of-

state sources. But stricter regulation of in-state sources could unfairly threaten states' economies. The Rule protects states' economic interests by "prevent[ing] the 'Tragedy of the Commons' that might result if jurisdictions can compete for industry and development by providing more liberal limitations than their neighboring states." *NRDC v. Costle*, 568 F.2d 1369, 1378 (D.C. Cir. 1977) (quotes omitted).

The Benefits of Avoiding Uncertainty. A third category of benefits that Petitioner States ignore is the resources—including administrative costs—that the Rule will conserve by clearly defining the scope of "waters of the United States." The Rule promotes predictability and consistency in the application of the law. It helps clear up the confusing body of case law that has emerged in the wake of *Rapanos*. The Rule reduces the need for case-by-case jurisdictional determinations and, where such determinations are needed, clarifies the standards for conducting them. It therefore saves administrative costs at the federal level, for the state agencies that have to make judgments under the Act, and for private parties who may be subject to the Act's coverage.

B. The States' Estimates of Administrative Costs Are Speculative and Exaggerated.

The Petitioner States argue that they will suffer irreparable harm because the Rule will force them to incur administrative costs, but the costs they invoke are too speculative and insubstantial to justify staying the Rule. (Mot. at 17-18.) In evaluating harms, this Court looks to their substantiality, their likelihood, and the adequacy of the proof provided. *Mich. Coal. of Radioactive Material Users v. Griepentrog*, 945 F.2d 150, 154 (6th Cir. 1991). The Petitioner States have not identified any substantial, likely injury, because their claims of harm are based on speculation about the extent to which the Rule will increase coverage under the Act, and about the administrative costs they will incur.

Speculation About an Increase in Territory Covered. State Petitioners claim in conclusory fashion that there will be a large “potential” geographic increase in the Act’s coverage in their states. (ECF No. 16 at 46 ¶ 6.) But the Agencies estimate only that the Rule will lead to “an estimated increase of between 2.84 and 4.65 percent in positive jurisdictional determinations annually.” 80 Fed. Reg. at 37,101. Moreover, State Petitioners’ claims about the potential geographic increase is speculative and unsupported by the record. As the Army

Corps noted, “No analysis was made to determine the actual number of acres of waters that would be [covered] and for this reason it is not possible to estimate the number of acres that would be captured by this increase in positive jurisdictional determinations.” Environmental Assessment at 22. Petitioners’ claims therefore fail to support a stay, because “the harm alleged must be both certain and immediate, rather than speculative or theoretical.” *Mich. Coal.*, 945 F.2d at 154.

In fact, there is reason to think that the Rule will decrease the number of covered waters in certain categories. For example, the definition of “tributary” is more restrictive: while the old definition required only that a water have an ordinary high-water mark, the new definition requires both an ordinary high-water mark and a “bed and banks.” (See p. 15, below.) So in at least this respect, the Rule reduces the total number of waters that qualify nationwide.

Speculation About Administrative Costs. As for specific costs, the States claim they will have to identify newly jurisdictional waters and determine whether they are subject to an already-existing water-quality standard. But review of water-quality standards is required only once every three years. 40 C.F.R. § 131.20(a); see 33 U.S.C.

§ 1313(c)(1). And while waters that do not meet the water-quality standards require the issuance of a total maximum daily load (“TMDL”), nothing in the Act sets a hard deadline for the issuance of a TMDL. *S.F. Baykeeper v. Whitman*, 297 F.3d 877, 885 (9th Cir. 2002). The State Petitioners therefore do not establish that a stay is necessary *before* this Court reviews the merits of their claims—much less before it reviews their argument that the Court lacks jurisdiction altogether.

Even less persuasive are the Petitioner States’ claims that they will have to incur costs associated with certifications under § 401 of the Act for dredge-and-fill permits, and NPDES permit applications. They can simply charge fees to offset much or all of these costs, as many states do. *See, e.g.*, Ga. Code Ann. § 12-5-23; Ga. Comp. R. & Regs. § 391-3-6-.22. They make no contention that the fees they are allowed to charge are inadequate to cover the costs of these programs. Moreover, states can simply waive the 401 certification. *See* 33 U.S.C. § 1341(a)(1). And in any event, the Petitioner States do not actually allege that they will receive any such applications—merely that they may incur costs “[i]f individual permit applications are filed on a previously non-

jurisdictional water body.” (McClary Decl., ECF No. 16 at P000007.) Such speculation cannot establish irreparable harm.

C. State Sovereignty Is Not At Stake Here

The Petitioner States have also not identified any way in which the Rule harms them by infringing their sovereignty. As discussed below, their Constitutional claims are without merit. And when the Petitioner States argue that they will “lose their sovereignty over intrastate waters” (Mot. at 16), they appear to mean only that the federal law will protect certain of their waters that they might prefer to leave federally unregulated. The States’ policy disagreement with an otherwise-valid federal regulation does not constitute a loss of sovereignty—particularly since numerous states support the federal regulation and believe that it protects their vital interests.

POINT II

PETITIONERS ARE UNLIKELY TO SUCCEED ON THE MERITS

A. The Final Rule Was a Logical Outgrowth of the Proposed Rule

Under the Administrative Procedure Act, agencies “may issue rules that do not exactly coincide with the proposed rule as long as the final rule is the ‘logical outgrowth’ of the proposed rule.” *Fertilizer Inst.*

v. EPA, 935 F.2d 1303, 1311 (D.C. Cir. 1991). “Under the ‘logical outgrowth’ test . . . , the key question is whether commenters ‘should have anticipated’ that EPA might” issue the final rule it did. *City of Portland v. EPA*, 507 F.3d 706, 715 (D.C. Cir. 2007).

State Petitioners claim that the final Rule is not a “logical outgrowth” because it includes distance-based limitations in its definitions of “adjacent waters” and in its case-by-case procedures. But Petitioners were on notice that distance-based limitations were contemplated. The preamble to the proposed rule sought public input on the proposed definition of “adjacent waters,” and requested comments on “other reasonable options for providing clarity,” including those “establishing specific geographic limits” such as “distance limitations.” 79 Fed. Reg. at 22,208/1, 22,209/1-2; *see* 80 Fed. Reg. at 37,088-37,091 (discussing public comments on distance-based limitations). It should be no surprise that when the Agencies solicited comments on how to achieve “greater clarity, certainty, and predictability” in case-by-case determinations, distance-based limitations were among the logical options. *Id.* at 22,214; *see also* 80 Fed. Reg. at 37,057 (noting that many commenters and stakeholders “urged EPA to improve upon the 2014

proposal, by providing more bright line boundaries”). The Rule is a logical outgrowth of the proposed rule.

B. The Agencies Were Not Arbitrary and Capricious in Setting Distance Limitations

The distance limitations for the Act’s reach are not arbitrary and capricious. As Chief Justice Roberts observed, the Agencies are to be “afforded generous leeway by the courts in interpreting the statute . . . [including] plenty of room to operate in developing *some* notion of an outer bound to the reach of their authority.” *Rapanos*, 547 U.S. at 758. The record reflects the importance of distance. See Technical Support Document at 112 (“Spatial proximity is one important determinant of the magnitude, frequency and duration of connections between wetlands and streams that will ultimately influence the fluxes of water, materials and biota between wetlands and downstream waters.”); see also 80 Fed. Reg. at 37,085-86 (discussing scientific basis for including waters located within distance limitations). And “bright-line tests are a fact of regulatory life,” necessary for administrative practicality. *Macon Cty. Samaritan Mem. Hosp. v. Shalala*, 7 F.3d 762,

768-69 (8th Cir. 1993). It would be inappropriate to second-guess these expert and highly technical judgments at this early juncture.

**C. The Rule Is Consistent With Justice Kennedy's
Opinion In *Rapanos***

Tributaries. The Rule does not run afoul of Justice Kennedy's opinion by including "tributaries" within the "waters of the United States." Justice Kennedy made clear that even minor tributaries can reasonably lie within the Act's jurisdiction. He observed that the standard for tributaries implemented by the Agencies at the time of *Rapanos* required the presence of an ordinary high-water mark, and stated that this standard "presumably provides a rough measure of the volume and regularity of flow," and therefore "may well provide a reasonable measure of whether specific minor tributaries bear a sufficient nexus with other regulated waters." 547 U.S. at 781.

Significantly, the Rule takes a more exacting approach to jurisdictional tributaries than that approved by Justice Kennedy. The Rule defines a tributary as a water that contributes flow to a traditional navigable water and possesses "the physical indicators of a bed and banks *and* an ordinary high water mark." 33 C.F.R. § 328.3(c)(3)

(emphasis added). Thus, in at least this respect, the Rule's requirement that a tributary have a bed and bank, in addition to an ordinary high water mark, tends to *reduce* jurisdiction over such waters when compared to agency practice at the time of *Rapanos*. Compare Rule, 33 C.F.R. § 328.3(c)(3)(iii) (requiring a bed and bank) *with* Army Corps, Regulatory Guidance Ltr. No. 05-05, Dec. 7, 2005 at 3 (an ordinary high-water mark can be demonstrated by evidence other than the presence of bed and banks).

State Petitioners wrongly attribute to Justice Kennedy the view “that the CWA cannot cover all ‘continuously flowing stream[s] (however small)’ or waters sending only the merest ‘trickle[s]’ into navigable waters.” (Mot. at 13.) The quoted language is from an early portion of Justice Kennedy’s opinion that was not addressing what tributaries the “CWA cannot cover,” but instead pointing out an internal inconsistency in the plurality opinion’s views on wetlands. Justice Kennedy observed that the plurality’s requirement of a continuous surface-water connection would “permit applications of the statute [to remote wetlands connected with a continuously flowing stream (however small)],” even though such wetlands could be “as far

from traditional federal authority as are the waters [the plurality] deems beyond the statute's reach." 547 U.S. at 776-77. Similarly, the language about the "merest trickle" also points to inconsistency in the plurality opinion. *Id.* at 769. But neither quote endorses any limitation on the Act's applicability to tributaries; Justice Kennedy was merely setting the stage for his own significant-nexus test.

Adjacent Waters. State Petitioners are also wrong in claiming that the Rule's coverage of adjacent waters (typically wetlands) fails Justice Kennedy's test. Justice Kennedy opined that the Act could not apply to all wetlands adjacent to certain tributaries, such as "drains, ditches, and streams remote from any navigable-in-fact water and carrying only minor water volumes toward it." *Id.* at 782. But the Rule excludes many of the adjacent wetlands that were of concern to Justice Kennedy. It does so by reducing the number of "tributaries" deemed covered, thus reducing coverage of wetlands adjacent to them. *See* 80 Fed. Reg. at 37,058 col.3. To be a tributary, there now must be evidence showing a bed and bank as well as an ordinary high-water mark. *Id.* at 37,058. As determined by the Agencies based on an extensive scientific record, "sufficient volume, duration, and frequency of flow are required

to create a bed and banks and ordinary high water mark.” 80 Fed. Reg. at 37,066. Thus, under the Rule’s definition, tributaries do not carry “only minor water volumes,” as the Petitioner States argue, and jurisdiction over wetlands adjacent to them does not fail Justice Kennedy’s test.

Similarly, the Rule addresses Justice Kennedy’s concerns by excluding minor and remote waters from its definition of tributaries, thereby excluding wetlands adjacent to them from the Act’s reach. Among these exclusions are three categories of “ditches” that have low flow or are remote from navigable-in-fact waters, 33 C.F.R. § 328.3(b)(3)(i), (ii), and (iii); certain stormwater-control features (including “drains”), *id.* § 328.3(b)(6); and limits on certain adjacent waters to those found within specific distances of other waters—which excludes “remote” waters from the Act’s reach, *id.* § 328.3(c)(1), (2).

Case-by-Case Coverage. In addition to establishing categories of waters that automatically qualify as waters of the United States, the Rule sets guidelines for making case-by-case determinations. 33 C.F.R. § 328.3(c)(5). These guidelines are on all fours with Justice Kennedy’s significant-nexus test. They require an evaluation of nine aquatic

functions to determine whether any function performed by particular waters, whether taken alone or in combination with other functions, contributes significantly to the chemical, physical or biological integrity of nearby downstream waters. *Id.*

Contrary to State Petitioners' assertion, when Justice Kennedy discussed the Act's objectives to "restore and maintain the chemical, physical, and biological integrity' of the Nation's waters, 547 U.S. at 780 (citing 33 U.S.C. § 1251(a)), he never asserted that *each* of these three statutory objectives must be served before a water lies within the Act's protections. Regardless, the nine functions assessed under the Rule generally serve all three objectives. For example, "contribution of flow," cited by State Petitioners, can affect the integrity of downstream waters in multiple respects: physically, by helping to sustain the volume of water in larger waters; chemically, by changing the dissolved-oxygen composition of the water column; and biologically, by supplying downstream waters with organic matter that sustains the food web. *See* 80 Fed. Reg. at 37,068. Moreover, contrary to State Petitioners' claim, the Agencies' discussions of the biological process of "dispersal" in the Rule's preamble and in the Science Report do not contravene *SWANCC*

v. Army Corps, 531 U.S. 159 (2001). The Agencies never endorse jurisdiction under the Act based upon dispersal involving migratory birds living in hydrologically unconnected waters, such as the isolated former sand and gravel pits at issue in *SWANCC*.

D. The Rule Does Not Violate the Constitution

Under *SWANCC* and Justice Kennedy's opinion in *Rapanos*, the application of the Act to waters that lack a significant nexus to traditional navigable waters raises constitutional difficulties and federalism concerns. *Rapanos*, 47 U.S. at 776. But "the power conferred by the Commerce Clause [is] broad enough to permit congressional regulation of activities causing air or water pollution, or other environmental hazards that may have effects in more than one State." *Hodel v. Va. Surface Mining & Reclamation Ass'n*, 452 U.S. 264, 282 (1981). As explained above and in much more detail in the preamble to the Rule, the categories of waters covered by the Rule all bear a significant nexus to traditional navigable waters and that conclusion is supported by voluminous, peer-reviewed scientific evidence.

The Rule does not offend the Tenth Amendment because such federal regulation of private activity to prevent pollution does not create

a cognizable harm to state sovereignty. *See Hodel*, 452 U.S. at 284-93. The Rule does not present constitutional or federalism difficulties because the Agencies applied the significant-nexus test in defining the Act's reach, and because the Rule addresses water pollution affecting more than one State. As Justice Kennedy explained, the Act's policy of respecting the "responsibilities and rights" of states, *see* 33 U.S.C. § 1251(b), encompasses respect for state water-pollution policies favoring federal action to "protect[] downstream States from out-of-state pollution that they cannot themselves regulate." 547 U.S. at 777.

As discussed above, the Rule is important to the Intervenor States because it protects their waters from interstate pollution, facilitates implementation of their own water programs, and protects their related economic interests. Accordingly, the Rule actually furthers the Tenth Amendment and federalism by protecting the interests of states. *See United States v. Wash. Suburban San. Comm'n*, 654 F.2d 802, 807 (D.C. Cir. 1981) (Tenth Amendment challenge to Act does not lie where it would cause injury to states).

CONCLUSION

The motion for a nationwide stay of the Clean Water Rule pending this Court's review should be denied.

Dated: Albany, New York
September 23, 2015

Respectfully submitted,

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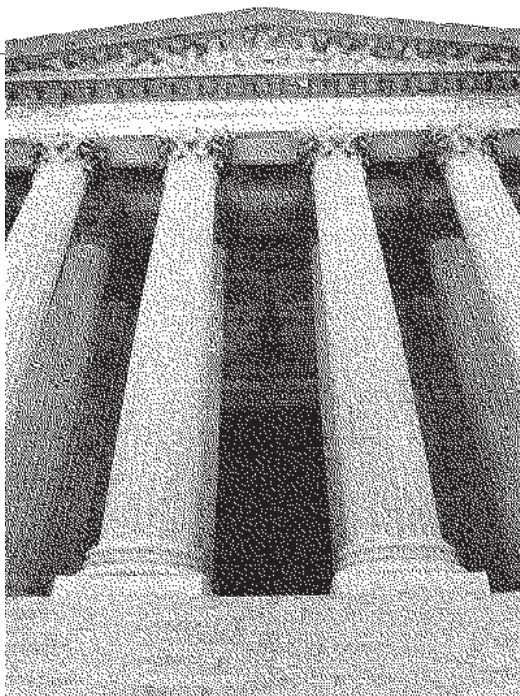
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THE FORUM

Which Environmental Statute Is the Most Important and Effective?

It has been 45 years since the first modern environmental statutes were beginning to be passed, a period in which the U.S. economy grew by leaps and bounds, but emissions and discharges of most kinds actually dropped. The laws were directed at the most important pollutants in different media and different economic settings. The Clean Air Act was aimed primarily at criteria pollutants and now is being wielded against the emissions that cause climate change. The Clean Water Act actually was passed over a presidential veto, showing strong bipartisan support. Although it didn't achieve its goals of zero discharge, our lakes and streams are no longer a sewer, and sewers are no longer a preferred conduit of pollutants into our waterways.

The Endangered Species Act has brought eagles and wolves and grizzly bears back from the brink of extinction, and in the snail darter case and subsequent lawsuits showed that it is one of our most effective laws in land use regulation. Our hazardous materials laws, starting with the Comprehensive Environmental Response, Compensation, and Liability Act, not only cleaned up some of our worst

waste sites, its strict liability provisions no doubt produced a marked decrease in industry's jetisoning wastes into inappropriate landfills and dumps. The Resource Conservation and Recovery Act manages hazardous materials in commerce, ensuring that businesses handle chemicals appropriately while using and storing them.

Meanwhile, the National Environmental Policy Act set the country on a course to preserve the biosphere as a matter of national will and put in place environmental impact assessment, wherein government has to assess the probable effect of its actions and invite citizen involvement. Finally, although not an environmental law per se, the Administrative Procedure Act manages the whole package of environmental laws and their implementation.

Which is the most important? We asked six of the foremost experts in the country to answer that question. After viewing their answers, readers will no doubt answer that they all are important, and be thankful that our lawmakers and policymakers, our businesses and citizens, and of course the environment itself, all benefit from this suite of statutes.



“CERCLA introduced the concept of joint and several liability to the daily lexicon of environmental practitioners”

Elliott P. Laws

Partner
CROWELL & MORING, LLP



“The APA’s procedural protections are critical to the sound implementation of our other environmental laws”

Amanda C. Leiter

Associate Professor of Law
AMERICAN UNIVERSITY



“No other federal statute besides the ESA deals so intimately with ecological life histories and, albeit indirectly, ecosystems”

Zygmunt Plater

Director
BOSTON COLLEGE LAND AND ENVIRONMENTAL LAW PROGRAM



“Congress set audacious goals in the CWA: To restore and maintain the chemical, physical, and biological integrity of the nation’s waters”

Kathy Robb

Partner
HUNTON & WILLIAMS



“The National Environmental Policy Act has changed the way we think, a truly magnificent achievement”

Nicholas C. Yost

Partner
DENTON US LLP



“The CAA’s emission reductions have been achieved during four decades when the U.S. population doubled and economic activity tripled”

Bob Yuhnke

Attorney (retired)
ENVIRONMENTAL DEFENSE FUND

Cleaner Waters — but a Murky, Uncertain Future

KATHY ROBB

At one level, the bundle commonly referred to as the Clean Water Act — a statute first passed in 1972 and last amended in 1987, with antecedents as far back as the Rivers and Harbors Act of 1899 — has enjoyed uncommon success.

In assessing that success, it is well to remember that in the beginning the rivers were on fire. Wood debris and an oily glaze common in the Cuyahoga River first burned in 1868 and in 13 subsequent fires. In 1952, ships and a waterfront building were destroyed by fire on the Cuyahoga. Iconic photos from that year published on the cover of *Life* magazine at the time of a 1969 fire horrified the nation, galvanizing political support for passage of the CWA three years later. But the Cuyahoga was not particularly unusual. The Chicago, Buffalo, and Rouge rivers also repeatedly caught fire. Visible filth was a mainstay on the Potomac and the Mississippi.

The law was not enacted without challenge. The initially named Federal Water Pollution Control Act Amendments of 1972 was vetoed by President Nixon, citing concern for “spiraling prices and increasingly onerous taxes,” particularly the “staggering, budget-wrecking \$24 billion” provided in the bill. Yet Congress immediately overrode the veto by 52 to 12 in the Senate and 247 to 23 in the House, with members of both parties casting votes on each side, in a bipartisan atmosphere we now can only marvel at.

Congress set audacious goals in 1972: “To restore and maintain the chemical, physical, and biological integrity of the nation’s waters,” to make waters fishable and swimmable by 1983, and to eliminate the discharge of pollutants by 1985. Unsurprisingly, these goals were not met. But by 1998,

the United States had doubled the waters clean enough for fishing and swimming; more than doubled the number of people served by modern sewage treatment plants, to 173 million; and drastically reduced wetlands losses.

By 2004, the date of the most recent Environmental Protection Agency “Water Quality Inventory Report to Congress,” more than 60 percent of the nation’s waters met the CWA goals; in 1972, less than a third did. The statute has resulted in a serious reduction in industrial and sewage waste discharges. There is no question that the country’s overall water quality has improved significantly over the past four decades as a result of the act.

Still, tensions inherent in the CWA from the beginning remain over 40 years later, centering on cost and jurisdiction. The two are inextricably connected. The statute came with significant federal funds to address its goals. From 1972 to 1995, for example, the federal government spent \$61 billion to build or upgrade sewage treatment plants. But the remaining capital needs are staggering. How do we achieve the law’s central goals for our waters with what will always be limited resources?

Exacerbating this problem is the debate about just what are jurisdictional waters under the act. After several Supreme Court decisions and multiple proposed and final guidance documents over the years, the debate reached a crescendo with the publication last April of a 100-page proposed rule by EPA and the Army Corps of Engineers addressing “waters of the United States” subject to the CWA. The proposed rule is sure to draw thousands of pages of comments and become the subject of litigation.

While EPA and the Corps protest that the proposed rule is merely a clarification, not a change, for the first time it offers a regulatory definition of “tributary” that includes waterbodies that are natural or man-made; includes all waters adjacent to those defined tributaries; and would require consideration of the jurisdiction of all “other waters”

on a case-by-case basis after reviewing whether there is a significant nexus to a tributary. It also includes new definitions for “adjacent” and “significant nexus.” While EPA and the Corps state that the proposed rule is grounded in the draft scientific study on the connectivity of waters, the rule was proposed before the Science Advisory Board reviewing the draft connectivity report had the opportunity to finish its analysis. And there is no consideration of the cooperative federalism that was once the touchstone of the act.

What the proposed rule might mean for jurisdiction is more than a new round of scholarly musings in law review articles. If applied, it would broaden the waters subject to CWA jurisdiction (and to other environmental laws as well), encourage jurisdiction determinations through costly litigation in citizen suits, consume local, state, federal, and private resources, and ultimately limit the day-to-day activities of thousands of businesses and individuals. It will further affect cost without moving us any closer to figuring out how to prioritize and protect the waters that matter to us or further the goals of the act — a potentially sad epilogue for the statute.

The Clean Water Act has resulted in cleaner rivers, lakes, and streams, providing boating, swimming, and fishing, and wildlife and health protection. Tens of billions of pounds of sewage, chemicals, and debris have been kept out of our waters. Scientific and technological advances have been encouraged. It has provided critical infrastructure funding. The rivers are no longer catching fire. New York City has half a dozen public swimming events annually in its harbor. How we resolve the tension of prioritizing and protecting waters going forward with scarce resources will determine the ultimate success of the statute.

Kathy Robb is a partner at Hunton & Williams representing water districts, manufacturers, energy companies, and financial institutions in environmental litigation and transactions.

*Trends in Urban Environmental
Criminal Enforcement*

Presenters:

Lt. Liza Bobseine

Michael S. Bogin, Esq.

Hugh L. McLean, Esq.

Moderator:

Susan H. Brailey, Esq.

Trends in Urban Environmental Criminal Enforcement



Reasons for Criminal Enforcement

- **The Violation May Be Extremely Serious**
- **Civil Enforcement Alone Not A Deterrent**
- **Illegal Profits/Financial Incentive for Improper Disposal**
- **The Violation May Seriously Undermine the Regulatory Program**

Environmental Statutes

- New York's environmental laws are codified in the "Environmental Conservation Law," which authorizes civil and criminal enforcement of state laws, as well as federal environmental statutes.
- Important federal statutes delegated to the state for enforcement include among others:
 - the Clean Water Act (U.S.C.A. §§ 19-5-101 to 123),
 - the Clean Air Act (U.S.C.A. §§ 19- 2-101 to 127),
 - and the Resource Conservation and Recovery Act (Solid and Hazardous Waste Act) which regulates solid wastes (U.S.C.A. §§ 19-6-101 to 824).

Roles in the Criminal Process

- **Law Enforcement**
- **Prosecutors**
- **Defense Counsel**

Law Enforcement

- Environmental Conservation Officers (ECOs)
- BECI: Bureau of Environmental Criminal Investigations – DEC Detectives
- DA or AG Investigators
- Local Police Officers
- USEPA Special Agents

Prosecutors

- Office of the Attorney General
- Local District Attorney's Offices
- Office of the United States Attorney
- Responsible for the review of the evidence, investigation, charging decisions and prosecution of the defendants.

Defense Counsel

Retained or Assigned Counsel

- Defends the accused to ensure the investigation was done within legal parameters;
- Accusatory instruments are appropriately drafted and legally sufficient;
- Get the best deal for his/her client.

Major Types of N.Y. State Prosecutions for Environmental Crimes:

- Water Pollution
- Fish and Wildlife
- Solid Waste (including Hazardous Waste)
- Hazardous Substances
- Air

Statutory Scheme – 7 Areas of Criminal Enforcement

- All areas subject to regulatory scheme
- Regulatory Violation, with Culpable Mental State, is an offense.
- Seriousness of offense varies with seriousness of regulated activity
- Specific activity in each area criminalized

Culpable Mental State

Penal Law §15.05

Required for most crimes under ECL:

Intentionally - conscious objective to cause such result or engage in such conduct

Knowingly - aware that his conduct is of such nature or that such circumstances exists

Recklessly - aware of and consciously disregards a substantial and unjustifiable risk that such result will occur or such circumstance exists

Criminal Negligence - fails to perceive a substantial and unjustifiable risk that such result will occur or such circumstance exists

EXCEPT...

- Air Cases

Article 19 of the ECL states that any person who “willfully” violates a provision of Article 19 shall be guilty of a misdemeanor.

Accusatory Instruments

- Summons
- Felony or Misdemeanor Complaint
- Indictment

Water Pollution



Water Pollution

- State regulates all discharges into waters of the state.
- Discharge not illegal itself generally, however a person needs to obtain a permit to discharge.
- Permit from Department of Environmental Conservation.
- Different types of permits.

- Two main types of criminal unpermitted discharges:
 - 1) Point Source
 - 2) Non-Point Source Discharges

Point Source Discharges

ECL §§ 17-0701, 17-0801, 71-1933

1. It shall be unlawful for any person, until a written SPDES permit therefor has been granted by the commissioner, or by his designated representative, and unless such permit remains in full force and effect, to:
 - a. Make or cause to make or use any outlet or point source for the discharge of sewage, industrial waste or other wastes or the effluent therefrom, into the waters of this state

1) Waters of the State

2) Point Source

3) SPDES Permit



How Point Source Discharges Are Regulated:

- Self Reporting
- Daily Monitoring
- Best Available Control Technology (BACT)

Non-Point Source Discharges

ECL § 17-0501

General prohibition against pollution

1. It shall be unlawful for any person, directly or indirectly, to throw, drain, run or otherwise discharge into such waters organic or inorganic matter that shall cause or contribute to a condition in contravention of the standards adopted by the department pursuant to section 17-0301.

- Contravention of the standards adopted by the department pursuant to section 17-0301
- Classification of Water Bodies
- (AA, A, B, C, D)

Wildlife Crimes



Wildlife Crimes

Two Types of Wildlife Crimes

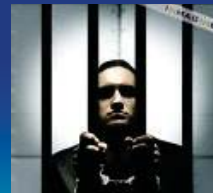
- Recreational Activities (i.e. hunting, fishing, trapping)
- Illegal Commercialization
 - Native Wildlife
 - Non-native Wildlife
 - Endangered and Threatened Species

Wildlife Crimes (Recreational Activities)

- Start off with the theory that the State owns everything.
 - § ECL 11-0105 – The State of New York owns all fish, game, wildlife, shellfish, crustacea and protected insects in the state, except those legally acquired and held in private ownership.
- If you want to hunt, fish, trap you generally need a license.



- If you don't get license.....



Illegal Commercialization/ Endangered and Threatened Species

- Article 11 and 13 of the ECL set out various statutory provisions that regulate the possession and sale of wildlife.
- Two major statutory provisions are:
- **ECL § 11-0107(2)** – No person shall, at any time of the year, buy, sell, offer or expose for sale, transport, or have in his possession any “**fish protected by law, game, protected wildlife, shellfish, harbor seals, crustacea protected by law, or part thereof, or protected insect, whether taken within the state or coming from without the state, except as permitted by the Fish and Wildlife Law.**”
- **ECL § 11-0535(2)** – makes illegal the “taking, importation, transportation, possession or sale of any **endangered or threatened species** of fish, shellfish, crustacea or wildlife, or hides or other parts thereof, or the sale or possession with intent to sell of any article made in whole or in part from the skin, hide or other parts of any endangered or threatened species of fish, shellfish, crustacea or wildlife” (except under license or permit from DEC).

Enforcement- The Penalty Section

ECL §71-0924
Where the value of wildlife
or parts thereof is:

\$250 or less

Violation
(Mandatory \$500 fine
& up to 15 days jail)

**Over \$250
up to \$1,500**

Unclassified Misd.
(Mandatory \$5,000 fine
& up to 1 year jail)

Over \$1,500

E Felony
(up to 4 years jail
& max \$5,000 fine)

Solid Waste

Encompasses all types of waste, including liquids. The disposal of solid wastes is regulated by the ECL, and an unlawful release (disposal, abandonment or other methods) is a crime.

Stuff

household garbage, municipal waste, construction and demolition debris



Bad Stuff

hazardous wastes/ substances, (i.e. lead, chlorine, regulated medical waste, and petroleum products)



Really Bad Stuff

acutely hazardous waste/ substances (AKA ethyl methyl death), such as arsenic acid, benzyl cyanide and hydrofluoric acid



Regulatory Framework

- Municipal Waste - must be taken to a sanitary landfill.
- Hazardous Waste - regulated from “cradle to grave.” Documentation tracks the waste from its creation until its proper disposal (manifest system).

What is a Substance Hazardous to Public Health Safety or the Environment?

- ECL §71-2702(10) – “any substance which:
- (a) is identified or listed as a hazardous waste in regulations promulgated pursuant to section 27-0903 of this chapter and all amendments thereto, regardless of whether at the time of release the substance was actually a waste; or
- (b) appears on the list in regulations promulgated pursuant to paragraph (a) of subdivision one of section 37-0103 of this chapter and all amendments thereto.”

Something is classified as a hazardous waste or substance in two different ways:

- 1) **Listed** - the substance or waste is on a list found in DEC's regulations; or
- 2) **Characteristic** - the substance or waste satisfies the criteria of one of four categories defined in DEC's regulations.
 - Toxicity - a small amount of it can cause death (e.g. hydrochloric acid);
 - Corrosivity - High or low pH or corrodes steel at a certain rate;
 - Ignitability - It has a flash point of 140° F; or
 - Reactivity - It is an unstable substance that reacts violently with water (i.e. explodes).

Environmental Search Warrants

What's the same?

- Must meet all the requirements of C.P.L. Article 690
- Based upon probable cause
- Search for and “seize” evidence of a crime
- Return to the court “without unnecessary delay”

Environmental Search Warrants

What's different?

- The requirements for safe execution of the search warrant
- The nature of the search activities
- The nature of the material to be “seized”
- The types of information used to establish probable cause
- Disposition of seized evidence



Sample No. **AL05736**

REPORT OF ANALYSIS

Westchester County Department of Labs and Research

10 Dana Road Valhalla, New York 10595

Sample Location :

Received By : DLV

Bottle No : PIT 1

Collection Point : SOIL

Collected By : HEINZINGER

ID of Source : PIT IN FLOOR

Collection Date : 04/02/2009 AT 8:30:00PM

Agency : Westchester County Health Dept.
Bur. Hazardous Material Control
145 Huguenot Street
New Rochelle, NY 10801
Att: Carlos Torres

Submitted On : 04/03/2009 AT 8:59:00AM

PWS No. :

Type Descriptor : Source Code : 000

pH :

Free Cl2 : Residual Cl2 :

Sample chilled on arrival ? : YES

Sample Type : S_SOIL

Comment : Sample AL05736 was extracted
using wrist shaker and analyzed by
NYSDOH 310-13, w

| Method | Test Description | Results | Qualifier | Units | DL/LOQ | Analyzed on | Validator |
|--------|------------------|---------|-----------|-------|--------|-------------|-----------|
|--------|------------------|---------|-----------|-------|--------|-------------|-----------|

Organics

Purgeable Organic Compounds in Solids

| | | | | | | | |
|-------------|---------------------------|-------|--|---------------|-----|------------|----|
| SW846/8260B | 1,1,1-TRICHLOROETHANE | < LOQ | | ug/Kg(dry wt) | 607 | 04/03/2009 | SV |
| SW846/8260B | 1,1,2,2-TETRACHLOROETHANE | < LOQ | | ug/Kg(dry wt) | 607 | 04/03/2009 | SV |
| SW846/8260B | 1,1,2-TRICHLOROETHANE | < LOQ | | ug/Kg(dry wt) | 607 | 04/03/2009 | SV |
| SW846/8260B | 1,1-DICHLOROETHANE | < LOQ | | ug/Kg(dry wt) | 607 | 04/03/2009 | SV |
| SW846/8260B | 1,1-DICHLOROETHENE | < LOQ | | ug/Kg(dry wt) | 607 | 04/03/2009 | SV |
| SW846/8260B | 1,2-DICHLOROBENZENE | < LOQ | | ug/Kg(dry wt) | 607 | 04/03/2009 | SV |
| SW846/8260B | 1,2-DICHLOROETHANE | < LOQ | | ug/Kg(dry wt) | 607 | 04/03/2009 | SV |
| SW846/8260B | 1,2-DICHLOROPROPANE | < LOQ | | ug/Kg(dry wt) | 607 | 04/03/2009 | SV |
| SW846/8260B | 1,3-DICHLOROBENZENE | < LOQ | | ug/Kg(dry wt) | 607 | 04/03/2009 | SV |
| SW846/8260B | 1,4-DICHLOROBENZENE | < LOQ | | ug/Kg(dry wt) | 607 | 04/03/2009 | SV |
| SW846/8260B | 4-Methyl-2-pentanone | < LOQ | | ug/Kg(dry wt) | 607 | 04/03/2009 | SV |
| SW846/8260B | BENZENE | 4770 | | ug/Kg(dry wt) | 607 | 04/03/2009 | SV |

Eavesdropping Warrants

- Can only be used to investigate any of the acts designated as felonies in title twenty-seven of article seventy-one of the environmental conservation law: Solid Waste (with a prior conviction and a release of more than 70 cy of Solid Waste), Hazardous Waste and Hazardous Substance felonies.

Other Environmental Crimes

- Air Pollution
- Pesticides
- Mining
- Tidal & Freshwater Wetlands

Environmental Crimes Under the Penal Law

- Inchoate Crimes - PL Articles 100-115 (Solicitation, Conspiracy, Attempt, Facilitation)
- Assault Offenses - PL Article 120
- Homicide Offenses - PL Article 125
- Criminal Mischief Offenses - PL Article 145
- Larceny - PL Article 155
- Other Theft Offenses - PL Article 165
- Forgery Offenses - PL Article 170
- False Written Statement Offenses - PL Article 175
- Commercial Bribery Offenses - PL Article 180
- Scheme to Defraud - PL §§ 190.60 and 190.65
- Official Misconduct and Obstruction of Public Servants - PL Article 195
- Bribery Involving Public Servants and Related Offenses - PL Article 200
- Perjury and Related Offenses - PL Article 210
- Contempt and Other Offenses Relating to Judicial Proceedings - PL Article 215
- Criminal Nuisance in the Second Degree - PL § 240.45(1)
- Unlawfully Possessing Noxious Material - PL § 270.05
- Organized Crime Control Act: Enterprise Corruption - PL Article 460

ATTORNEY GENERAL SUCCESSFUL WILDLIFE PROSECUTIONS

People v. Jack Yang

Sale of Madagascar Radiated Tortoise (an Endangered Species) for \$20,000



People v. Bao Ding Sea Food Inc. Seized Warehouse of Severely Contaminated Raw Razor Clams and Oysters from China



ATTORNEY GENERAL SUCCESSFUL SOLID WASTE PROSECUTIONS

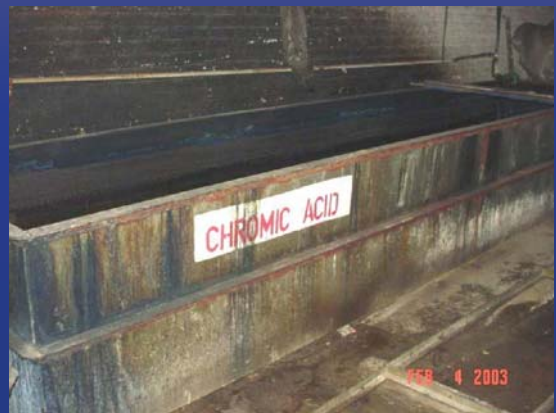
People v. Brisman

Abandoned Truck full of Hazardous Waste
from Perfume Manufacturing Business



People v. H.S. Finishing

Abandoned Metal Finishing Facility



ATTORNEY GENERAL SUCCESSFUL WATER POLLUTION PROSECUTIONS

People v. Schmitt

Marina owner dumped raw sewage into Jamaica Bay Tidal Estuary for decades and destroyed acres of protected tidal wetlands.





- Trip to one of the last pristine areas of the Alaskan wilderness (\$2,599.00)

- Guided tour to view Polar Bear in natural environment (\$1,699.00)

-Heavily padded winter coat (\$499.00)

-Surviving your close Polar Bear encounter with only 100 deep scratches (Priceless!!!)

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Environmental Crime Enforcement¹

The industrialization of our society has resulted in the development of processes and products that are potentially dangerous to our health, safety and environment. As a result, a comprehensive regulatory scheme has been promulgated to manage the lawful release of pollutants to the environment. State and federal environmental laws set standards for what people and institutions must do to control or prevent pollution. The administrative and civil enforcement of these laws and regulations can be very effective in ensuring the regulated community is in compliance. Unfortunately, this is not always the case and criminal enforcement of the environmental laws becomes necessary.

Criminal enforcement may be appropriate for several reasons:

The Violation May Be Extremely Serious

Environmental criminal activities can often involve hazardous waste and other extremely toxic chemicals. Improper handling of regulated wastes often has a detrimental effect on the public and the environment.

Civil Enforcement Alone Not A Sufficient Deterrent

Civil enforcement generally results in fines for the violation. Many companies often consider such fines a cost of doing business and calculate this into the retail cost. Consequently, the public indirectly pays for the violations. Criminal enforcement can result in incarceration, an extremely effective deterrent.

Illegal Profits/Financial Incentive for Improper Disposal

Those who generate and/or dispose of pollution often find it profitable to dispose of the pollution illegally. Additionally, some companies may defraud other legitimate businesses by improperly disposing waste they have contracted to legally dispose. For example, businesses may disguise hazardous waste in their ordinary solid waste to be picked up by their hauler.

The Violation May Seriously Undermine the Regulatory Program

Environmental regulatory programs rely on companies to submit self-monitoring data and to honestly comply with other reporting requirements. If a company fails to report, or submits false information to the regulatory program, the effectiveness of the program is severely impacted.

Assistant Attorney General Hugh L. McLean of the Environmental Crimes Unit contributed significantly to the preparation of these materials.

What is Environmental Crime?

Typically, it is intentionally, knowingly, recklessly, or with criminal negligence, violating our environmental laws and regulations. Criminal liability for environmental violations can occur at any stage in the generation, treatment, transportation and disposal of regulated wastes. Although the most important basis for criminal prosecution of these crimes is under the Environmental Conservation Law criminal prosecutions for these violations may also be brought under several different parts of the New York State Penal Law:

Inchoate Crimes –

PL Articles

100: Solicitation

105: Conspiracy

110: Attempt

115: Facilitation

Assault Offenses - PL Article 120

Homicide Offenses - PL Article 125

Criminal Mischief Offenses - PL Article 145

Larceny - PL Article 155

Other Theft Offenses - PL Article 165

Forgery Offenses - PL Article 170

False Written Statement Offenses - PL Article 175

Commercial Bribery Offenses - PL Article 180

Scheme to Defraud - PL 190.60 and 190.65

Official Misconduct and Obstruction of Public Servants - PL Article 195

Bribery Involving Public Servants and Related Offenses - PL Article 200

Perjury and Related Offenses - PL Article 210

Contempt and Other Offenses Relating to Judicial Proceedings-PL Article 215

Criminal Nuisance in the Second Degree - PL 240.45(1)

Unlawfully Possessing Noxious Material - PL 270.05

Organized Crime Control Act: Enterprise Corruption - PL Article 460

Who Creates Pollution?

Major generators of pollution include large manufacturing companies that make cars, furniture and clothes, and chemical industries that produce acids, cyanide, heavy metals, ignitables, reactives and solvents. Although large manufacturers, like the chemical industry, account for 71% of all hazardous waste produced, they comprise only 17% of all generators. So, who are some of the other generators?

Potential Smaller Community Offenders.

Water pollution, hazardous waste, household garbage and medical wastes are products of our society. Many small and medium businesses in the local community are producers of regulated wastes and are subject to liability. These include: furniture

builders or refinishers; electroplaters or metal stampers; automotive repair and body shops; gas stations; analytical laboratories; photo shops; funeral homes; dry cleaners; agricultural pesticide dealers; and hospitals. In addition, homeowners may dispose of hazardous materials comingled with their household waste.

What Are The Motives?

Money. Greed. The desire to make money or to save money. Proper storage, treatment and disposal of pollution is expensive. For example, the cost of legal disposal of hazardous waste ranges from \$400 - \$1,200 per 55 gallon drum, depending on the chemicals involved. Some generators choose to dispose illegally rather than pay the high cost of legitimate disposal. On the other hand, hazardous waste transporters often collect fees to properly dispose of the waste, but choose to illegally dispose of it and increase their profits.

Environmental Statutes.

New York's environmental laws are codified in the Environmental Conservation Law, which authorizes civil and criminal enforcement of state laws, as well as federal environmental statutes. Important federal statutes delegated to the state for enforcement include among others: the Clean Water Act (U.S.C.A. 19-5-101 to 123), the Clean Air Act (U.S.C.A. 19- 2-101 to 127), and the Resource Conservation and Recovery Act (Solid and Hazardous Waste Act) which regulates solid wastes (U.S.C.A. 19-6-101 to 824).

Provisions of the Environmental Conservation Law

Solid Waste – Hazardous Waste and Substances Hazardous to the Public Health, Safety or the Environment

§ 71-2702. Definitions.

As used in section 27-0914 of this chapter, and this title, the following terms shall have the following meanings:

1. "Hazardous wastes" means:
 - (a) Those wastes identified or listed in regulations promulgated pursuant to section 27-0903 of this chapter and all amendments thereto;
 - (b) Acute hazardous wastes and;
 - (c) Waste oils, including but not limited to, used engine lubricating oil, fuel oil, motor oil, gear oil, cutting oil, transmission fluid, hydraulic fluid, dielectric fluid, oil storage tank residue, animal oil, and vegetable oil, which have been contaminated by physical or chemical impurities, through use or accident, and have not been subsequently

rerefined, and which fail one or more of the characteristic tests listed in regulations promulgated pursuant to section 27-0903 of this chapter and all amendments thereto or which contain any waste identified or listed in regulations promulgated pursuant to section 27-0903 of this chapter and all amendments thereto.

2. "Acute hazardous wastes" means those wastes identified or listed as "acute hazardous wastes" in regulations promulgated pursuant to section 27-0903 of this chapter and all amendments thereto.

3. "Authorization" means the possession, where required, of a valid license, permit or certificate issued by an agency of the state of New York or the federal government or an order issued by the commissioner or the administrator of the federal environmental protection agency under applicable statutes, rules or regulations regarding the possession or release of hazardous or acutely hazardous wastes or substances hazardous or acutely hazardous to public health, safety or the environment or otherwise engaging in conduct which is exempt under applicable statutes, rules or regulations from the requirements of possessing such a license, permit, certificate or order.

4. "Site of generation" means premises where hazardous wastes are produced, used, or stored pursuant to authorization or registration under the federal solid waste disposal act or under article twenty-seven of this chapter, and all contiguous property owned or leased by the owner or lessor of said premises, including contiguous property which may be otherwise divided by a public or private right-of-way, provided the entrance and exit between the properties is at a crossroads intersection, and access is by crossing as opposed to going along the right-of-way, and non-contiguous property owned or leased by the owner or lessor of said premises, but connected by a right-of-way which he controls and to which the public does not have access.

5. "Disposal" means the discharge, deposit, injection, dumping, spilling, leaking or placing of any substance so that such substance or any related constituent thereof may enter the environment, or the abandonment of any substance. Disposal also means the thermal destruction of waste or hazardous waste and the burning of such wastes as fuel for the purpose of recovering useable energy.

6. "Primary water supply" means a body of surface water, fresh or saline or water in a saturated zone or stratum beneath the surface of land or water, best usage of which includes being used for drinking, culinary or food processing, including potable mineral waters, and so classified in regulations promulgated pursuant to section 15-0313 or 17-0301 of this chapter, as amended.

7. "Water" includes lakes, bays, ponds, rivers, streams, and other waters as further defined in subdivision two of section 17-0105 of this chapter.

8. "Pound" means an avoirdupois pound.

9. "Gallon" means a unit of liquid capacity equal to two hundred thirty-one cubic inches or four quarts.

10. "Substance hazardous to public health, safety or the environment" means any substance which:

(a) is identified or listed as a hazardous waste in regulations promulgated pursuant to section 27-0903 of this chapter and all amendments thereto, regardless of whether at the time of release the substance was actually a waste; or

(b) appears on the list in regulations promulgated pursuant to paragraph (a) of subdivision one of section 37-0103 of this chapter and all amendments thereto.

11. "Substance acutely hazardous to public health, safety or the environment" means any substance which:

(a) is listed as an acute hazardous waste in regulations promulgated pursuant to section 27-0903 of this chapter and all amendments thereto, regardless of whether at the time of release the substance was actually a waste; or

(b) appears on the list in regulations promulgated pursuant to paragraph (b) of subdivision one of section 37-0103 of this chapter and all amendments thereto.

12. "Environment" means any water, water vapor, any land including land surface or subsurface, air, fish, wildlife, biota, and all other natural resources.

13. "Release" means any pumping, pouring, emitting, emptying, or leaching, directly or indirectly, of a substance so that the substance or any related constituent thereof, or any degradation product of such a substance or of a related constituent thereof, may enter the environment, or the disposal of any substance.

14. "Abandonment" means the intentional relinquishment or forsaking of all possession or control of any substance. In any prosecution under this title, it is an affirmative defense to an allegation of abandonment that the defendant surrendered possession or control of such substance to another party who knowingly and voluntarily consented to assume such possession or control.

Solid Waste – ECL §71-2703(2)

Criminal sanctions. a. Any person who, having any of the culpable mental states defined in section 15.05 of the penal law, shall violate any of the provisions of or who fails to perform any duty imposed by title 3 or 7 of article 27 of this chapter, or any rules and regulations promulgated pursuant thereto, or any final determination or order of the commissioner made pursuant to this title shall be guilty of a violation and, upon conviction thereof, shall be punished by a fine of not less than one thousand five hundred dollars nor more than fifteen thousand dollars per day of violation or by imprisonment for not more than fifteen days or by both such fine and imprisonment.

b. i. Any person who shall violate paragraph a of this subdivision and thereby causes or attempts to cause the release of more than ten cubic yards of solid waste into the environment shall be guilty of a class B misdemeanor and, upon conviction thereof, shall be punished by a fine of not less than three thousand seven hundred fifty dollars per day nor more than twenty-two thousand five hundred dollars per day of violation, or by imprisonment for a term in accordance with the penal law, or by both such fine and imprisonment.

ii. Any person who shall violate paragraph a of this subdivision and thereby causes or attempts to cause the release of more than ten cubic yards of solid waste into the environment, after having been convicted of a violation of this subdivision within the preceding five years, shall be guilty of a class A misdemeanor and, upon conviction thereof, shall be punished by a fine of not less than three thousand seven hundred fifty dollars per day nor more than thirty-seven thousand five hundred dollars per day of violation, or by imprisonment for a term in accordance with the penal law, or by both such fine and imprisonment.

c. i. Any person who shall violate paragraph a of this subdivision and thereby causes or attempts to cause the release of more than seventy cubic yards of solid waste into the environment shall be guilty of a class A misdemeanor and, upon conviction thereof, shall be punished by a fine of not less than three thousand seven hundred fifty dollars per day nor more than thirty-seven thousand five hundred dollars per day of violation, or by imprisonment for a term in accordance with the penal law, or by both such fine and imprisonment.

ii. Any person who shall violate paragraph a of this subdivision and thereby causes or attempts to cause the release of more than seventy cubic yards of solid waste into the environment, after having been convicted of a violation of this subdivision within the preceding five

years, shall be guilty of a class E felony and, upon conviction thereof, shall be punished by a fine of not less than seven thousand five hundred dollars per day nor more than seventy-five thousand dollars per day of violation, or by imprisonment for a term in accordance with the penal law, or by both such fine and imprisonment.

3. Additional sanctions. Any person who violates any of the provisions of, or who fails to perform any duty imposed by title 7 of article 27, with regard to the construction and operation of facilities for the disposal of construction and demolition debris or any rule or regulation promulgated pursuant thereto, or any term or condition of any certificate or permit issued pursuant thereto or any final determination or order of the commissioner made pursuant to this title shall be liable for a civil penalty not to exceed fifteen thousand dollars and each day of such deposition shall constitute a separate violation and said civil penalty is in addition to any other fines or penalties which may be applied pursuant to this title.

4. Definition. As used in this section, the following term shall have the following meaning "release" means any pumping, pouring, emitting, emptying, discharge, deposit, injection, dumping, spilling or placing of a substance.

5. Penalty assessment criteria. In determining the amount of any fine, penalty or sentence imposed pursuant to this section, the commissioner or the court shall take into consideration any evidence introduced by a party regarding the economic impact of a penalty on a business, the compliance history of a violator, good faith efforts of a violator to comply, any economic benefit obtained from noncompliance, the amount of risk or damage to public health or the environment caused by a violator, whether the violation was procedural in nature, or such other factors as justice may require.

Water - ECL§71-1933

§ 71-1933. Violations; criminal liability.

1. Any person who, having any of the culpable mental states defined in section 15.05 of the penal law, shall violate any of the provisions of titles 1 through 5, 9 through 11 and 19 of article 17 or the rules, regulations, orders or determinations of the commissioner promulgated thereto, or the terms of any permit issued thereunder, shall be guilty of a misdemeanor and, upon conviction thereof, shall be punished by a fine of not less than three thousand seven hundred fifty dollars nor more than thirty-seven thousand five hundred dollars per day of

violation or by imprisonment for a term of not more than one year, or by both such fine and imprisonment. If the conviction is for an offense committed after a first conviction of such person under this subdivision, punishment shall be by a fine of not more than seventy-five thousand dollars per day of violation, or by imprisonment for not more than two years, or by both.

2. No prosecution under this section shall be instituted until after final disposition of an appeal or review, if any, provided by section 17-0909 or its predecessor, section 1244 of the Public Health Law.

3. Any person who with criminal negligence, as defined in section 15.05 of the penal law,

a. violates

i. any provision of title 7 or 8 of article 17 of this chapter, or

ii. the rules or regulations promulgated thereunder, or

iii. any term of any permit issued thereunder, or

iv. any requirement imposed in a pretreatment program approved pursuant to section 402(a)(3) or 402(b)(8) of the Federal Water Pollution Control Act (33 USC § 1342(a)(3) or § 1342(b)(8)) or approved pursuant to title 7 or 8 of article 17 of this chapter, or

v. any final administrative orders issued pursuant to this article where an opportunity for a hearing is provided, or

b. introduces into a sewer system or publicly owned treatment works any pollutant or hazardous substance

i. when such person knew that such introduction was likely to cause personal injury or property damage, except if that introduction was in compliance with all applicable federal, state or local requirements or permits, or

ii. which causes the treatment works to violate any term of any permit issued under title 7 or 8 of article 17 of this chapter or the rules or regulations promulgated thereunder except if that introduction was in compliance with all applicable federal, state or local requirements or permits; shall be guilty of a class A misdemeanor.

4. Any person who knowingly, as defined in section 15.05 of the penal law,

a. violates

i. any provision of title 7 or 8 of article 17 of this chapter, or

ii. the rules or regulations promulgated thereunder, or

iii. any term of any permit issued thereunder, or

iv. any requirement imposed in a pretreatment program approved pursuant to section 402(a)(3) or 402(b)(8) of the Federal Water Pollution Control Act (33 USC § 1342(a)(3) or § 1342(b)(8)) or approved pursuant to title 7 or 8 of article 17 of this chapter, or

v. any final administrative orders issued pursuant to this article where an opportunity for a hearing was provided, or

b. introduces into a sewer system or publicly owned treatment works any pollutant or hazardous substance

i. when such person knew that such introduction was likely to cause personal injury, except if that introduction was in compliance with all applicable federal, state or local requirements or permits, or

ii. which causes the treatment works to violate any term of any permit issued under title 7 or 8 of article 17 of this chapter or the rules or regulations promulgated thereunder except if that introduction was in compliance with all applicable federal, state or local requirements or permits; shall be guilty of a class E felony.

5. Any person who intentionally, as defined in section 15.05 of the penal law,

a. violates

i. any provision of title 7 or 8 of article 17 of this chapter, or

ii. the rules or regulations promulgated thereunder, or

iii. any term of any permit issued thereunder, or

iv. any final administrative orders issued pursuant to this article where an opportunity for a hearing was provided, and

b. knows at that time that he thereby places another person who is not a participant in the crime in imminent danger of death or serious bodily injury shall be guilty of a class C felony.

c. for the purpose of paragraphs a and b of this subdivision:

in determining whether a defendant who is an individual knew that his conduct placed another person in imminent danger of death or serious bodily injury

(a) the person is responsible only for actual awareness or actual belief that he possessed; and

(b) knowledge possessed by a person other than the defendant but not by the defendant himself may not be attributed to the defendant.

6. For purposes of subdivisions three, four and five of this section, a single operational upset which leads to simultaneous violations of more than one pollutant parameter shall be treated as a single violation.

7. Any person who, with intent to deceive, makes any false material statement, representation, or certification in any application, record, report, plan or other document filed or required to be maintained pursuant to title 7 or 8 of article 17 of this chapter or who intentionally falsifies, tampers with, or renders inaccurate any monitoring device or method required to be maintained pursuant to title 7 or 8 or article 17 of this chapter shall be guilty of a class E felony.

8. a. When a person is convicted of a crime under the provisions of this section, the sentence of the court shall be as follows:

i. A fine, as set forth in paragraph b of this subdivision;

- ii. A sentence of imprisonment, as set forth in paragraph c of this subdivision; or
 - iii. Any combination of such fine or imprisonment.
 - b. Fines. A sentence to pay a fine shall be a sentence to pay an amount fixed by the court, not exceeding:
 - i. \$750,000 for a class C felony committed by an organization as defined in section 71-1932 of this title;
 - ii. \$375,000 for a class C felony;
 - iii. \$75,000 per day of continuing violation for a class E felony defined under subdivision four of this section but in no event less than \$7,500; and \$15,000 for a class E felony defined under subdivision seven of this section;
 - iv. \$37,500 per day of continuing violation for a class A misdemeanor but in no event less than \$3,750.
 - c. Imprisonment. A sentence of imprisonment shall be a sentence of imprisonment authorized by article seventy of the penal law.
9. All prosecutions under this section shall be instituted by the department or the commissioner and shall be conducted by the Attorney General in the name of the people of the state of New York.
10. In the prosecution of any criminal proceeding under this section by the Attorney General and, in any proceeding before a grand jury in connection therewith, the Attorney General shall exercise all the powers and perform all the duties which the District Attorney would otherwise be authorized or required to exercise or perform, and in such a proceeding the District Attorney shall exercise such powers and perform such duties as are requested of him by the Attorney General.

Fish and Wildlife - Articles 11 and 13 of the ECL set out various statutory provisions that regulate the possession and sale of wildlife.

ECL § 11-0107(2) – No person shall, at any time of the year, buy, sell, offer or expose for sale, transport, or have in his possession any “fish protected by law, game, protected wildlife, shellfish, harbor seals, crustacea protected by law, or part thereof, or protected insect, whether taken within the state or coming from without the state, except as permitted by the Fish and Wildlife Law.”

ECL § 11-0535(2) – makes illegal the “taking, importation, transportation, possession or sale of any endangered or threatened species of fish, shellfish, crustacea or wildlife, or hides or other parts thereof, or the sale or possession with intent to sell of any article made in whole or in part from the skin, hide or other parts of any endangered or threatened species of fish, shellfish, crustacea or wildlife” (except under license or permit from DEC).

Endangering the Public Health, Safety or the Environment ECL §§71-2710 through 71-2714

Elements of Endangering Public Health Safety or the Environment Offenses

- A person engages in conduct;
- With a culpable mental state;
- Which causes a release;
- Of a hazardous or acutely hazardous substance.

The seriousness of the offense (Class B Misdemeanor to Class C Felony) is based upon the culpable mental state, the quantity of the release and the potential for or actual injury.

Corporate Defendants - Penal Law §20.20

1. As used in this section:

(a) “Agent” means any director, officer or employee of a corporation, or any other person who is authorized to act in behalf of the corporation.

(b) “High managerial agent” means an officer of a corporation or any other agent in a position of comparable authority with respect to the formulation of corporate policy or the supervision in a managerial capacity of subordinate employees.

2. A corporation is guilty of an offense when:

(a) The conduct constituting the offense consists of an omission to discharge a specific duty of affirmative performance imposed on corporations by law; or

(b) The conduct constituting the offense is engaged in, authorized, solicited, requested, commanded, or recklessly tolerated by the board of directors or by a high managerial agent acting within the scope of his employment and in behalf of the corporation; or

(c) The conduct constituting the offense is engaged in by an agent of the corporation while acting within the scope of his employment and in behalf of the corporation, and the offense is (i) a misdemeanor or a violation, (ii) one defined by a statute which clearly indicates a legislative intent to impose such criminal liability on a corporation, or (iii) any offense set forth in title twenty-seven of article seventy-one of the environmental conservation law.

**Criminal Enforcement of the Environmental Conservation Law
Quick Reference Guide**

| Regulated Activity | Article and Title | Enforcement (Article 71) | Relevant Regulations (6 NYCRR) |
|---------------------------|----------------------------------|---|--|
| Air | Art. 19 | §71-2105 | Chapter III Parts 200-236, 248 and Subchapter B |
| Water | Art. 17, Titles 7 & 8 | §71-1933 | Chapter X, Article 2 Parts 750-01 - 750-02 |
| Water: Classification | Art. 15, Title 27 | | Chapter X, Article 2, Subpart B |
| Water: Quality Standards | Art. 17, Title 5 | § 71-1933 | Chapter X, Article 2, Parts 700-706 |
| Water: Wetlands | Art. 24 & 25 | §71-2303(2) and §71-2503(2) | Chapter X, Article 1 Parts 660-665 |
| Water: Other | Art. 15 & 17 | §71-1131 | Chapter X, Article 1, Parts 670-672 and Article 2, Parts 701-704 |
| Regulated Medical Waste | Art. 27, Title 15 | §71-4402(2)-4409 | Chapter IV, Subchapter B, Part 360, Subpart 360-10 & 360-17 |
| Pesticides | Art. 33 | §71-2907(3) | Chapter IV, Subchapter A, Parts 320-329 |
| Solid Waste | Art. 27 | §71-2703(2) | Chapter IV, Subchapter B, Part 360-364 |
| Hazardous Wastes | Art. 37, Titles 1 & 2 | §71-2705(2), §§71-2707-2710, §71-2715, §71-2717 | Chapter IV, Subchapter B, Parts 370-375 |
| Hazardous Substances | Art. 40 | §§71-2710-2714 §71-4303(2) | Chapter V, Parts 595-599 |

Notes

ENVIROMENTAL CONSERVATION LAW ARTICLE 27 TITLE 26

ELECTRONIC EQUIPMENT RECYCLING AND REUSE

- Section 27-2601. Definitions.
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27-2621. Disposition of fees.

§ 27-2601. Definitions.

As used in this title:

1. "Cathode ray tube" means a vacuum tube or picture tube used to convert an electronic signal into a visual image.

2. "Computer" means an electronic, magnetic, optical, electrochemical or other high-speed data processing device performing a logical, arithmetic or storage function, including a laptop computer and desktop computer, and includes any cable, cord, or wiring permanently affixed to or incorporated into such product, and may include both a computer central processing unit and a monitor; but such term shall not include an automated typewriter or typesetter, a portable hand-held calculator, a portable digital assistant, server, or other similar device.

3. "Computer peripheral" means a monitor; electronic keyboard; electronic mouse or similar pointing device; facsimile machine, document scanner, or printer intended for use with a computer; and includes any cable, cord, or wiring permanently affixed to or incorporated into any such product. Computer peripheral shall not include any document scanner or printer which weighs one hundred pounds or more.

4. "Consumer" means a person located in the state who owns or uses covered electronic equipment, including but not limited to an individual, a business, corporation, limited partnership, not-for-profit corporation, the state, a public corporation, public school, school district, private or parochial school or board of cooperative educational services or governmental entity, but does not include an entity involved in a wholesale transaction between a distributor and retailer.

5. "Covered electronic equipment" means: a computer; computer peripheral; small electronic equipment; small-scale server; cathode ray tube; or television, as defined in this section. "Covered electronic equipment" does not include any motor vehicle or any part thereof; camera or video camera; portable or stationary radio; household appliances such as clothes washers, clothes dryers, refrigerators, freezers, microwave ovens, ovens, ranges or dishwashers; equipment that is functionally or physically part of a larger piece of equipment intended for use in an industrial, research and development or commercial setting; security or anti-terrorism equipment; monitoring and control instrument or system; thermostat; hand-held transceiver; telephone of any type; portable digital assistant or similar device; calculator; global positioning

system (GPS) receiver or similar navigation device; a server other than a small-scale server; a cash register or retail self checkout system; a stand-alone storage product intended for use in industrial, research and development or commercial settings; commercial medical equipment that contains within it a cathode ray tube, a flat panel display or similar video display device, and is not separate from the larger piece of equipment; or other medical devices as that term is defined under the Federal Food, Drug and Cosmetic Act.

6. "Electronic waste" means covered electronic equipment that has been discarded or is no longer wanted by its owner, or for any other reason enters the waste collection, recovery, treatment, processing, or recycling system. For purposes of section 27-2611 of this title, "electronic waste" does not include the case, shell, or other enclosure of covered electronic equipment from which incorporated assemblies, sub-assemblies, components, materials, wiring, circuitry and commodities have been removed.

7. "Electronic waste collection site" means a facility at a fixed or temporary site at which electronic waste is accepted from consumers and temporarily stored for more than five days in a calendar year before such waste is transported to an electronic waste consolidation facility or electronic waste recycling facility. Electronic waste collection sites include, but are not limited to, dedicated sites and facilities for the acceptance of electronic waste, and retail stores and outlets, municipal or private electronic waste collection sites and not-for-profit donation sites that have agreed to accept electronic waste.

8. "Electronic waste consolidation facility" means a facility that receives and stores electronic waste for the purpose of organizing, categorizing or consolidating items of electronic waste before such waste is transported to an electronic waste recycling facility. Electronic waste consolidation facilities include, but are not limited to, facilities of brokers acting as intermediaries between electronic waste buyers and sellers, and regional centers at which electronic waste is organized, categorized or consolidated after being transported to such centers from electronic waste collection sites or other electronic waste consolidation facilities.

9. "Electronic waste recycling facility" means a facility at which electronic waste is recycled.

10. "Label" means a marker on the surface of covered electronic equipment conveying information; for the purposes of this title, labels must be permanent and can be attached, printed, engraved or incorporated in any other permanent way that is obvious and visible to users of the product.

11. "Manufacturer" means a person who: (a) assembles or substantially assembles covered electronic equipment for sale in the state; (b) manufactures covered electronic equipment under its own brand name or under any other brand name for sale in the state; (c) sells, under its own brand name, covered electronic equipment sold in the state; (d) owns a brand name that it licenses to another person for use on covered electronic equipment sold in the state; (e) imports covered electronic equipment for sale in the state; or (f) manufactures covered electronic equipment for sale in the state without affixing a brand name. "Manufacturer" does not mean a person who assembles or substantially assembles, and sells less than one thousand units of covered electronic equipment annually in this state, or whose primary business is the sale of covered electronic equipment which is comprised primarily of rebuilt, refurbished or used components. If more than one person is a manufacturer of a brand of covered electronic equipment, any such person may assume

responsibility for obligations of a manufacturer of that brand under this title. If none of those persons assumes responsibility for the obligations of a manufacturer under this title, any and all such persons jointly and severally may be considered to be the responsible manufacturer of that brand for purposes of this title.

12. "Manufacturer's brands" means a manufacturer's name, brand name or brand label, and all manufacturer's names, brand names and brand labels for which the manufacturer has a legal right or interest, including those names, brand names, and brand labels of companies that have been acquired by the manufacturer or in which the manufacturer asserts a legal interest such as trademark, license, service mark, or patent.

13. "Monitor" means a separate visual display component of a computer, whether sold separately or together with a computer central processing unit, and includes a cathode ray tube, liquid crystal display, gas plasma, digital light processing or other image projection technology, greater than four inches when measured diagonally, and its case, interior wires and circuitry, and any cable cord or wiring permanently affixed thereto or incorporated into such product.

14. "Person" means any individual, business entity, partnership, company, corporation, not-for-profit corporation, association, governmental entity, public benefit corporation, public authority, firm, organization, or any other group of individuals, or any officer or employee or agent thereof.

15. "Recycle" means to separate, dismantle or process the materials, components or commodities contained in electronic waste for the purpose of preparing the materials, components or commodities for use or reuse in new products or components thereof, but not for energy recovery or energy generation by means of combustion, gasification, pyrolysis or other means. Recycling includes the manual and mechanical separation of electronic waste to recover materials, components or commodities contained therein for the purpose of reuse or recycling, and changing the physical or chemical composition of electronic waste to segregate components for purposes of recycling those components.

16. "Retailer" means a person who sells covered electronic equipment to a person in the state through any means, including, but not limited to, transactions conducted through retail sales outlets, mail, catalogs, the telephone or the internet, or any electronic means. "Retailer" does not include a person who sells or offers for sale fewer than ten items of covered electronic equipment during a calendar year.

17. "Reuse" means the use of electronic waste that is tested and certified to be in good working order and which was removed from the waste stream for use for the same purpose for which it was manufactured, including the continued use of whole systems or components.

18. "Sell" or "sale" means any transfer for consideration of title or the right to use, from a manufacturer or retailer to a person, including, but not limited to, transactions conducted through retail sales outlets, catalogs, mail, the telephone, the internet, or any electronic means; this includes transfer of new products or used products that may have been refurbished by their manufacturer or manufacturer-approved party and that are offered for sale by a manufacturer or retailer, but does not include consumer-to-consumer second-hand transfer. "Sell or sale" does not include: (a) the transfer of used covered electronic equipment or a lease of covered electronic equipment; or (b) wholesale transactions among a manufacturer, wholesaler and retailer.

19. "Small electronic equipment" means any portable digital music player that has memory capability and is battery-powered, video cassette recorder, a digital video disc player, digital video recorder, digital

converter box, cable or satellite receiver, or electronic or video game console, and includes any cable, cord, or wiring permanently affixed to or incorporated into any such product.

20. "Small-scale server" means a computer that typically uses desktop components in a desktop form factor, but is designed primarily to be a storage host for other computers. To be considered a small-scale server, a computer must have the following characteristics: designed in a pedestal, tower, or other form factor similar to those of desktop computers such that all data processing, storage, and network interfacing is contained within one box or product; intended to be operational twenty-four hours per day and seven days a week, and unscheduled downtime is extremely low, such as on the order of hours per year; is capable of operating in a simultaneous multi-user environment serving several users through networked client units; and designed for an industry accepted operating system for home or low-end server applications.

21. "Television" means a display system containing a cathode ray tube or any other type of display primarily intended to receive video programming via broadcast, cable or satellite transmission, having a viewable area greater than four inches when measured diagonally.

§ 27-2603. Manufacturer collection; recycling surcharge.

1. (a) Beginning April first, two thousand eleven, a manufacturer of covered electronic equipment must accept for collection, handling and recycling or reuse electronic waste for which it is the manufacturer. Such waste shall count toward the amount of electronic waste required to be accepted pursuant to subdivision four of this section.

(b) Beginning April first, two thousand eleven, a manufacturer of covered electronic equipment must accept for collection, handling and recycling or reuse one piece of electronic waste of any manufacturer's brand if offered by a consumer with the purchase of covered electronic equipment of the same type by a consumer. Such waste shall count toward the amount of the electronic waste required to be accepted pursuant to subdivision four of this section.

2. Beginning April first, two thousand eleven, each manufacturer must accept for collection, handling and recycling or reuse the manufacturer's acceptance standard as specified in subdivision four of this section.

3. Statewide recycling or reuse goal. (a) For the period from April first, two thousand eleven through December thirty-first, two thousand eleven, the statewide recycling or reuse goal for electronic waste shall be the product of the latest population estimate for the state, as published by the U.S. Census bureau multiplied by three pounds multiplied by three-quarters.

(b) For calendar year two thousand twelve, the statewide recycling or reuse goal for all electronic waste shall be the product of the latest population estimate for the state, as published by the U.S. Census bureau multiplied by four pounds.

(c) For calendar year two thousand thirteen, the statewide recycling or reuse goal for all electronic waste shall be the product of the latest population estimate for the state, as published by the U.S. Census bureau multiplied by five pounds.

(d) For calendar year two thousand fourteen and annually thereafter, the statewide recycling or reuse goal for all electronic waste is the product of the base weight multiplied by the goal attainment percentage. For the purposes of this paragraph, "base weight" means the greater of:

(i) the average weight of all electronic waste collected for recycling or reuse during the previous three calendar years as reported to the department pursuant to paragraph (b) of subdivision one of section 27-2617 of this title; or (ii) the three year average of the sum of all electronic waste collected for recycling or reuse during the previous three calendar years based on information reported to the department pursuant to paragraph (b) of subdivision one, paragraph (b) of subdivision two and paragraph (b) of subdivision three of section 27-2613 of this title.

(e) The "goal attainment percentage" means:

(i) ninety percent if the base weight is less than ninety percent of the statewide recycling or reuse goal for the previous calendar year;

(ii) ninety-five percent if the base weight is ninety percent or greater, but does not exceed ninety-five percent of the statewide recycling or reuse goal for the previous calendar year;

(iii) one hundred percent if the base weight is ninety-five percent or greater, but does not exceed one hundred five percent of the statewide recycling or reuse goal for the previous calendar year;

(iv) one hundred five percent if the base weight is one hundred five percent or greater, but does not exceed one hundred ten percent of the statewide recycling or reuse goal for the previous calendar year; and

(v) one hundred ten percent if the base weight is one hundred ten percent or greater of the statewide recycling or reuse goal for the previous calendar year.

4. Manufacturer acceptance standard. (a) For the period April first, two thousand eleven through December thirty-first, two thousand eleven and annually thereafter, each manufacturer's acceptance standard is the product of the statewide recycling or reuse goal under paragraph (a), (b), (c) or (d) of subdivision three of this section, as appropriate, multiplied by that manufacturer's market share pursuant to paragraph (b) of this subdivision.

(b) Each manufacturer's market share of electronic waste shall be determined by the department based on the manufacturer's percentage share of the total weight of covered electronic equipment sold as determined by the best available information, including, but not limited to, state sales data reported by weight. Beginning April first, two thousand eleven, and every calendar year thereafter, the department shall provide each manufacturer with a determination of its market share of electronic waste which shall be the quotient of the total weight of the manufacturer's covered electronic equipment sold to persons in this state based on the average annual retail sales during the preceding three calendar years, as reported under sections 27-2605 and 27-2617 of this title divided by the total weight of all manufacturers covered electronic equipment sold to persons in this state based on the average annual retail sales during the preceding three calendar years, as reported under sections 27-2605 and 27-2617 of this title.

5. In the absence of a waiver by the department pursuant to subdivision three of section 27-2615 of this title, beginning in calendar year two thousand thirteen, a manufacturer that fails to meet its manufacturer's acceptance standard for the previous calendar year as required by subdivision four of this section shall be subject to a recycling surcharge, determined as follows:

(a) If a manufacturer accepts at least ninety percent but less than one hundred percent of its manufacturer's acceptance standard as required by subdivision four of this section, the surcharge shall be thirty cents multiplied by the number of additional pounds of electronic waste that should have been accepted by such manufacturer.

(b) If a manufacturer accepts at least fifty percent but less than ninety percent of its manufacturer's acceptance standard as required by subdivision four of this section, the surcharge shall be forty cents multiplied by the number of additional pounds of electronic waste that should have been accepted by such manufacturer.

(c) If a manufacturer accepts less than fifty percent of its manufacturer's acceptance standard as required by subdivision four of this section, the surcharge shall be fifty cents multiplied by the number of additional pounds of electronic waste that should have been accepted by such manufacturer.

6. The recycling surcharge shall be paid to the department with the annual report required pursuant to section 27-2617 of this title.

7. Beginning with calendar year two thousand fourteen, if a manufacturer accepts more than its manufacturer's acceptance standard as required by subdivision four of this section, the excess weight may be used as electronic waste acceptance credits and may be sold, traded, or banked for a period no longer than three calendar years succeeding the year in which the credits were earned; provided, however, that no more than twenty-five percent of a manufacturer's obligation for any calendar year may be met with recycling credits generated in a prior calendar year.

§ 27-2605. Manufacturer electronic waste registration and responsibilities.

1. A manufacturer shall submit a registration on a form prescribed by the department to the department by January first, two thousand eleven, along with a registration fee of five thousand dollars. The department may require such form to be filed electronically. Such registration shall include:

(a) the manufacturer's name, address, and telephone number;

(b) the name and title of an officer, director, or other individual designated as the manufacturer's contact for purposes of this title;

(c) a list identifying the manufacturer's brands;

(d) a general description of the manner in which the manufacturer will comply with section 27-2603 of this title, including specific information on the manufacturer's electronic waste acceptance program in the state, and a current list of locations within the state where consumers may return electronic waste;

(e) sales data reported by weight for the manufacturer's covered electronic equipment sold in this state for the previous three calendar years, categorized by type to the extent known. If the manufacturer cannot provide accurate state sales data, it must explain why such data cannot be provided, and estimate state sales data by (i) dividing its national sales data by weight by the national population according to the most recent census and multiplying the result by the population of the state, or (ii) another method approved by the department;

(f) a statement disclosing whether: (i) any covered electronic device sold in this state exceeds the maximum concentration values established for lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls (PBBs), and polybrominated diphenyl ethers (PBDEs) under the restriction of hazardous substances directive (RoHS) pursuant to 2002/95/EC of the European Parliament and Council and any amendments thereto and if so, a listing of any covered electronic equipment that is not in compliance with such directive; or (ii) the manufacturer has received an exemption from one or more of those maximum concentration

values under the RoHS directive that has been approved and published by the European Commission; and

(g) any other information as the department may require.

2. A manufacturer's registration is effective upon acceptance by the department and must be updated within thirty days of any material change to the information required by subdivision one of this section.

3. Any person who becomes a manufacturer on or after January first, two thousand eleven shall register with the department prior to selling or offering for sale in the state any covered electronic equipment, and must comply with the requirements of this title.

4. No later than April first, two thousand eleven, a manufacturer shall not sell or offer for sale electronic equipment in the state unless the manufacturer has registered with the department and maintains an electronic waste acceptance program through which the manufacturer, either directly or through an agent or designee, accepts electronic waste from consumers in the state for recycling. The manufacturer shall ensure that retailers are notified of such registration.

5. The electronic waste acceptance program shall include, at a minimum:

(a) collection, handling and recycling or reuse of electronic waste pursuant to section 27-2603 of this title in a manner convenient to consumers. The following acceptance methods shall be considered reasonably convenient: (i) mail or ship back return programs; (ii) collection or acceptance events conducted by the manufacturer or the manufacturer's agent or designee, including events conducted through local governments or private parties; (iii) fixed acceptance locations such as dedicated acceptance sites operated by the manufacturer or its agent or designee; (iv) agreements with local governments, retail stores, sales outlets and not-for-profit organizations which have agreed to provide facilities for the collection of electronic waste; (v) community collection events; and (vi) any combination of these or other acceptance methods which effectively provide for the acceptance of electronic waste for recycling or reuse through means that are available and reasonably convenient to consumers in the state. At a minimum, the manufacturer shall ensure that all counties of the state, and all municipalities which have a population of ten thousand or greater, have at least one method of acceptance that is available within such county or municipality. The department may establish additional requirements to ensure convenient collection from consumers;

(b) information on how consumers can destroy all data on any electronic waste, either through physical destruction of the hard drive or through data wiping;

(c) a public education program to inform consumers about the manufacturer's electronic waste acceptance program, including at a minimum: (i) an internet website and a toll-free telephone number and written information included in the product manual for, or at the time of sale of, covered electronic equipment that provides sufficient information to allow a consumer of covered electronic equipment to learn how to return the covered equipment for recycling or reuse, and in the case of manufacturers of computers, hard drives and other covered electronic equipment that have internal memory on which personal or other confidential data can be stored, such website shall provide instructions for how consumers can destroy such data before surrendering the products for recycling or reuse; (ii) advertisements and press releases if any; and

(d) any other information as required by the department in accordance with regulations promulgated pursuant to this article.

6. A manufacturer shall maintain records demonstrating compliance with

this title and make them available for audit and inspection by the department for a period of three years.

7. A manufacturer may satisfy the electronic waste collection requirements of this section by agreeing to participate in a collective electronic waste acceptance program with other manufacturers. Any such collective electronic waste acceptance program must meet the same requirements as an individual manufacturer. Any collective electronic waste acceptance program must include a list of manufacturers that are participating in such program along with other identifying information as may be required by the department. Such program shall submit a registration to the department along with a registration fee of ten thousand dollars.

8. A manufacturer shall be responsible for all costs associated with the implementation of the electronic waste acceptance program. The manufacturer shall not charge consumers for the collection, handling and recycling and reuse of electronic waste, provided that such prohibition shall not apply to a charge on business consumers or to charges for premium services. This prohibition shall not apply to a manufacturer's contract with a consumer for the collection, handling, recycling or reuse of electronic waste that was entered into prior to the effective date of this section. For purposes of this subdivision, "business consumer" means a for-profit entity which has fifty or more full time employees or a not-for-profit corporation with seventy-five or more full time employees, but not a not-for-profit corporation designated under section 501(c)(3) of the internal revenue code. For purposes of this subdivision, "premium services" means equipment and data security services, refurbishment for reuse by the consumer, and other custom services as may be determined by the department.

§ 27-2607. Retailer requirements.

1. At the location of sale of covered electronic equipment, a retailer shall provide purchasers of covered electronic equipment with information, if any, about opportunities for the return of electronic waste that has been provided to the retailer by a manufacturer.

2. Beginning April first, two thousand eleven, no retailer shall sell or offer for sale in the state any covered electronic equipment unless the manufacturer and the manufacturer's brands are registered with the department pursuant to section 27-2605 of this title. If the retailer purchased covered electronic equipment from a manufacturer who fails to register by January first, two thousand eleven, or prior to the date the manufacturer withdrew its registration or the registration was revoked by the department, the retailer may continue to sell the covered electronic equipment for one hundred eighty days after April first, two thousand eleven, or the date the registration was withdrawn or revoked.

§ 27-2609. Labeling.

Beginning April first, two thousand eleven, a manufacturer may not offer for sale in the state or deliver to retailers for subsequent sale covered electronic equipment unless it has a visible, permanent label clearly identifying the manufacturer of that equipment.

§ 27-2611. Disposal ban.

1. Beginning April first, two thousand eleven, no manufacturer, retailer, or owner or operator of an electronic waste collection site, electronic waste consolidation facility or electronic waste recycling facility in the state shall dispose of electronic waste at a solid waste management facility or hazardous waste management facility, or place electronic waste for collection which is intended for disposal at a solid waste management facility or hazardous waste management facility.

2. Beginning January first, two thousand twelve, no person except for an individual or household shall place or dispose of any electronic waste in any solid waste management facility, or place electronic waste for collection which is intended for disposal at a solid waste management facility or hazardous waste management facility in this state. Persons engaged in the collection of solid waste for delivery to a solid waste management facility shall provide written information to users of such facility on the proper methods for the recycling of electronic waste.

3. Beginning January first, two thousand fifteen, no individual or household shall place or dispose of any electronic waste in any solid waste management facility, or place electronic waste for collection which is intended for disposal at a solid waste management facility or hazardous waste management facility in this state.

4. Beginning January first, two thousand twelve, an owner or operator of a solid waste management facility or hazardous waste management facility shall educate users of such facility on the proper methods for the management of electronic waste. Such education shall include:

(a) providing written information to users of such facility on the proper methods for recycling of electronic waste; and

(b) posting, in conspicuous locations at such facility, signs stating that electronic waste may not be disposed of at the facility.

§ 27-2613. Electronic waste collection, consolidation and recycling.

1. Electronic waste collection sites. No later than January first, two thousand eleven, each person who owns or operates an electronic waste collection site in the state shall:

(a) register with the department on a form prescribed by the department. The department may require such form to be filed electronically. The registration shall include: (i) the name, address, and telephone number of the owners and the operators of the electronic waste collection site; and (ii) the name, address, and telephone number of the electronic waste collection site. Any person who commences the operation of an electronic waste collection site on or after January first, two thousand eleven shall register with the department at least thirty days prior to receiving any electronic waste at such collection site. A registration is effective upon acceptance by the department. In the case of collection sites operated by a retailer, a single registration listing the name, address, and telephone number of the individual collection sites may be submitted covering all their collection sites;

(b) beginning March first, two thousand twelve, each person operating an electronic waste collection site shall submit to the department an annual report for the period of April first, two thousand eleven through December thirty-first, two thousand eleven and each calendar year thereafter, on a form prescribed by the department. The department may require annual reports to be filed electronically. Annual reports shall

include, but not be limited to, the following information: (i) the quantity, by weight, of electronic waste received from consumers in the state; (ii) the name and address of each person to whom the electronic waste collection site sent electronic waste during the reporting period, along with the quantity, by weight, of electronic waste that was sent to each such person; and (iii) the weight of electronic waste collected on behalf of or pursuant to an agreement with each manufacturer during the reporting period. All quantities of electronic waste reported by the collection site must separately include electronic waste generated by New York state consumers and electronic waste received from or shipped outside the state;

(c) manage electronic waste in a manner that complies with all applicable laws, rules and regulations;

(d) store electronic waste (i) in a fully enclosed building with a roof, floor and walls, or (ii) in a secure container (e.g., package or vehicle), that is constructed and maintained to minimize breakage of electronic waste and to prevent releases of hazardous materials to the environment;

(e) remove electronic waste from the site within one year of the waste's receipt at the site, and maintain records demonstrating compliance with this requirement.

2. Electronic waste consolidation facilities. (a) No later than January first, two thousand eleven, each person who operates an electronic waste consolidation facility in the state shall register with the department on a form prescribed by the department. The department may require such form to be filed electronically. The registration shall include: (i) the name, address and telephone number of the owner and the operator of the facility; and (ii) the name, address and telephone number of the electronic waste consolidation facility. Any person who commences the operation of an electronic waste consolidation facility on or after January first, two thousand eleven shall register with the department at least thirty days prior to receiving any electronic waste. A registration is effective upon acceptance by the department. Any registration required by this paragraph shall be accompanied by a registration fee of two hundred fifty dollars.

(b) Beginning March first, two thousand twelve, each person operating an electronic waste consolidation facility shall submit to the department an annual report for the period of April first, two thousand eleven through December thirty-first, two thousand eleven and each calendar year thereafter, on a form prescribed by the department. The department may require annual reports to be filed electronically. Annual reports shall include, but not be limited to, the following information: (i) the name and address of each electronic waste collection site from which the consolidation facility received electronic waste during the reporting period, along with the quantity, by weight, of electronic waste received from each collection site; (ii) the name and address of each person to whom the electronic waste consolidation facility sent electronic waste during the reporting period, along with the quantity, by weight, of electronic waste that was sent to each such person; (iii) the weight of electronic waste collected on behalf of or pursuant to an agreement with each manufacturer during the reporting period; and (iv) a certification by the owner or operator of the electronic waste consolidation facility that such a facility has complied with the requirements of this title and all other applicable laws, rules, and regulations. All quantities of electronic waste reported by the consolidation facility must separately include electronic waste generated by New York state consumers and electronic waste received from or shipped outside the state.

(c) Each person operating an electronic waste consolidation facility shall:

(i) manage electronic waste in a manner that complies with all applicable laws, rules and regulations;

(ii) store electronic waste (A) in a fully enclosed building with a roof, floor and walls, or (B) in a secure container (e.g., package or vehicle), that is constructed and maintained to minimize breakage of electronic waste and to prevent releases of hazardous materials to the environment;

(iii) have a means to control entry, at all times, to the active portion of the facility;

(iv) inform all employees who handle or have responsibility for managing electronic waste about the proper handling and emergency procedures appropriate to the type or types of electronic waste handled at the facility;

(v) remove electronic waste from the site within one year of the waste's receipt at the site, and maintain records demonstrating compliance with this requirement; and

(vi) maintain the records required by paragraphs (a) and (b) of this subdivision and by subparagraph (v) of this paragraph on site and make them available for audit and inspection by the department for a period of three years.

(d) A person operating an electronic waste consolidation facility shall not engage in electronic waste recycling unless such person is also registered as an electronic waste recycling facility, and complies with the requirements of this section that are applicable to each type of facility.

(e) A person operating an electronic waste consolidation facility may accept electronic waste in the same manner as an electronic waste collection site provided that such person complies with the requirements of this section that are applicable to electronic waste collection sites.

3. Electronic waste recycling facilities. (a) No later than January first, two thousand eleven, each person operating an electronic waste recycling facility in the state shall register with the department on a form prescribed by the department. The department may require such form to be filed electronically. The registration shall include: (i) the name, address and telephone number of the owner and the operator of the facility; and (ii) the name, address, and telephone number of the electronic waste recycling facility. Any person who commences the operation of an electronic waste recycling facility on or after January first, two thousand eleven shall register with the department at least thirty days prior to receiving any electronic waste. A registration is effective upon acceptance by the department. Any registration required by this paragraph shall be accompanied by a registration fee of two hundred fifty dollars.

(b) Beginning March first, two thousand twelve, each person operating an electronic waste recycling facility shall submit to the department an annual report for the period of April first, two thousand eleven through December thirty-first, two thousand eleven and each calendar year thereafter, on a form prescribed by the department. The department may require annual reports to be filed electronically. Annual reports shall include, but not be limited to, the following information: (i) the quantity, by weight, of electronic waste received from consumers in the state; (ii) the name and address of each electronic waste collection site and electronic waste consolidation facility from which electronic waste was received during the reporting period, along with the quantity,

by weight, of electronic waste received from each person; (iii) the name and address of each person to whom the facility sent electronic waste or component materials during the reporting period, along with the quantity, by weight, of electronic waste or component materials thereof sent to each such person; (iv) the weight of electronic waste collected on behalf of or pursuant to an agreement with each manufacturer during the reporting period; and (v) a certification by the owner or operator of the facility that such facility has complied with the requirements of this title and all other applicable laws, rules, and regulations. All quantities of electronic waste reported by the recycling facility must separately include electronic waste generated by New York state consumers and electronic waste received from or shipped outside the state.

(c) Each person operating an electronic waste recycling facility shall:

(i) manage and recycle electronic waste in a manner that complies with all applicable laws, rules and regulations;

(ii) store electronic waste (A) in a fully enclosed building with a roof, floor and walls, or (B) in a secure container (e.g., package or vehicle), that is constructed and maintained to minimize breakage of electronic waste and to prevent releases of hazardous materials to the environment;

(iii) have a means to control entry, at all times, through gates or other entrances to the active portion of the facility;

(iv) inform all employees who handle or have responsibility for managing electronic waste about proper handling and emergency procedures appropriate to the type or types of electronic waste handled at the facility;

(v) remove electronic waste from the site within one year of the waste's receipt at the site, and maintain records demonstrating compliance with this requirement; and

(vi) maintain the records required by paragraphs (a) and (b) of this subdivision and by subparagraph (v) of this paragraph on site and make them available for audit and inspection by the department for a period of three years.

(d) A person operating an electronic waste recycling facility may also operate such facility as an electronic waste consolidation facility provided that such person complies with the requirements of this section that are applicable to each type of facility. Where a facility is operated for both purposes, only one registration fee must be paid.

(e) A person operating an electronic waste recycling facility may accept electronic waste in the same manner as an electronic waste collection site provided that such person complies with the requirements of this section that are applicable to electronic waste collection sites.

4. Except to the extent otherwise required by law, no manufacturer or person operating an electronic waste collection site, electronic waste consolidation facility or electronic waste recycling facility shall have any responsibility or liability for any data in any form stored on electronic waste surrendered for recycling or reuse, unless such person misuses or knowingly and intentionally, or with gross negligence, discloses the data. This provision shall not prohibit any such person from entering into agreements that provide for the destruction of data on covered electronic equipment.

§ 27-2615. Department responsibilities.

1. The department is authorized to promulgate rules and regulations necessary to implement and administer this title. At a minimum, the department shall promulgate rules and regulations on: standards for reuse; electronic waste acceptance credits; waivers of the recycling surcharge; and acceptable alternative methods for the determination of state sales data.

2. The department shall (a) maintain a list of manufacturers who are registered pursuant to section 27-2605 of this title, (b) maintain a list of each such manufacturer's brands, and (c) post such lists on the department's website.

3. The department may waive the recycling surcharge payable by a manufacturer under this title when the manufacturer demonstrates in an application to the department it was unable to accept the weight of electronic waste required by section 27-2603 of this title despite the manufacturer's best efforts. The application shall be made with the annual report required by section 27-2617 of this title. The application shall include such information as the department requires. A waiver provided pursuant to this subdivision shall not relieve a manufacturer from the obligation to comply with the provisions of this title not specifically addressed in such waiver.

§ 27-2617. Reporting requirements.

1. Beginning March first, two thousand twelve, for the period of April first, two thousand eleven through December thirty-first, two thousand eleven and each calendar year thereafter, a manufacturer that offers covered electronic equipment for sale in this state shall submit a report to the department on a form prescribed by the department that includes the following:

(a) sales data reported by weight for the manufacturer's covered electronic equipment sold in this state for the previous three calendar years, categorized by type to the extent known. If the manufacturer cannot provide accurate state sales data, it must explain why such data cannot be provided, and estimate state sales data by (i) dividing its national sales data by weight by the national population according to the most recent census and multiplying the result by the population of the state, or (ii) another method approved by the department;

(b) the quantity, by weight, of electronic waste collected for recycling or reuse in this state, categorized by the type of covered electronic equipment collected during the reporting period, the methods used to accept the electronic waste, and the approximate weight of electronic waste accepted by each method used to the extent known;

(c) all quantities of electronic waste reported by the manufacturer must separately include electronic waste generated by New York state consumers and electronic waste received from or shipped outside the state: (i) the quantity, by weight, of electronic waste received directly from consumers in the state through a mail back program; (ii) the name and address of each electronic waste collection site, electronic waste consolidation facility, and electronic waste recycling facility at which electronic waste from consumers was received on behalf of the manufacturer during the reporting period, along with the quantity, by weight, of electronic waste received; and (iii) the name and address of each person to whom the manufacturer sent electronic waste or component materials during the reporting period, along with the quantity, by

weight, of electronic waste or component materials thereof sent to each such person;

(d) the number of electronic waste acceptance credits purchased, sold, banked and traded during the reporting period, the number of electronic waste acceptance credits used to meet the requirements of section 27-2603 of this title, and from whom they were purchased and to whom they were sold or traded, and the number of electronic waste acceptance credits retained as of the date of the report;

(e) the amount of any recycling surcharge owed for the reporting period, with sufficient information to demonstrate the basis for the calculation of the surcharge;

(f) the names and locations of electronic waste recycling facilities utilized by the manufacturer and entities to which electronic waste is sent for reuse, whether in the state or outside the state, including details on the methods of recycling or reuse of electronic waste, any disassembly or physical recovery operation used, and the environmental management measures implemented by such recycling facility or entity;

(g) information detailing the acceptance methods made available to consumers in municipalities which have a population of greater than ten thousand and in each county of the state to meet the requirements of paragraph (a) of subdivision five of section 27-2605 of this title;

(h) a brief description of its public education program including the number of visits to the internet website and calls to the toll-free telephone number provided by the manufacturer as required by section 27-2605 of this title;

(i) any other information as required by the department; and

(j) a signature by an officer, director, or other individual affirming the accuracy of the report.

2. The department may require annual reports to be filed electronically.

3. The report shall be accompanied by an annual reporting fee of three thousand dollars, and any recycling surcharge due pursuant to section 27-2603 of this title.

4. The department shall submit a report on implementation of the title in this state to the governor and legislature by April first, two thousand twelve and every two years thereafter. The report must include, at a minimum, an evaluation of:

(a) the electronic waste stream in the state;

(b) recycling and reuse rates in the state for covered electronic equipment;

(c) a discussion of compliance and enforcement related to the requirements of this title;

(d) recommendations for any changes to this title; and

(e) a discussion of opportunities for business development in the state related to the acceptance, collection, handling and recycling or reuse of electronic equipment in this state.

§ 27-2619. Preemption.

Jurisdiction in all matters pertaining to electronic waste recycling, including but not limited to the obligations of manufacturers, retailers, electronic waste collection sites, electronic waste consolidation facilities and electronic waste recycling facilities with respect to electronic waste recycling, is, by this title, vested exclusively in the state. Any provision of any local law or ordinance, or any rule or regulation promulgated thereto, governing covered electronic equipment and

the collection, reuse, or recycling of electronic waste shall upon the effective date of this title be preempted.

§ 27-2621. Disposition of fees.

All fees and charges collected pursuant to this title shall be deposited into the environmental protection fund established pursuant to section ninety-two-s of the state finance law.

§ 71-2729. Enforcement of title 26 of article 27 of this chapter.

1. a. Any consumer, as defined in title twenty-six of article twenty-seven of this chapter, who violates any provision of, or fails to perform any duty imposed by, section 27-2611 of this chapter, shall be liable for a civil penalty not to exceed one hundred dollars for each violation.

b. Any person, except a consumer, manufacturer, or an owner or operator of an electronic waste collection site, electronic waste consolidation facility, or electronic waste recycling facility as these terms are defined in title twenty-six of article twenty-seven of this chapter, who violates any provision, or fails to perform any duty imposed by section 27-2611 of this chapter, shall be liable for a civil penalty not to exceed two hundred fifty dollars for each violation.

c. Any manufacturer, or any person operating an electronic waste collection site, an electronic waste consolidation facility, or an electronic waste recycling facility as those terms are defined in title twenty-six of article twenty-seven of this chapter, who:

i. fails to submit any report, registration, fee, or surcharge to the department as required by title twenty-six of article twenty-seven of this chapter shall be liable for a civil penalty not to exceed one thousand dollars for each day such report, registration, fee, or surcharge is not submitted; and

ii. violates any other provision of title twenty-six of article twenty-seven of this chapter or fails to perform any duty imposed by such title, except for subdivision four of section 27-2603 of this chapter, shall be liable for a civil penalty for each violation not to exceed one thousand dollars for the first violation, two thousand five hundred dollars for the second violation and five thousand dollars for the third and subsequent violations of this title within a twelve-month period.

d. Any retailer, as defined by section 27-2601 of this chapter, who violates any provision of title twenty-six of article twenty-seven of this chapter or fails to perform any duty imposed by such title, shall be liable for a civil penalty for each violation not to exceed two hundred fifty dollars for the first violation, five hundred dollars for the second violation and one thousand dollars for the third and subsequent violations of this title in a twelve-month period.

e. Civil penalties under this section shall be assessed by the commissioner after a hearing or opportunity to be heard pursuant to the provisions of section 71-1709 of this article, or by the court in any action or proceeding pursuant to this section, and, in addition thereto, such person may by similar process be enjoined from continuing such violation.

2. All penalties collected pursuant to this section shall be paid over to the commissioner for deposit to the environmental protection fund established pursuant to section ninety-two-s of the state finance law.

New York Solar Energy Law
Part One: New York State Solar Policy and Law

Presenters:
Noah Shaw, Esq.
David Sandbank

Moderator:
Dan Chorost, Esq.



Reforming the Energy Vision (REV) and NY-SUN

Overview

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December 2015

What is REV: Core Approaches

The State's Reforming the Energy Vision (REV) policy initiative is centered on three core approaches that will drive transformation:

- Regulatory Reform (PSC) – “REV” Proceedings
- Market Activation (NYSERDA) – Clean Energy Fund
- Leading by Example (NYPA) – Grid & Public Facilities

What is REV: Outcomes

- A cleaner environment by 2030
 - 40% reduction in greenhouse gas emissions from 1990 levels
 - 50% of all New York’s energy must be generated from renewable sources
 - 23% reduction in energy consumption of buildings from 2012 levels
- A stronger and healthier economy
- More affordable energy
- Empowered customers
- A more resilient energy system

REV-Related PSC Proceedings

- “REV” Tracks 1 and 2 & Clean Energy Standard (14-M-0101)
- Large-Scale Renewables (15-E-0302)
- Clean Energy Fund (14-M-0094)
- NY Green Bank (13-M-0412)
- NY-Sun (03-E-0188)
- Community DG (14-M-0224)

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CEF Overview

- A proposed 10-year, \$5 billion funding commitment to support increased scale and impact of clean energy
- The next evolution of State clean energy programs, modified to:
 - Improve market readiness of clean energy solutions
 - Increase private investment to leverage ratepayer funds
- Four Portfolios:
 - Market Development
 - NY Green Bank
 - Innovation
 - NY-Sun

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Overview of Current NY-Sun Programs

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NY-Sun Programs

- **NY-Sun Incentive Programs**
 - <200 kW Residential/Small Commercial
 - >200 kW Commercial/Industrial
- **Lowering Balance of System Costs**
 - Shared Solar
 - Solarize
 - K-Solar
 - PV Trainers Network
- **Financial Support**
 - Affordable Solar
 - Green Jobs - Green New York
 - C-PACE

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<200kW Residential/Small Commercial

- Participation through Eligible Installers/Contractors who submit all of the paperwork to NYSERDA
- Purchases, leases, PPAs (power purchase agreements) are all eligible
- Incentives paid directly to contractor/developer

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<200kW Residential/Small Commercial

Three Regions

- Long Island (PSEG-LI)
- ConEd
- Rest of State (ROS)

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Each region's MW targets are broken into blocks by sector to which incentives are assigned

Residential (up to 25 kW)

Small non-residential (up to 200 kW)

>200kW Commercial/Industrial

Performance-based incentives

- Initial incentive payment at commercial operation (25%)
- Three annual incentive payments based on production

20% multiplier on base incentive for utility strategic locations

>200kW Commercial/Industrial

Two Incentive Regions

- ConEd Service Territory
- Rest of State (ROS), except Long Island

ROS is one region with two incentive rates

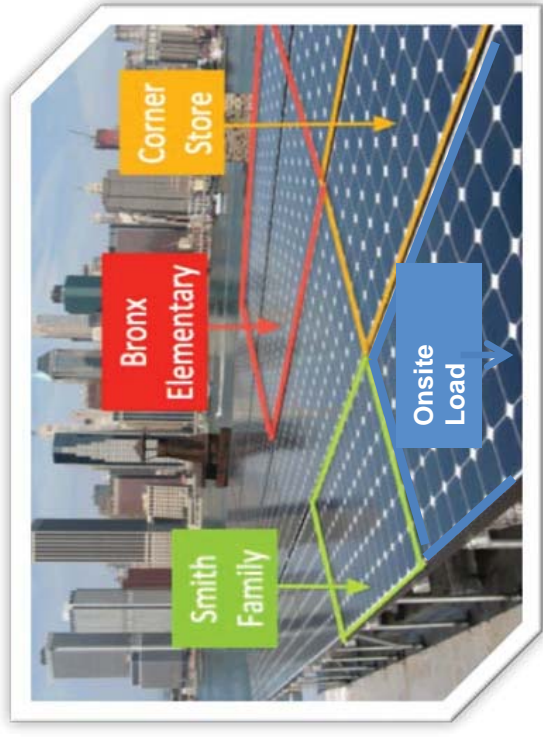
- *Volumetric Incentive* – Net Metering Crediting on a kWh basis
- *Monetary Incentive* – Remote Net Metering Crediting on a monetary basis, available through grandfathering (prior to June 1, 2015)

Community Distributed Generation

180

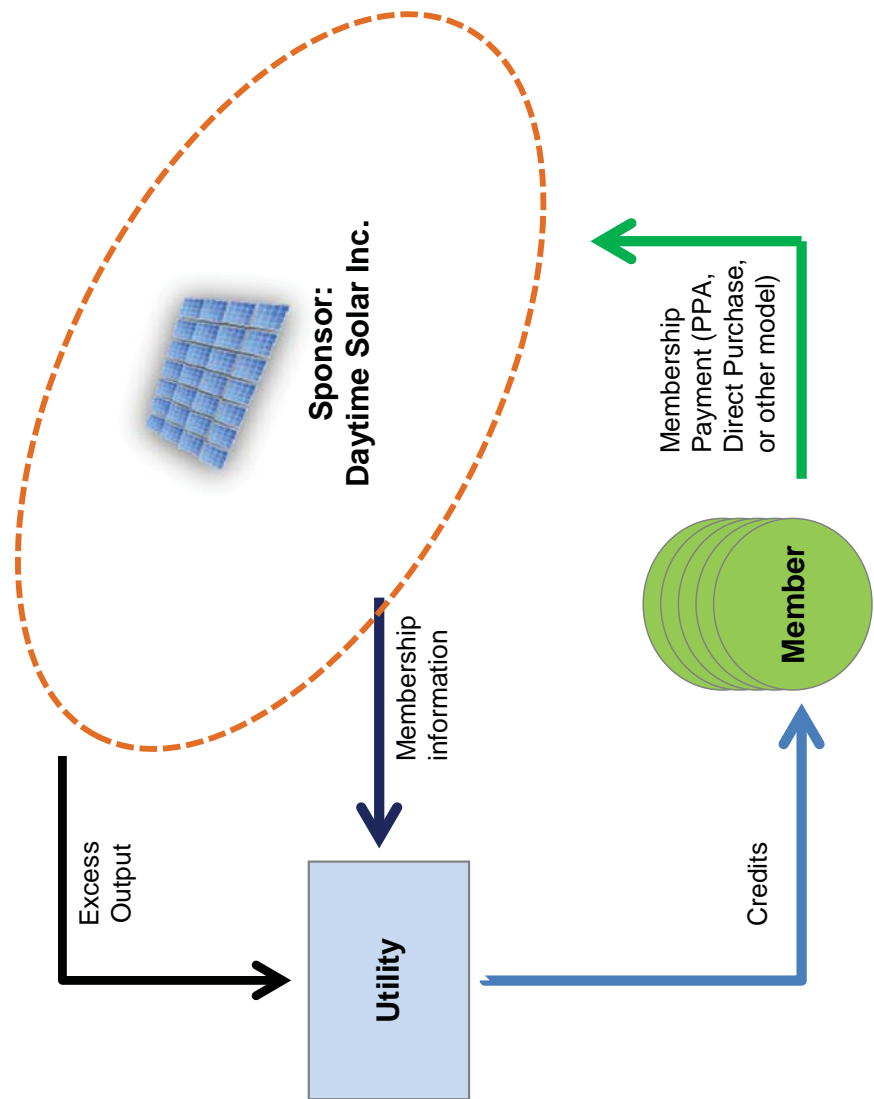
Community Distributed Generation

The Community Distributed Generations (Community DG) program extends New York's current net energy metering policy guidelines to expand access to renewable energy.



Source: Vote Solar

Potential Examples



Why Community DG

- The vast majority of New Yorkers cannot put solar on their roof because of:
 - Shade
 - Structural issues
 - Multifamily building
 - Rental property
 - Other factors
- Opportunities for Low- to Moderate-Income
- Community Involvement
- Diversify Solar Installer Offerings

Community DG Order (July 17, 2015)

- Within the Remote Net Metering provisions of PSL 66-j and 66-l
- Describes utilities' role of providing connection and net-metering
- Addresses multi-unit building issues
- Describes the low-income component
- Provides for the number of members & proportionate share allowed
- Describes the consumer protections that apply
- Addresses grid locational benefits and siting

Community DG Legal Issues to Watch

- Registration with the SEC; is the sponsor offering a “security”?
 - Shared Solar NREL Paper, April 2015
 - CommunitySun SEC No-Action Letter
- Use of municipal land / prevailing wage issues
- Consumer protections / contract structures
- HEFPA

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Questions?

New York Solar Energy Law
Part Two: Current Solar Legal Issues

Presenters:

Jessica A. Bacher, Esq.

Devin McDougall, Esq.

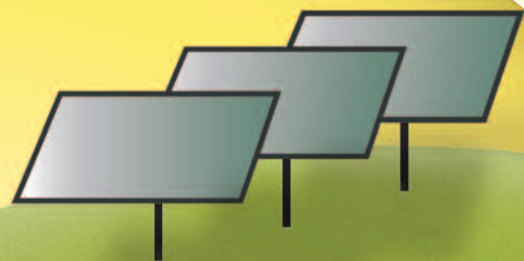
Leo Wiegman

Moderator:

Nicholas M. Ward-Willis, Esq.

A Guide to Community Shared Solar:

Utility, Private, and Nonprofit Project Development



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Introduction

PURPOSE

In communities across the United States, people are seeking alternatives to conventional energy sources. Whether they aim to increase energy independence, hedge against rising fuel costs, cut carbon emissions, or provide jobs, people are looking to community-scale renewable energy projects for solutions. Falling costs and creative new financing models have made solar projects—including community shared solar projects—more financially feasible.

This guide is a resource for those who want to develop community shared solar projects, from community organizers or solar energy advocates to government officials or utility managers. By exploring the range of incentives and policies while providing examples of operational community shared solar projects, this guide will help communities plan and implement successful energy projects. In addition, by highlighting some policy best practices, this guide suggests changes in the regulatory landscape that could significantly boost community shared solar installations across the nation.

HOW TO USE THIS GUIDE

The information in this guide is organized around three sponsorship models: utility projects, special purpose entity projects, and nonprofit projects. The guide begins with examples of the three project sponsorship models, discussing the legal and financial implications of each model. This is followed by a discussion of state policies that encourage community shared solar. The guide then reviews some of the tax and financing issues that impact community shared solar projects. While the guide cannot offer legal or tax advice, the authors hope to provide an outline of the legal hurdles that every project organizer should consider. Finally, Section 6, Getting Started provides readers with practical tools and tips for planning their own projects. The Appendices provide a more detailed comparison of business structures suitable for special purpose entities pursuing solar projects and the Interstate Renewable Energy Council's Model Community Renewables Program Rules.

As with the first version of this guide, **the case studies have been provided by the program sponsors or developers and have not been independently verified by the authors or by NREL.** Please contact the program sponsor for further information.

This guide cannot possibly describe all available incentives or cite all the examples of community shared solar efforts nationwide. For information regarding the most recent developments, see Section 7, Resources.

WHY “COMMUNITY SHARED” SOLAR?

For the purpose of this guide, “community shared solar” is defined as a solar-electric system that provides power and/or financial benefit to multiple community members. Community shared solar advocates recognize that the on-site solar market comprises only one part of the total market for solar energy. A 2008 study by the National Renewable Energy Laboratory (NREL) found that only 22 to 27% of residential rooftop area is suitable for hosting an on-site photovoltaic (PV) system.¹ Community options expand access to solar power for renters, those with shaded roofs, and those who choose not to install a residential system on their home for financial or other reasons. As a group, ratepayers and tax payers fund solar incentive programs. Accordingly, as a matter of equity, solar energy programs should be designed in a manner that allows all contributors to participate.

This guide focuses on projects designed to increase access to solar energy and to reduce up-front costs for participants. Secondary goals met by many community shared solar projects include:

- ▶ Improved economies of scale
- ▶ Optimal project siting
- ▶ Increased public understanding of solar energy
- ▶ Local job generation
- ▶ Opportunity to test new models of marketing, project financing, and service delivery.

Creative mechanisms to foster greater solar energy project deployment are not limited to those described in this guide. Readers may be interested in investigating the following efforts that employ some elements of community shared solar:

- ▶ Volume purchasing efforts, such as those in Portland, OR (Solarize Portland!) and nationwide (One Block Off the Grid)
- ▶ Solar services co-ops such as Cooperative Community Energy, CA
- ▶ Utility-owned distributed generation on customer rooftops, such as the Arizona Public Service Community Power Project.

¹ Supply Curves for Rooftop Solar PV-Generated Electricity for the United States, National Renewable Energy Laboratory, Nov. 2008. www.nrel.gov/docs/fy09osti/44073.pdf.

DEFINITION OF KEY TERMS

The following terms are defined in the context of community shared solar.

Renewable Energy Certificates (RECs, carbon offsets, or green tags): A renewable energy facility produces two distinct products. The first is electricity. The second is the package of environmental benefits resulting from not generating the same electricity—and emissions—from a conventional gas or coal-fired power plant. These environmental benefits can be packaged into a REC and sold separately from the electrical power. A REC represents the collective environmental benefits, such as avoided mercury, carbon dioxide (CO₂), and other environmentally harmful pollutants, as a result of generating one megawatt-hour (MWh) of renewable energy.

In most cases, RECs are sold on a per MWh basis. However, some project organizers choose to sell all future rights to RECs up front, on a per-installed-watt basis, effectively capturing an installation rebate and forgoing any future revenue from REC sales.

Net metering: Most on-site renewable energy systems use net metering to account for the value of the electricity produced when production is greater than demand. Net metering allows customers to bank this excess electric generation on the grid, usually in the form of kilowatt-hour (kWh) credits during a given period. Whenever the customer's system is producing more energy than the customer is consuming, the excess energy flows to the grid and the customer's meter "runs backwards." This results in the customer purchasing fewer kilowatt-hours from the utility, so the electricity produced from the renewable energy system can be valued at the retail price of power. Most utilities have a size limit for net metering. Community shared solar project organizers should be sure to check before assuming participants in a community shared solar system can net meter. It may be that some alternative arrangement, such as group billing or joint ownership, is used to account for the value of the electricity produced by a community shared solar project.

Tax appetite: Individuals and businesses can reduce the amount of taxes owed by using tax credits. For a tax credit to have any value, though, the individual or business must actually owe taxes. If the individual or business is tax exempt or does not have sufficient income to need tax relief, the tax credits have no value. Individuals or businesses that can use tax credits to reduce the amount they owe in taxes are said to have a "tax appetite." For example, public and nonprofit organizations are tax exempt, and therefore, do not have a tax appetite. In addition, taxpaying entities might be eligible to use tax-based incentives, but have insufficient tax appetite to make full use of them.

Investment Tax Credit (ITC): Section 48 of the Internal Revenue Code defines the federal ITC. The ITC allows commercial, industrial, and utility owners of PV systems to take a one-time tax credit equivalent to 30% of qualified installed costs. There is also a federal residential renewable energy tax credit (Internal Revenue Code Section 25D), but the residential tax credit requires that the PV system be installed on a home the taxpayer owns and uses as a residence, thus it would rarely, if ever, be applicable to community shared solar projects.

Power purchase agreement (PPA): A PPA is an agreement between a wholesale energy producer and a utility under which the utility agrees to purchase power. The PPA includes details such as the rates paid for electricity and the time period during which it will be purchased. Sometimes, the term PPA or “third-party PPA” is used to describe the agreement between the system owner and the on-site system host, under which the host purchases power from the system. This arrangement is not explicitly allowed in all states; in some states, it may subject the system owner to regulation as a utility. To avoid confusion, in this guide, a PPA refers only to an agreement by a utility to purchase power from the solar system owner.

Solar services agreement (SSA): A solar services agreement is an agreement between the system owner and the system site host, for the provision of solar power and associated services. The system owner designs, installs, and maintains the system (a set of solar services) and signs an agreement with the host to continue to provide maintenance and solar power. The agreement is sometimes referred to as a PPA, but in this guide, we use the term SSA to indicate that the agreement between the system owner and the system site host is more than a power purchase: it is an agreement that the system owner will provide specific services to ensure continued solar power.

Securities: A security is an investment instrument issued by a corporation, government, or other organization that offers evidence of debt or equity. Any transaction that involves an investment of money in an enterprise, with an expectation of profits to be earned through the efforts of someone other than the investor, is a transaction involving a security. Community shared solar organizers must be sure to comply with both state and federal securities regulations, and avoid inadvertently offering a security. For more information on securities, see Section 4, Tax Policies and Incentives.



Photo from United Power's Sol Partners Installation, Colorado

Community Shared Solar Project Models

People have many reasons for organizing or participating in a community shared solar project. Just as their motives vary, so do the possible project models, each with a unique set of costs, benefits, responsibilities, and rewards. This section reviews several project models:

- ▶ **Utility-Sponsored Model:** A utility owns or operates a project that is open to voluntary ratepayer participation.
- ▶ **Special Purpose Entity (SPE) Model:** Individuals join in a business enterprise to develop a community shared solar project.
- ▶ **Nonprofit Model:** A charitable nonprofit corporation administers a community shared solar project on behalf of donors or members.

The authors of this guide illustrate pros and cons of different sponsorship models, as well as variations within project models, so that project planners can select the model and variations that best suit their situation and goals. Before selecting a project model, every planner should consider the issues below.

- ▶ **Allocation of Costs and Benefits:** Who will pay to plan, construct, and operate the solar system? Who will have rights to benefits, including the electricity produced, RECs, revenue from electricity sales, tax benefits, other incentives, and ownership of the project's assets (such as the solar system itself)?
- ▶ **Financial and Tax Considerations:** Will money be raised through a solar fee on electricity bills, by equity or debt financing of a business entity, through charitable donations, or other options? What kind of tax implications will there be for participants—e.g., will the project generate taxable income for participants? Will it generate tax credits or deductions for participants?
- ▶ **Other Legal Issues:** How will the project design address securities regulation, utilities regulation, business regulation, and the complexity of agreements between various project participants?

The chart on the following page compares aspects of the three sponsorship models.

COMPARISON OF MODELS

| | Utility | Special Purpose Entity | Nonprofit |
|-------------------------------|--|---|---|
| Owned By | Utility or third party | SPE members | Nonprofit |
| Financed By | Utility, grants, ratepayer subscriptions | Member investments, grants, incentives | Memberships, donor contributions, grants |
| Hosted By | Utility or third party | Third party | Nonprofit |
| Subscriber Profile | Electric rate payers of the utility | Community investors | Donors, members |
| Subscriber Motive | Offset personal electricity use | Return on investment; offset personal electricity use | Return on investment; philanthropy |
| Long-term Strategy of Sponsor | Offer solar options; add solar generation (possibly for Renewable Portfolio Standard) | Sell system to host; retain for electricity production | Retain for electricity production for life of system |
| Examples | <ul style="list-style-type: none"> • Sacramento Municipal Utility District – SolarShares Program • Tucson Electric Power – Bright Tucson Program | <ul style="list-style-type: none"> • University Park Community Solar, LLC • Clean Energy Collective, LLC • Island Community Solar, LLC | <ul style="list-style-type: none"> • Winthrop Community Solar Project • Solar for Sakai |

UTILITY-SPONSORED MODEL

For communities desiring to organize a community shared solar project, the local electric utility is a good place to start. First of all, utilities are likely to have the legal, financial, and program management infrastructure to handle organizing and implementing a community shared solar project. Second, many utilities are actually governed by the member customers and can be directed to pursue projects on members' behalf. Fully one-fourth of Americans own their own electric power company through co-ops, or city- or county-owned utilities.² In general, publicly owned utilities have taken the lead in deploying community shared solar projects. Even when the utility is investor-owned or privately held, it may wish to expand customer choice with an option for community shared solar power.³

OVERVIEW

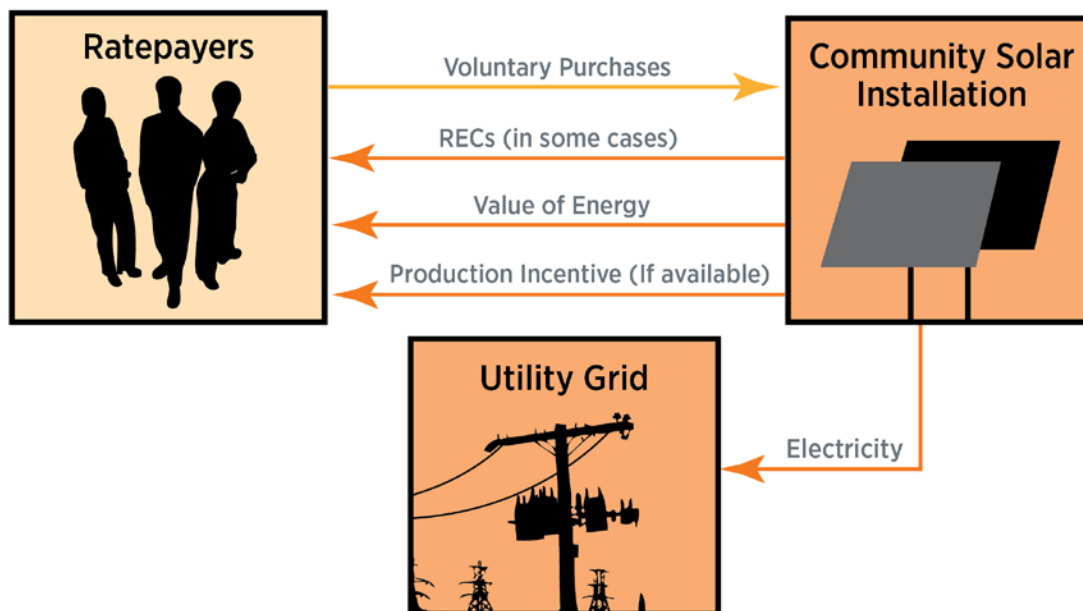
In most utility-sponsored projects, utility customers participate by contributing either an up-front or ongoing payment to support a solar project. In exchange, customers receive a payment or credit on their electric bills that is proportional to 1) their contribution and 2) how much electricity the solar project produces. Usually, the utility or some identified third party owns the solar system itself. The participating customer has no ownership stake in the solar system. Rather, the customer buys rights to the benefits of the energy produced by the system. Note that utility-sponsored community shared solar programs differ from traditional utility “green power” programs in that “green power” programs sell RECs from various renewable energy resources and generally do not act as a hedge against rising electric costs; utility community shared solar programs sell energy or rights to energy from specific solar installations, with or without the RECs, at a rate that is generally locked in for a period of many years.

Utility-sponsored programs can help make solar power more accessible by decreasing the amount of the purchase required, and by enabling customers to purchase solar electricity in monthly increments. Both Sacramento Municipal Utility District's SolarShares and Tucson Electric Power's Bright Tucson programs allow customers to participate in community shared solar on a monthly basis.

² Growing a Green Economy for All: From Green Jobs to Green Ownership, The Democracy Collaborative, June 2010, p. 22. www.community-wealth.org/_pdfs/news/recent-articles/07-10/report-warren-dubb.pdf.

³ ITC tax benefits may not be readily accessible to for-profit utilities, due to the normalization accounting rules.

COMMUNITY SHARED SOLAR INSTALLATION



TAX AND FINANCE ISSUES FOR UTILITY-SPONSORED PROJECTS

A utility project's ability to use tax incentives depends on the individual utility's characteristics. Electric co-ops, municipal utilities and public utility districts are exempt from federal income taxes, and thus, cannot benefit from federal tax incentives, like the ITC and depreciation. However, the utility can make use of Clean Renewable Energy Bonds (CREBs) that are not available to the for-profit investor-owned or privately held utilities.

Since 2008, investor-owned utilities have been eligible to use the commercial ITC on qualifying public utility property. And as taxpaying entities, the utilities may have the tax appetite to make use of them. However, normalization accounting rules limit regulated utilities' flexibility in maximizing the value of these tax benefits compared to other private developers. Normalization rules require regulated utilities to spread the benefits of investment tax credits throughout the useful life of the solar project in the rate-making process. The utility's incentive for investment is the difference between the value it receives from the tax credit up front and the value it passes on to customers over time (i.e., the time value of money). Private developers have the flexibility to pass on the benefits of the ITC sooner, which can give them a price advantage over utility solar projects.⁴

⁴ P. Alvarez and B. Hodges. (2009). "Buying Into Solar." Public Utilities Fortnightly. p. 57.

Other legal issues for utility-sponsored projects include the following:

- ▶ **Securities Compliance.** In designing mechanisms for customer participation in solar projects, utilities must be careful to comply with state and federal securities regulations. This requires carefully considering what benefit a customer-participant receives in exchange for a financial contribution to the project and how the project is marketed. For example, customer participants may be offered ownership stakes in the solar system itself or just the rights to certain benefits from the energy produced (such as credit on their electric bills, RECs, or access to a special electric rate). However, regardless of how the program is marketed, depending on your state, the receipt of credits on electric bills or other benefits may constitute a return on an investment and fall within the blue sky laws (state laws that regulate the offering and sale of securities).
- ▶ **Allocation of Incentives.** In addition to federal tax incentives, a utility-sponsored project might be eligible for various state incentive programs that provide cash benefits or savings to the project. The utility must consider whether and how these incentives will be passed on to customer participants and the tax implications of how the incentives are handled. For example, in Washington State, participants in a utility-sponsored program are eligible for production incentives. While the state Department of Revenue has ruled that the incentive is not taxable, the IRS has not ruled definitively on whether subsidies for solar PV in community shared solar installations are taxable income, although the precedent is that subsidies for energy conservation measures are not taxable.⁵
- ▶ **RECs.** Customer participants in utility-sponsored projects often desire to claim the environmental benefits of using solar energy. Participants can only make such a claim if they receive RECs or the utility retires the RECs on the participants' behalf. If the utility keeps the RECs for any reason, including Renewable Portfolio Standard compliance, only the utility can make environmental claims related to the solar system. The utility-sponsored project should consider and make explicit how RECs are allocated.

From a participant perspective, the tax implications are minimal. Bill credits for the value of electricity are not generally taxed; at the same time, participants in a utility-sponsored project are not eligible for the federal investment tax credit. The relative ease of participating in a utility-sponsored project may offset some of the foregone tax incentives available under other community shared solar ownership models.

EXAMPLES OF UTILITY-SPONSORED PROJECTS

The following examples highlight some of the project options available to those planning a utility-sponsored project.

⁵ 26 USC 136 states that subsidies from public utilities for energy conservation measures are not taxable. For example, Washington State's production incentive was ruled to be not income. See <http://apps.leg.wa.gov/WAC/default.aspx?dispo=true&cite=458-20>.

Sacramento Municipal Utility District (SMUD): SolarShares Program

SMUD's SolarShares Program allows customers who cannot or choose not to acquire PV systems of their own to purchase solar power directly from SMUD while achieving net metering benefits comparable to behind-the-meter PV. SMUD buys the output of local, community-scale photovoltaic systems under 20-year PPAs and then resells the solar power to participating customers. Bill credits equivalent to the amount of energy the customer buys from the SolarShares system are credited to the customer through virtual net metering and are equivalent in value to the bill



Photo from Stephen Frantz, Sacramento Municipal Utility District

credits received by a customer with behind-the-meter PV—i.e., full retail price per kWh. The program is subsidized with SB1⁶ surcharge funds, which allows SMUD to sell the power for less than the PPA purchase price. SMUD retains the renewable energy credits and is able to count up to 25 MW of SolarShares projects toward its 125-MW SB1 goal. SolarShares' business goals are to make solar benefits available to all SMUD ratepayers, to contribute to achieving SMUD's 125-MW SB1 goal, and to gather pricing and marketing experience that could lead to a sustainable solar enterprise for SMUD beyond the current, mandated incentive program.

SolarShares began in mid-2008 with a 1-MW system constructed by enXco at a leased site in Wilton. The system has thus far produced an average 1,745 MWh per year, of which about 86% has been sold to SolarShares participants. Intensified marketing in Q4 2011 succeeded in moving the percentage sold toward the program's 95% goal. The program has maintained stable enrollment of around 600 customers throughout its three-year life, with most dropouts attributable to customers moving out of the District. Market research conducted in mid-2009 confirmed that most SolarShares customers are satisfied with the program (75% positive responses) and would recommend it to others (85% positive responses).

⁶ SB1 is the California Solar Initiative, a state mandate requiring all California electric utilities to offer a 10-year program of declining incentives for customer-sited PV. It expires at the end of 2016.

Customers pay a fixed monthly fee, based on both their average electricity consumption and the amount of PV to which they want to subscribe (from 0.5 to 4 kW). SMUD is exploring the marketing advantages of changing this pricing structure to a flat fixed fee per kWh, allowing customers to purchase in packets of 1,000 kWh/year. Once enrolled, customers are locked in at the fixed monthly fee, for as long as they wish to participate. They receive monthly kWh credits for the estimated output of their solar subscription. Although customers currently pay a premium for solar energy, the effective rate for solar is locked in when they enroll, which maintains the ability of solar to act as a hedge against future price increases. SMUD is making plans for expansion of up to 25 MW by the end of 2016. An RFP for a second megawatt was released in Q3 2011, and the next 1-MW project is scheduled for completion in Q3 2012. The PPA price for the second MW will be blended with the price for the original system to yield a lower participation fee for both existing and new program subscribers. Depending on market response to the second project, SMUD will probably seek to expand the program by larger increments in the future (the enabling legislation caps projects at 5 MW each).

▶ **Program Highlights**

- *System Owner:* enXco, with SMUD purchasing 100% of the output under a 20-year PPA
- *Installed Capacity:* 1 MW
- *Participant Agreement:* Customers pay a fixed monthly fee in return for a kWh credit. Credit varies monthly, as solar output varies, so a 12-month consecutive commitment is requested.
- *Electricity:* The estimated kWh generated by a customer's share is netted against the customer's consumption at home, at the full retail rate.
- *RECs:* Retained by SMUD
- *Number of Participants:* Approximately 600

▶ **Financial Details**

- *Installed Cost:* NA
- *Capital Financing:* Handled by third party, enXco
- *Tax Credits:* 30% federal business investment tax credit taken by enXco, depreciation taken by enXco
- *Estimated Annual Cost:* Varies by customer size and array size. Output from a 0.5-kW share for the small user will cost \$129/year at 2012 prices. As the price for non-solar energy rises, a participant could eventually realize monthly savings on their solar purchase.

For more information: Stephen Frantz, sfrantz@smud.org, (916) 732-5107, www.smud.org/

Tucson Electric Power: Bright Tucson Community Solar Program



Photo from Marc Romito, Tucson Electric Power

In 2011, Tucson Electric Power launched its Bright Tucson Community Solar Program to create opportunities for customers unable to install traditional distributed solar power. Through the program, customers have the opportunity to purchase solar power in “blocks” of 150 kWh per month. Program participants can choose to purchase some or all of their energy through the program. Each purchased block replaces the charges for an equivalent amount of conventional power. At current rates, the solar block is more expensive by about two cents per kWh, but program blocks are exempt from two surcharges applied to other electric usage. Both these surcharges are adjusted annually to reflect changing energy costs, so the benefit of avoiding them could increase over time. The solar block rate is locked in for 20 years under rules approved by the Arizona Corporation Commission (ACC), offering TEP customers a way to hedge against future rate increases. While blocks purchased through the program will still be subject to non-fuel rate changes, the blocks will not be affected by changes to the base energy rate or renewable energy surcharges.

Tucson Electric Power offers an online solar calculator to help potential participants determine how many blocks to purchase to offset the desired quantity of household electricity use. If the solar energy purchased through the program exceeds actual usage during a monthly billing period, the excess is carried forward to the next billing period as a credit. Any credit remaining after the September billing period will be paid in full as a credit on the next bill.

The first source of solar power for the Bright Tucson Community Solar Program is a 1.6-MW single-axis tracking PV array located in The Solar Zone at the University of Arizona Science and Technology Park. TEP is expanding the program as demand requires through utility-owned systems and power purchase agreements. Currently, program participants have purchased 2.1 MW of community shared solar.

The following details pertain specifically to the first Bright Tucson Community Solar Program solar source, a 1.6-MW single-axis tracking PV array, unless otherwise noted.

► **Program Highlights**

- *System Owner:* Tucson Electric Power
- *System Host:* University of Arizona Science and Technology Park
- *Installed Capacity:* 1.6-MW single-axis tracking PV array
- *Participant Agreement:* Customers pay a fixed monthly fee per solar block in return for a 150-kWh credit. Any credit remaining after the September billing period will be paid in full as a credit on the next bill.
- *Electricity:* Each 150-kWh block replaces the charges for an equivalent amount of conventional power at a rate that currently adds \$3 per month to the customer's electric bill.
- *RECs:* Retained by TEP
- *Number of Participants:* 564 (six are commercial; includes all program solar sources)

► **Financial Details**

- *Installed Cost:* \$4/watt
- *Capital Financing:* Utility financed
- *Tax Credits:* For 1.6-MW single-axis tracking array, TEP used levelized ITC. For 2-MW dual-axis tracking array, owner took the Treasury Grant (in lieu of ITC).
- *Estimated Annual Cost:* \$36/year for a monthly 150-kWh block. As the price for non-solar energy rises, participants could eventually realize monthly savings on their solar purchase.

For more information: Marc Romito, mromito@tep.com, www.tep.com/Renewable/Home/Bright

OTHER COMMUNITY SHARED SOLAR PROJECTS

United Power, CO; City of Ellensburg, WA; Florida Keys Electric Co-op, FL; Seattle City Light, WA; St. George, UT; City of Ashland, OR; *Coming Soon: San Diego Gas & Electric, CA*

SPECIAL PURPOSE ENTITY (SPE) MODELS

To take advantage of the tax incentives available to commercial solar projects, organizers may choose to structure a project as a business. In most states, there is a range of business entities that could be suitable for a participant-owned community shared solar project. (Please see Appendix A for more in-depth descriptions of these business entities.) The main challenges in adapting these commercial solar structures for community shared projects include:

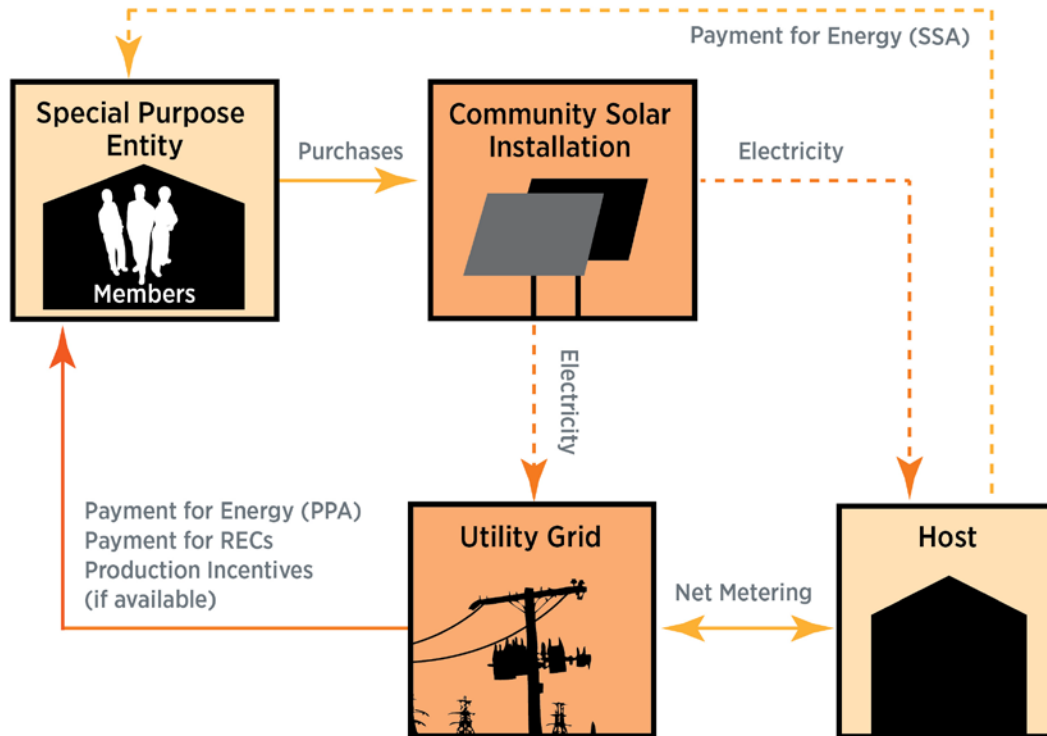
- ▶ Fully using available tax benefits when community investors have a limited tax appetite, including a lack of passive income
- ▶ Maintaining the community project identity when engaging non-community-based tax-motivated investors
- ▶ Working within limits on the number of unaccredited investors if the project is to be exempt under securities laws.

OVERVIEW

When a group chooses to develop a community shared solar project as a special purpose entity, it assumes the significant complexity of forming and running a business. The group must navigate the legal and financial hurdles of setting up a business and raising capital, and comply with securities regulation. In addition, it must negotiate contracts among the participant/owners, the site host and the utility; set up legal and financial processes for sharing benefits; and manage business operations.

Given the complexity of forming a business, it is not surprising that many special purpose entities pursuing community shared solar are organized by other existing business entities with legal and financial savvy. Solar installation companies such as My Generation Energy in Massachusetts have successfully created LLCs to purchase solar installations funded by groups of investors. Although this expands the market for solar, the benefits are limited to a small group of tax-motivated investors. In an alternative model, the Clean Energy Collective in Colorado has created a business structure under which participation is offered to an unlimited number of utility customers.

COMMUNITY SHARED SOLAR INSTALLATION



TAX AND FINANCE ISSUES FOR SPECIAL PURPOSE ENTITY PROJECTS

Federal income tax benefits offer significant value for solar projects, but can be challenging for community shared projects to use effectively. Making use of tax credits or losses (from depreciation) requires significant taxable income. Moreover, passive investors in a community shared solar project (investors who do not take an active role in the company or its management) can only apply the ITC to passive income tax liability. As discussed below, most investors in a community shared solar project will likely be passive investors, and few will have passive income. As a result, most individuals cannot fully use federal tax benefits. In this section, we describe the major limitations on using federal tax benefits and outline potential financing structures that accommodate those limitations. However, the descriptions here do not account for the many nuances that might apply to individual projects.

Passive Activity Rules

IRS “passive activity” rules are a major challenge for community-based renewable energy investors trying to use federal tax benefits. In most cases, an individual’s investment in a community shared solar project will be considered a passive investment. Passive activity rules allow tax credits or losses generated from passive investment to be used to offset only passive income.⁷

Most individuals primarily have non-passive income, which includes salaries, wages, commissions, self-employment income, taxable social security, and other retirement benefits. Non-passive income also includes portfolio income, such as interest, dividends, annuities, or royalties not derived in the ordinary course of a business. While portfolio income may seem passive, the IRS specifically excludes it from the category of passive income.

Passive income can only be generated by a passive activity. There are only two sources for passive income: a rental activity or a business in which the taxpayer does not materially participate.

“Participation” generally refers to work done in connection with an activity in which the taxpayer owns an interest. To “materially” participate in the trade or business activity (in this case, operation of a solar project) an individual must participate on a regular, continuous, and substantial basis in the operations of the activity. This is a high standard that participants likely will not be able to meet. That means most participants will be passive investors, limited to applying federal tax benefits to passive income. The community shared solar project itself likely will not generate sufficient income to make full use of the ITC or depreciation benefits, at least not in the early years of a project. Therefore, a project intending to rely on federal tax benefits will have to seek participation of an investor with a larger tax appetite.

At-Risk Limitations

In addition to passive activity rules, at-risk rules limit the amount of losses one can claim from most activities. Specifically, one can only claim losses equivalent to one’s amount of risk in the activity. The “at-risk” amount generally is the amount of cash and property one contributes to the activity. In addition, any amount borrowed for use in the activity is at-risk, as long as the borrower is personally liable for repayment of the loan or the loan is secured with property not used for the activity. Money contributed from a non-recourse loan is not considered “at-risk.”

⁷ For a list of IRS material participation tests and other details about passive activity and at-risk rules, see IRS Publication 925, available at: www.irs.gov/pub/irs-pdf/p925.pdf.

Securities Regulation

Securities regulations are a major factor in financing structures for the SPE model. To reduce the burden of securities compliance, many small projects seek a private placement exemption to registration requirements. Qualifying for such an exemption requires limiting who can invest in the project (based on assets or income for individuals) and how such an offering can be conducted. The practical effect is to limit the number of middle-income individuals who can invest in a community shared solar project. If a project is designed to produce electricity proportional to the amount used by the participants, securities issues will effectively limit the size of a project. For example, private placement exemption limits the number of “unaccredited” investors to 35 or fewer.⁸ A 1-MW solar facility, in contrast, could serve far more participants, perhaps 300 to 500. Therefore, project developers must carefully consider how to reconcile their financing mechanism with the size of their project, the number of participants, and type of participants.

Potential Financing Structures

Special purpose entities need to plan their financing structures carefully. Structures that effectively use the ITC can be complex and tend to mimic the structures used by larger commercial solar projects. For a community SPE, potential financing structures that maximize federal tax incentives include:

- ▶ **Self-financing:** This is the simplest option for a community SPE is to finance the project with equity invested by community members. However, in order to fully use federal tax benefits, the SPE needs to have enough community investors that have sufficient tax appetite to use federal tax incentives. Given the passive loss rules and the at-risk limitations discussed above, this is not a realistic goal for community groups consisting of individuals who lack other sources of passive income. That means the project organizers will likely have to make the project economically viable without full use of federal tax incentives (difficult without aid from a state or local incentive of similar value), or will have to use one of the more complex structures such as a flip or a sale/leaseback (described below). This need not take away from the community ownership, if the project can find even one community member with the financial resources and tax appetite to participate as the primary tax investor.
- ▶ **Flip Structure:** In this scenario, the community SPE partners with a tax-motivated investor in a new special purpose entity that owns and operates the project. Initially, most of the equity comes from the tax investor and most of the benefit (as much as 99%) would flow to the tax investor. When the tax investor has fully monetized the tax benefits and achieved an agreed-upon rate of return, the allocation of benefits and majority ownership (95%) would “flip” to the community SPE (but not within the first five years). After the flip, the community SPE has the option to buy out all or most of the tax investor’s interest in the project at the fair market value of the tax investor’s remaining interest. Note that the numbers provided here reflect IRS guidelines on flip structures issued for wind projects claiming the federal production tax credit. Similar rules potentially could apply to solar projects claiming the ITC.

⁸ To be considered an accredited investor, an individual must have either: 1) a net worth of more than \$1 million or 2) an annual income of \$200,000 (\$300,000 jointly with a spouse) in each of the most recent two years and a reasonable expectation of having the same income level in the current year.

- ▶ **Sale/Leaseback:** In this scenario, the community SPE (as the developer of the project, the site host, or both) installs the PV system, sells it to a tax investor and then leases it back. As the lessee, the community SPE is responsible for operating and maintaining the solar system and has the right to sell or use the power. In exchange for use of the solar system, the community lessee makes lease payments to the tax investor (the lessor). The tax investor has rights to federal tax benefits generated by the project and the lease payments. The community SPE may have the option to buy back the project at 100% fair market value after the tax benefits are exhausted.

There are numerous complex legal, financial, and tax issues associated with all of these financing structures. These descriptions do not cover these issues completely. For more information on financing structures, see Section 7, Resources.

EXAMPLES OF SPECIAL PURPOSE ENTITY PROJECTS

The following examples represent two possible approaches: a volunteer-led LLC and a business enterprise that partners with utilities to deliver solar to customers. These special purpose entities are structured as LLCs. Although there has been much interest in the possibility of structuring a community shared solar enterprise as a cooperative (co-op), in fact, co-ops are not exempt from the complex securities issues and project organizers have tended to choose to do business as LLCs.⁹ Several rural electric co-ops that deliver electricity to customer/members have started community shared solar programs, but the programs are peripheral to the function as consumer co-ops for the distribution of electricity. As in the previous edition of this guide, the descriptions of the programs in the following pages have been provided by the program sponsors or developers and have not been independently verified by the authors or by DOE.

⁹ Tangerine Power, LLC, based in Washington State has created a business model for a solar power co-op and has launched the Edmonds Community Solar Cooperative.

University Park Community Solar LLC, Maryland



Photo from David Brosch, University Park Community Solar, LLC

The volunteer founders of University Park Community Solar spent more than two years crafting the legal and financial aspects of their business model. With expert consultation, including help from a state senator to change the Maryland net metering law, the volunteers formed a member-managed LLC that will return their investment in five to six years. Within the group, there are both active and passive investors.

A 22-kW system was installed on the roof of a local church in May 2010. The LLC will pass benefits to its members based on revenue from several sources: electricity

sold to the church and grid, the auction of RECs, federal tax incentives, and depreciation. The LLC and the Church signed a 20-year agreement detailing the provision of electricity, access to the solar array, maintenance, insurance, and other issues. The host has an option to purchase the system before the 20-year term is up.

To assist in establishing the LLC, the group received pro bono help from the Maryland Intellectual Property Legal Resource Center and paid approximately \$12,000 for other legal and accounting expertise. The founders note that initial accounting and legal fees could overwhelm any return to members. Going forward, they plan to handle the accounting and tax paperwork in house as much as possible.

The LLC organizers were careful to obtain legal advice on how to gain an exemption from state and federal SEC filing requirements. The organizers are not all “accredited” investors. In addition, the organizers were required to create lengthy disclosure documents to ensure that investors were fully informed of the risks. Their attorneys advised them to pursue an exemption that restricted them in several aspects, including having fewer than 35 unaccredited investors, keeping the offering private, and limiting membership within the state of Maryland. See Section 5, Securities Compliance, for information about securities compliance and private placement exemptions.

Project founders are looking to expand the model beyond the first site. Additional host sites in Maryland and other states are being explored, including schools, nonprofits, and places of worship. Furthermore, the LLC has offered to share legal and accounting documents with groups around the nation to facilitate the model's replication. The first successful replication was completed in December 2011 by Greenbelt Community Solar, LLC in Greenbelt, Maryland.

► **Program Highlights**

- *System Owner*: University Park Community Solar, LLC
- *System Host*: Church of the Brethren, University Park, MD
- *Installed Capacity*: 22 kW
- *Participant Agreement*: LLC passes net revenues (after expenses) and tax credits to members
- *Electricity*: LLC sells power to the church below retail rate; rate escalates approximately 3.5%/year; church net meters and annual net excess generation is compensated by the utility
- *RECs*: LLC is working to auction RECs independently
- *Number of Participants*: 35 LLC Members

► **Financial Details**

- *Installed Cost*: \$5.90/watt
- *Capital Financing*: Project financed with member investments
- *Tax Credits*: \$39,000 ITC (taken as the 1603 Treasury Grant in lieu of a tax credit)
- *Grants*: \$10,000 from state of MD
- *MACRS*: Will depreciate 85% of cost over six years
- *Annual Income from Power Sales*: \$3,300 in the first year, rising 3.5%/year
- *Estimated Annual Income from REC Sales*: \$7,000 (28 RECs at \$250 per MWh)

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www.universityparksolar.com

Clean Energy Collective, LLC, Colorado



Photo from Lauren Suhrbier, The Clean Energy Collective, LLC

The Clean Energy Collective (CEC) provides a member-owned model that enables individuals to directly own panels in a community shared solar farm. The CEC works closely with local utilities to create community-scale solar projects that combine the on-bill credits of a utility-owned project with the equivalent tax benefits and rebates of an individually owned solar project. While the 30% investment tax credit is not directly available to individuals who participate in the project, the cost to participate is adjusted to reflect the value of the tax credits. For projects initiated in 2011 or earlier, the CEC took the 1603 Treasury Grant, instead of the ITC, as the initial owner of the array. Portions of the array were then sold to customers at discounted costs (reducing the cost by the proportioned Treasury Grant amount). Customers could not take a tax credit on their purchase because the grant had been taken by the CEC. Both parties are subject to recapture over the first five years if the resulting system is then sold to a disqualified or non-taxpaying entity. Creating this proprietary project model, with ownership, tax and legal considerations, proved challenging.

When individuals purchase panels in the solar farm, the utility credits them for the electricity produced at or above the retail rate using the CEC's RemoteMeter™ software system. The purchase price is as low as \$535, depending on location, available rebates, and RECs. For example, in the first project, CEC sold the rights to all future RECs up front on a per-watt basis, offsetting a portion of the installed cost. The benefits of ownership are transferable. If an owner moves within the service territory, the bill credits follow them; if an owner moves out of the territory, the owner can resell ownership to another utility customer or back to the CEC at fair market value, or donate the property to a nonprofit.

The owners must be customers of the electric utility in which the community array is located and their purchase is limited to the number of panels they need to offset 120% of their yearly electric use. These rules ensure that benefits directly accrue to the local utility customers rather than outside investors. The CEC is the management company representing the community owners and maintaining the solar arrays. In order to provide “utility-grade” long-term power to the utility, a percentage of the monthly power credit value and the initial sale price goes toward funding insurance, operations, and maintenance escrows.

The first CEC project is a 78-kW array in the Holy Cross Energy service territory. The CEC leased the land, sold the project to customers, and negotiated a PPA with Holy Cross Energy. The PPA rate paid by Holy Cross will escalate as regular utility rates increase. CEC’s RemoteMeter™ system automatically calculates monthly bill credits for customer accounts and integrates directly with the utility’s billing system to apply the credits.

In 2011, the CEC completed three more projects, bringing its installed project portfolio to 2.5 MW.

► **Project Highlights – First Project: Mid Valley Metro Solar Array**

- *System Owner:* Individuals and businesses in Holy Cross Energy utility territory
- *System Host:* CEC leases site from the Mid Valley Metropolitan District
- *Installed Capacity:* 78 kW
- *Participant Agreement:* Minimum \$725 purchase (a single panel after rebates and incentives). Panel owners receive monthly credits for the value of the electricity produced for 50 years.
- *Electricity:* CEC, as agent for its customers, has a PPA with Holy Cross Energy to purchase the power produced. Customers receive the resulting monetary credit on their monthly electric bill.
- *RECs:* Holy Cross Energy purchased rights to RECs for \$500/kW installed (paid up front).
- *Number of Participants:* 18 customers

► **Financial Details – First Project**

- *Installed Cost:* \$466,000 or \$6/watt (Cost to customers: \$3.15/watt, includes all rebates, RECs and credits taken by the CEC)
- *Capital Financing:* Project built with internal CEC private capital, which is paid back as individuals buy in to the project
- *Federal Tax Credit:* CEC takes the 1603 Treasury Grant and passes the savings to the customer
- *Rebates:* \$1/watt plus \$0.50/watt for rights to the RECs from Holy Cross Energy
- *Estimated Annual Income from Power Sales:* \$15,444 (\$198/kW), rising as regular rates rise
- *Simple Payback:* 13.1 years

► **Project Highlights – Subsequent Three Projects**

- *System Owner:* Individuals, businesses, and educational institutions in various Colorado utility territories
- *System Host:* CEC leases sites from government and private entities
- *Installed Capacity:* 858 kW, 1.1 MW, and 498 kW
- *Participant Agreement:* Minimum purchase ranges from \$535 to \$756 (a single panel after rebates and incentives). Panel owners receive monthly credits for the value of the electricity produced.
- *Electricity:* CEC, as agent for its customers, has a PPA with the utility to purchase the power produced, or has an established rate tariff. Customers receive the resulting monetary credit on their monthly electric bill.
- *RECs:* Utilities purchased rights to RECs for \$500/kW installed (paid up front).
- *Number of Participants:* 400, 500, and 200

► **Financing Details – Subsequent Three Projects**

- *Installed Cost:* \$6/watt, \$6/watt, \$5.30/watt (cost to customers as low as \$3/W includes all rebates, RECs and credits taken by the CEC)
- *Capital Financing:* Projects built with bridge loan financing from JP Morgan Chase and internal CEC private capital
- *Federal Tax Credit:* CEC takes the 1603 Treasury Grant and passes the savings to the customer
- *Rebates:* \$1.25/watt to \$1.58/watt, including up-front sale of RECs
- *Estimated Annual Income from Power Sales:* \$172,000, \$220,000 and \$78,300. Rising as regular rates rise
- *Simple Payback:* 12.5 to 15.5 years

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Island Community Solar, LLC, Washington

Inspired by the passage of Washington State's generous production incentive for community shared solar projects (WAC 458-20-273), a group of solar enthusiasts developed a project in their community on Whidbey Island, Washington. Working closely with the local Port District and the utility, Puget Sound Energy, they developed a one-acre "P-Patch" for solar farmers on Port property at Greenbank Farm. The P-Patch consists of six separately metered plots, each capable of hosting approximately 25 kW of ground mounted solar panels. The solar farmers pay rent to the Port and sell power directly to the grid. When the acre is fully built out, it will generate almost enough to match the on-site annual consumption.



Photo from Linda Irvine, Island Community Solar LLC

In order to capture the investment tax credit, the Whidbey Island group chose to form an LLC, Island Community Solar (ICS). ICS obtained exemption from securities filing requirements under the Federal Intrastate Offering Exemption (Rule 147) and a Washington Small Offering Exemption (WAC 460-44A-504), which prohibits advertising and limits the number of unaccredited investors. After preparing extensive disclosure documents, ICS raised \$430,000 from 36 local members. ICS built 50 kW in two phases, completing the installation in January 2012.

ICS projects a positive return on investment over the ten year lease period. The 1603 Treasury Grant enabled the LLC to monetize the investment tax credit. Although most members do not have sufficient tax appetite to use the passive losses from depreciation, they will earn a return from the state production incentive and power sales to the utility.

It may be difficult to replicate or expand this project without policy changes. The expiration of the 1603 Treasury Grant makes it unlikely that the members will be able to monetize future tax credits, because most lack the tax appetite. The sunset of the Washington State production incentive in June 2020 means that every subsequent project has a shorter window of opportunity to earn incentives. Finally, the avoided cost of the power generated is dropping. The utility's PPA rates for 2012 are lower than in 2011, due to many factors including downward pressure on electric prices from an abundance of natural gas, and the discarding of an assumed future cost for carbon.

► **Project Highlights**

- *System Owner:* Island Community Solar, LLC
- *System Host:* Port of Coupeville's Greenbank Farm
- *Installed Capacity:* 50 kW; estimated Production: 52,930 kWh/year
- *Participant Agreement:* Members receive distributions, profits, and losses in proportion to capital contributions; passive loss limitations apply.
- *Electricity:* Sold to the utility through a 10 year PPA, escalating 2.5% annually
- *RECs:* Retained by the owner; no market for solar RECs in WA
- *Number of Participants:* 36

► **Financial Details**

- *Installed Cost:* \$410,000 installation; \$8,000 legal; \$5,400/year insurance
- *Capital Financing:* 100% owner equity
- *Federal Tax Credit:* \$123,000 1603 Treasury Grant
- *Incentives:* Production Incentive of \$1.08/kWh until June 30, 2020
- *Estimated Annual Income:* \$56,840 (production incentive); \$4,128 (power sales)
- *Estimated Annual Expenses:* \$10,000
- *Simple Payback:* 7.2 years

For more information: Linda Irvine, linda@nwseed.org, www.nwseed.org

NONPROFIT MODEL

Nonprofits may engage with community shared solar projects in at least two ways: they may organize and administer a community shared solar project that shares benefits with participating members or they may solicit donations for a solar project. While this second option is not strictly “community shared solar,” in that the donors do not share directly in the benefits of the solar installation, the donors do share indirectly, by lowering energy costs for their favored nonprofit and demonstrating environmental leadership. In addition, with emerging state policies such as virtual net metering and group billing, there may be possibilities for nonprofit project sponsors to share benefits with their donor/members. In a variation on nonprofit ownership, a nonprofit may partner with a third-party for-profit entity, which can own and install the system and take the tax benefits. This model has been deployed successfully in the California Multifamily Affordable Housing program and at other nonprofit locations throughout the country.¹⁰

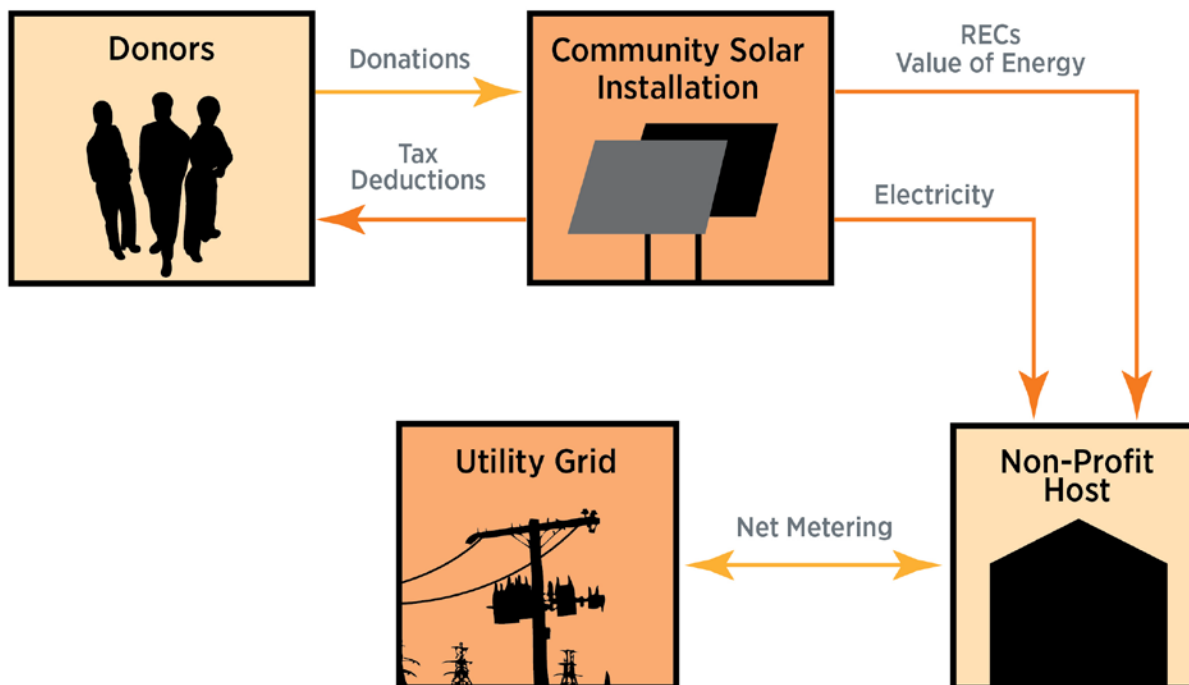
If a nonprofit were to return some benefit to donors, (for example, a portion of production incentives or a share of electric savings) this would constitute a “quid pro quo” contribution and the donor could not deduct their entire contribution.

OVERVIEW

Nonprofit organizations such as schools and churches are partnering with local citizens to develop community shared solar projects. Under this model, supporters of the nonprofit organization help finance the system through tax-deductible donations or direct investment in the project. The second option requires that the nonprofit comply with state and federal securities regulations. While the nonprofit is not eligible for the federal commercial ITC, it may be eligible for grants or other sources of foundation funding that would not otherwise be available to a business. An example of this model is the “Solar for Sakai” project on Bainbridge Island, Washington, in which a community nonprofit raised donations for a solar installation, and in turn, donated the installation to a local school.

¹⁰ The Portland Habilitation Center Northwest, a nonprofit organization, partnered with U.S. Bancorp Community Development Corporation, which will own and finance an 870 kW system to provide energy to the nonprofit.

NONPROFIT PROJECTS



TAX AND FINANCE ISSUES FOR NONPROFIT PROJECTS

As non-taxpaying entities, nonprofit organizations typically are not eligible for tax incentives. However, donors to a nonprofit project can receive a tax benefit in the form of a tax deduction. The IRS allows taxpayers who itemize deductions to deduct verifiable charitable contributions made to qualified organizations. Of course, a tax deduction is much less valuable than a tax credit. For example, a \$100 tax credit reduces taxes owed by \$100 while a \$100 tax deduction reduces taxes owed by \$25 for a taxpayer in the 25% federal bracket.

Donors can deduct their contributions to a community shared solar project if the project sponsor obtains tax-exempt status as a charitable organization under the Internal Revenue Code (26 U.S.C. § 501(c)(3)). Section 501(c)(3) organizations must be organized and operated exclusively for exempt purposes such as charitable, religious, educational, or scientific purposes. Section 501(c)(3) organizations may not be operated for the benefit of private interests and are restricted in how much time they can devote to lobbying activities. The Application for Recognition of Exemption under Section 501(c)(3) is IRS Form 1023.

Winthrop Community Solar Project, Washington

Following the 2010 launch of Okanogan County Electric Cooperative's (OCEC) first community shared solar project, co-op members who had been unable to participate were eager to develop another community shared solar project.

Project design and management was handled by Energy Solutions, who solicited the Town of Winthrop as project host and the Partnership for a Sustainable Methow (PSM) as project administrator. As a nonprofit with a mission to initiate, encourage, and support activities that foster long-term sustainability and wellbeing in the Methow Valley



Photo from Ellen Lamiman, Energy Solutions

community, PSM was eligible for a Nonprofit Notification of Claim of Exemption from the Washington State Division of Securities. This exemption allowed PSM to offer ownership in the community shared solar project to members, contributors, or participants in the organization, or to relatives of community members. In early 2011, the opportunity to participate was announced through local press, radio, and the PSM website. Applications were processed on a first come, first served basis, ultimately attracting 49 investors to fully fund the community shared solar project in just six weeks. Investment levels ranged from \$500 to \$15,000, with investors participating at all levels.

Participating investors were not eligible to claim the 30% federal investment tax credit, which is unavailable to nonprofits and other entities that do not pay taxes. However, the high state production incentive for community shared solar projects using Washington-made materials partially made up for the loss of the tax credit. When the production incentive expires in June 2020, project ownership will be transferred to the Town of Winthrop.

► Program Highlights

- *System Owner:* Participating OCEC members
- *System Administrator:* Partnership for a Sustainable Methow
- *System Host:* Town of Winthrop
- *Installed Capacity:* 22.8-kW ground mounted array
- *Participant Agreement:* Ownership purchased in \$500 increments up to \$15,000. Investors sign an ownership contract with PSM, which receives owners' investments, pays bills, and distributes production incentive to owners through June 2020. System ownership will then transfer to the project host, the Town of Winthrop.

- *Electricity*: Net metering benefits accrue to Town of Winthrop (host), production incentive benefits accrue to participating OCEC members (owners)
- *RECs*: Remain with participating OCEC members
- *Number of Participants*: 49 investors

► **Financial Details**

- *Installed Cost*: \$200,000 or \$8.77/watt (cost to investors \$9.64/watt, includes insurance, bookkeeping, and administration costs)
- *Capital Financing*: Project financed with owner investments, secured prior to construction
- *Tax Credits*: None; federal tax credit cannot be claimed if project is not a business venture or is not placed on an owner's residential property.
- *Grants*: None
- *Rebates*: None
- *Estimated Annual Payment to Participants*: \$72 per \$500 of investment
- *Estimated ROI*: 30% by June 2020

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Solar for Sakai, Bainbridge Island, Washington



Photo from Joe Deets, Community Energy Solutions

Community Energy Solutions, a nonprofit organization on Bainbridge Island, Washington, led the effort to raise funds for a solar installation at Sakai Intermediate School. Twenty-six community organizations or individuals made tax-deductible donations to Community Energy Solutions. The school owns the PV system and all of the resulting power and environmental attributes.

► Program Highlights

- *System Owner:* Sakai Intermediate School
- *Installed Capacity:* 5.1 kW
- *Electricity:* Net metered

► Financial Details

- *Installed Cost:* \$50,000 or \$9.80/watt (not including energy curriculum and monitoring)
- *Grants:* \$25,000 from utility (Puget Sound Energy)
- *Donations:* \$30,000 through Community Energy Solutions
- *Production Incentive:* \$0.15/kWh from state of WA

SUMMARY OF BENEFIT ALLOCATION OPTIONS BY MODEL

As evidenced by the examples above, there are many options for allocating the benefits of community shared solar within each sponsorship model. The following chart summarizes the most common options.

| | Utility | Special Purpose Entity | Nonprofit |
|--|--|--|--|
| Electricity from Solar System | <ul style="list-style-type: none"> Participants receive an estimated or actual kWh credit for their portion of project (virtual net metering) Participants receive a monetary credit for the value of production for their portion of the project | <ul style="list-style-type: none"> SPE sells the electricity to the utility (PPA) SPE sells the electricity to the system host (SSA) SPE assigns kWh to utility accounts per agreement with utility (virtual net metering) Electricity from the system is netted against SPE members' group bill | <ul style="list-style-type: none"> Nonprofit owner uses on-site and net meters Nonprofit owner assigns to utility accounts per agreement with utility (virtual net metering) Electricity from the system is netted against a group bill |
| Renewable Energy Credits | <ul style="list-style-type: none"> Assigned to participants Retired on participants' behalf Retained by the utility | <ul style="list-style-type: none"> Rights to RECs sold up front RECs sold on an ongoing basis Retained for participants | <ul style="list-style-type: none"> Rights to RECs sold up front RECs sold on an ongoing basis Retained for nonprofit |
| Federal Tax Credits and Deductions | <ul style="list-style-type: none"> Neither the commercial ITC nor the residential renewable energy tax credit is available to participants If the utility has a tax appetite, it may use the commercial ITC Normalization accounting rules will impact the value of the ITC for regulated utilities | <ul style="list-style-type: none"> SPE can pass benefits of Commercial ITC through to participants Only of use if participants have a tax appetite for passive income offsets | <ul style="list-style-type: none"> Project donors can deduct the donation on their taxes Nonprofits are not eligible for federal tax credits |
| Accelerated Depreciation (MACRS) | <ul style="list-style-type: none"> Not available to participants An investor-owned utility may be able to use MACRS, provided they own the system To qualify for MACRS, regulated utilities must use normalization accounting | <ul style="list-style-type: none"> SPE passes depreciation benefits through to the participants, subject to passive activity rules | <ul style="list-style-type: none"> Not useful to nonprofits |
| State and Utility Rebates and Incentives | <ul style="list-style-type: none"> Utility may qualify and use rebates/incentives to buy down the project costs; benefits are indirectly passed on to participants | <ul style="list-style-type: none"> SPE may qualify and use rebates/incentives to buy down the project costs or pass through to participants | <ul style="list-style-type: none"> Nonprofit may qualify and use rebates/incentives to buy down the project costs |

Emerging State Policies to Support Community Shared Solar

Over the last several years, a number of states have expanded their successful on-site solar programs by instituting policies that encourage innovative community shared solar programs. While each of these state programs varies considerably, a number of themes are emerging. For example, all of the current state-level programs require the solar array and the group members to be located within the same utility service territory. Other requirements to participate in “group” ownership benefits vary, but may include a cap on system size, proof of partial ownership, or limits on the type of ratepayers that can participate. Billing methods also vary; some programs offer one aggregate bill for the entire group, whereas others assign a pro-rated monetary credit on each member’s bill.

State-level community shared solar policies can be grouped based on how the benefits of community shared solar are distributed. In general, there are three broad categories: group billing, virtual net metering, and joint ownership.

LOCAL FLAVOR

In Vermont, two well-known residents, Ben and Jerry, (the ice cream guys) decided to share the benefits of one solar installation on a shared electric bill. They hired AllEarthRenewables to build a solar array on Ben’s guesthouse and informed their electric utility that the output of the installation should be netted against the combined consumption of both Ben’s and Jerry’s homes, in one bill. The solar panels offset all of the energy consumption at the guesthouse, and the remainder of the energy is applied toward offsetting the combined use of Ben and Jerry’s homes. They get one electric bill, and split the offset 50/50. They don’t have a formal contract, but it works because they are good pals with a long history of working together.

GROUP BILLING

Group billing arrangements operate much like master metering in a multi-unit residential or commercial building. Under master metering, a landlord receives a single electric bill for all electricity usage within a building, including tenant load. The landlord then determines how to assign energy costs to individual tenants taking into account tenant leases. Group billing for community shared solar projects works in a similar way, except that participants do not need to reside in a single building. First, a utility produces a group bill showing all participants’ energy consumption and relevant charges. Then, output from a shared PV system is netted against the group bill. The remaining costs are allocated to participants according to an agreement between the participants. Under this framework, group billing allows multiple participants to receive net metering credits from a single renewable energy facility.

A drawback to group billing is that a customer representative must serve as a point of contact and an intermediary between a group of participants and a utility. The customer representative takes on tasks, such as billing and dispute resolution, that expose the representative to administrative burdens. This framework may also raise concerns regarding the creditworthiness of a customer representative.

Vermont has expanded its net metering program to allow group billing for shared systems and this expansion has proven very popular.¹¹ In the service territories of Vermont's two largest utilities, Green Mountain Power and Central Vermont Public Service territory, over 22 groups have formed to share in the output of a renewable energy system with system sizes ranging from 1.5 to 199 kW. Vermont's program is not limited to solar energy systems. Any eligible renewable energy resource within Vermont's net metering program, including wind, small hydro, and biomethane can be installed under a group billing arrangement. In 2011, Vermont doubled the capacity limit for net metered systems, including group net metered systems, to 500 kW.¹²

VIRTUAL NET METERING

Community shared renewables programs in Colorado, Delaware, Massachusetts, and California rely on virtual net metering to distribute economic benefits from a shared solar energy system. Similar to group billing, virtual net metering allows net metering credits generated by a single renewable system to offset load at multiple retail electric accounts within a utility's service territory. As with traditional net metering, credits appear on each individual customer's bill.

Colorado has implemented one of the most publicized and recognized community shared solar programs using virtual net metering, which it calls Community Solar Gardens. Colorado has allowed jointly owned systems (discussed below) for quite some time, although it has not formulated detailed program rules to support joint ownership. In 2010, Colorado authorized the Community Solar Gardens program under a subscription-based model.¹³ In 2011, the Colorado Public Utilities Commission implemented rules governing the program.¹⁴ The rules allow for substantial flexibility with regard to the structure of the Community Solar Garden entity. Regarding the virtual net metering component, the Community Solar Gardens program values a solar garden subscriber's bill credit according to the subscriber's "total aggregate retail rate," less a "reasonable charge" to account for the delivery, integration, and administration costs of the program. Stakeholders continue to discuss the calculation of the bill credit in another docket at the Commission (11A-418E) as part of the Commission's approval of Xcel Energy's 2012 Renewable Energy Standard Compliance Plan.

Unlike Colorado's program, Delaware's community shared program is open to any eligible renewable energy resource—solar, wind, ocean, geothermal, biogas, and small hydro—within Delaware's net metering program. Delaware passed the bill permitting the program in July 2010 and the Delaware Public

¹¹ See Vermont Public Service Board Rule 5.100, available at: www.psb.vermont.gov/sites/psb/files/rules/OfficialAdoptedRules/5100adoptedrule_2.pdf.

¹² Vermont Energy Act of 2011, H. 56, 30 V.S.A. 219a(a)(3)(A), available at: www.leg.state.vt.us/docs/2012/bills/Passed/H-056.pdf.

¹³ See Colorado House Bill 10-1342, available at: www.leg.state.co.us/.

¹⁴ 4 C.C.R. 723-3 Rule 3664, available at: www.dora.state.co.us/puc/rules/723-3.pdf.

Service Commission followed up with rules in June 2011.¹⁵ Delaware's community shared renewables program allows community systems to be behind a customer's meter or off site. The value of the virtual net metering credit depends on whether or not a customer is on the same distribution feeder as the facility. If the customer is on the same distribution feeder as the facility, the credit is essentially valued at the customer's full retail rate. If it is not, the credit is essentially a generation-only credit. In other respects, Delaware's program structure is identical to the Community Renewables Model Program Rules, developed by the Interstate Renewable Energy Council (Appendix B).

Under Massachusetts' virtual net metering program, there are two avenues of participation:

1. A "neighborhood net metering" program allows neighborhood facilities to serve the energy needs of at least ten residential customers in a neighborhood group.
2. An alternative program allows participating net metered systems to allocate monthly excess generation to one or more customers within a distribution company's service territory.

Under Massachusetts' neighborhood net metering program, a renewable energy system must be behind a participating customer's meter. However, only a minimal amount of load needs to be present on site. In fact, even "parasitic" load needed to run a facility is allowed to count toward meeting on-site load requirements. Kilowatt-hour credits generated by a renewable energy system are allocated to participating customer accounts by the participating utility. Utilities are not required to include the distribution component of participants' applicable retail rate within neighborhood net metering credits.

Under an alternative program, and contrasting what is typically seen in net metering, Massachusetts allows any customer with a net-metered system to allocate credits associated with monthly excess generation from a system to other customers of the same distribution company. Customers designated by the owner of the net-metered system receive a net metering credit that reflects the host customer's fully bundled retail rate. The net metering credit offered to designated customers is calculated using the retail rate of the host customer (cents per kWh), multiplied by the allocation of kWh for the designated customer. While on-site load must be present where the net-metered system is installed, as with neighborhood net metering rules, parasitic load qualifies as on-site load. This alternative program is very flexible in who can participate and offers a more financially attractive net metering credit than the neighborhood net metering program.

¹⁵ S.B. 267, An Act to Amend Title 26 of the Delaware Code Relating to Net Energy Metering, July, 2010. www.legis.delaware.gov/LIS/LIS145.NSF/db0bad0e2af0bf31852568a5005f0f58/f17ba623105f222b8525774500765d6e?OpenDocument; DE PSC, Order No. 7984, June, 2011. www.depsec.delaware.gov/orders/7984.pdf.

The California Public Utilities Commission recently expanded the availability of virtual net metering in California to all multitenant buildings in the state. Up until this expansion, under California's Multifamily Affordable Solar Housing (MASH) program, residents of multifamily, low-income complexes, such as the SDCHC townhomes in San Diego, have been allowed to receive bill credits from a single on-site PV system.¹⁶ The building owner allocates net metering credits to individual tenants and a building's common load. Virtual net metering allows the building owner to avoid building a separate solar energy system with a separate inverter for each tenant, which saves considerable funds. According to a program report issued in August 2011, 325 projects are eligible for participation in the MASH program representing over 20 MW of capacity.¹⁷ In July 2011, the Commission expanded the types of customers eligible for virtual net metering to tenants in any multi-tenant or multi-meter property—not just affordable housing properties. In addition, the Commission allowed for virtual net metering credits to be shared throughout an entire affordable housing property, as long as that property is on contiguous parcels and under common ownership.¹⁸ This change opens virtual net metering to a much broader group of customers and signals a significant expansion in California's net metering program.

SOLAR FOR ALL

The nonprofit San Diego Community Housing Corporation (SDCHC) partnered with a third party, Everyday Energy, to put a 20-kW system on its Hacienda Townhomes property. Everyday Energy installed and owns the system on the 52-unit apartment building, taking advantage of the tax benefits that are not available to the nonprofit Housing Corp. SDCHC signed a 20-year solar services agreement with Everyday Energy under which they will pay a flat fee to cover maintenance and electric services from the installation. An electric meter measures the energy flow directly to the grid, and the utility (San Diego Gas & Electric) credits the tenants and common areas as directed in the Virtual Net Metering agreement. Residents will save a projected 30% on their electric bills.

¹⁶ See Multifamily Affordable Solar Housing Semiannual Report, available at: www.cpuc.ca.gov/NR/rdonlyres/B3644285-F573-428F-AA0A-A2497A30401B/0/MASHSemiAnnualReport.pdf.

¹⁷ See California Solar Initiative Low-Income Solar Program Evaluation, available at: www.cpuc.ca.gov/NR/rdonlyres/13AAEDF8-BB7D-4FBD-AC05-3FC2B9CBF746/0/CSISASH_MASHImpact_and_Cost_Benefit_Report.pdf.

¹⁸ See California Solar Initiative Phase One Modifications, Decision 11-07-031, Rulemaking 10-05-004, available at: www.docs.cpuc.ca.gov/word_pdf/FINAL_DECISION/139683.pdf.

JOINT OWNERSHIP

Following the precedent set by successful community shared wind programs, a few states are exploring options for distributing the benefits of participating in a community shared renewable energy program through frameworks similar to wholesale power sale arrangements. The community shared wind movement was motivated, in part, by a desire to promote rural development through expanded citizen investment opportunities. By allowing citizens to “piggyback” their projects onto larger wind projects, communities could benefit from economies of scale. This history led to a primary difference between the emergence of community shared solar and wind: Community shared wind uses a technology that began as utility-scale application and moved into smaller scale applications. In contrast, community shared solar uses a technology that began with on-site systems and applies it to larger solutions.

Maine’s Community-Based Renewable Energy Pilot Program law¹⁹ allows “locally owned electricity generating facilities” with at least 51% ownership by “qualifying local owners” to elect one of two incentive mechanisms. Under the first, qualifying local owners can enter into a long-term contract to sell output from a facility to a transmission and distribution utility. The contract price for energy may vary over the course of a year, but the average price, weighted based on the expected output of a facility, may not exceed \$0.10 per kWh. This price only includes the value of a power sale and does not include a purchase of RECs. A significant downside of this approach is that a payment for power sales to a wholesale or retail purchaser results in taxable income at a federal level and possibly at a state level. Depending on the tax bracket a particular customer faces, the taxation of payments for power sales can significantly decrease the size of benefits available to participating customers.

Under Maine’s second incentive option, generation is virtually net metered to joint owners in proportion to the owners’ stake in a system. For example, a 50% owner would receive 50% of the net metering credits generated by a system through virtual net metering.

Washington’s community solar rules allow for ownership of community shared solar projects up to 75 kW that are either jointly owned by individuals, businesses, and nonprofits or owned by a utility and voluntarily funded by the utility’s ratepayers. Participants receive production incentives based on their proportional share of the output of a project. In addition, in the case of utility-owned projects, participants receive the value of the electricity. Washington’s community solar incentives are among the most generous in the world if projects use inverters and modules made in Washington. For such systems, the production incentive is set at \$1.08 per kWh through June 2020, but is subject to dilution if incentive payments exceed 0.5% of utility gross revenue in a given year.

¹⁹ See An Act To Establish the Community-based Renewable Energy Pilot Program, available at: www.mainelegislature.org/legis/bills/bills_124th/chapters/PUBLIC329.asp.

Tax Policies and Incentives

Federal tax incentives for solar systems are especially valuable and tend to be a primary driver in the design of project structures and financing strategies. This section introduces some state and federal tax policies that impact community shared solar projects, as well as other federal financial incentives in the form of grants, bonds, and loans. For details on tax issues specific to each ownership model, see Section 2, Community Shared Solar Project Models.

Receiving any kind of financial benefit or loss from participation in a community solar project could have tax consequences for the participant. In addition, tax incentives can interact in complicated ways, and project organizers should seek professional advice before including tax incentives in a project plan.

Federal tax incentives provide significant support to solar projects, offsetting approximately 56% of the installed cost of a commercially owned PV system and 30% of a residential installation.²⁰ However, community shared solar project designers should be aware that federal tax incentives were developed with either individually owned residential installations or commercially owned projects in mind. Community-scale projects do not fit squarely into either category, which makes it challenging to design projects that can make use of either the residential or commercial tax credits. For example, the residential Renewable Energy Tax Credit is not available to community shared solar projects because it only applies to taxpayers who install a solar system on their own residences.

Proposed legislation at the federal level could make it easier to use tax credits for community shared solar. Senator Mark Udall (CO) proposed the SUN Act 2011, which would allow individuals to claim the residential tax credit when purchasing solar panels in a community shared solar project. For more information and updates, see Senator Udall's website: www.markudall.senate.gov/.

Tax incentives vary widely, depending on the status of the project sponsor. For example, investor-owned utilities are eligible for tax incentives that are unavailable to municipal utilities or electric cooperatives. Nonprofit projects cannot use solar tax benefits, but donations to them are tax-deductible. Special Purpose Entity business projects have the greatest flexibility for taking advantage of federal tax incentives. As a result, a host of project business structures—some of which are very complicated and require significant legal expertise—have been created to maximize federal tax incentives. These structures are discussed in greater detail in Section 2, Community Shared Solar Project Models.

²⁰ Financing Non-Residential Photovoltaic Projects: Options and Implications, Lawrence Berkeley National Laboratory, Jan 2009. <http://eetd.lbl.gov/ea/emp/reports/lbnl-1410e.pdf>.

The following federal incentives may be applicable to a community shared solar installation, depending on the details of each project. Additional detail on each of these federal incentives can be found on the Database of State Incentives for Renewables & Efficiency (DSIRE) located at www.dsireusa.org/.

BUSINESS ENERGY INVESTMENT TAX CREDIT (“COMMERCIAL ITC”)

The Commercial ITC is one of the most valuable incentives available for solar energy. The Commercial ITC allows commercial, industrial, and non-public utility owners of PV systems to take a one-time tax credit equivalent to 30% of qualified installed costs. Under the Commercial ITC, the owner of the PV system for tax purposes can be different from the owner of the host property. Therefore, the use of a third party to finance systems has emerged as a leading trend in the solar industry. The tax credit can be used to offset regular tax and alternative minimum tax (AMT). The Commercial ITC is currently available for systems that are placed in service before the end of 2016. There is no cap on the amount of the Commercial ITC. Unused credits can be carried forward for up to 20 years. Commercial entities will likely pay income taxes on any up-front rebate or cash incentive the entities receive. In this case, entities not have to reduce the “cost basis” by the amount of the rebate before calculating the Commercial ITC. After January 1, 2017, owners of qualifying solar facilities will be eligible to claim a 10% ITC.

Eligibility and timing issues are complex. For a discussion of these issues, as well as the basis reduction and allocation issues, see the DSIRE website: www.dsireusa.org/solar/incentives.

The American Recovery and Reinvestment Act of 2009 created a cash grant alternative to the Commercial ITC. The owner of a qualified solar facility eligible for the ITC could instead elect to receive a grant for approximately the same value. This was especially valuable to taxpaying entities that could not take full advantage of the ITC due to lack of tax appetite. The Section 1603 Treasury Grant expired in 2011.

The Commercial ITC is available to private utilities and SPEs owing federal taxes.

MODIFIED ACCELERATED COST RECOVERY SYSTEM (MACRS)

In addition to grants and tax credits, federal tax policy allows businesses (but not individuals) to depreciate their investments in solar projects on an accelerated basis. “Depreciation” refers to the concept that over time, assets such as equipment lose value and will eventually need to be replaced. To account for this reduction in asset value, businesses record an expense over a set period of time. For qualified solar projects, this period is five years. Subject to certain restrictions, an owner with other sources of passive income can offset that income with losses generated by accelerated depreciation deductions under the modified accelerated cost recovery system (MACRS).

For projects placed in service by the end of 2012, bonus depreciation is available. This allows the owner to deduct 50% of the adjusted basis of an eligible solar system in the first year. For projects taking the ITC, the depreciable basis must be reduced by half the value of the ITC. For example, if the ITC equals 30% of project costs, the depreciable basis is reduced by 15%.

The IRS publishes schedules that detail how different asset classes should be depreciated. For additional information, please consult IRS Publication #946. A more detailed discussion of using tax benefits is provided in Section 2, in the discussion of the Special Purpose Entity ownership model.

TAX CREDIT BONDS

Qualified tax credit bonds are a mechanism to lower the cost of debt financing for non-taxpaying entities such as government agencies, municipal utilities and electric cooperatives. Two tax credit bonds in particular—Clean Renewable Energy Bonds (CREBs) and Qualified Energy Conservation Bonds (QECBs)—were created to finance renewable energy projects and programs. All available tax credits have been awarded and no additional funding is expected. However, project organizers may find that some awardees have unallocated funds that might be used for a community shared solar project.

CLEAN RENEWABLE ENERGY BONDS (CREBS):

CREBs are tax credit bonds that can be used by government entities, municipal utilities and electric cooperatives to finance solar installations and other renewable energy projects. Ashland, Oregon used the proceeds from a CREB to partially finance its Solar Pioneers II community shared solar project in 2008.

QUALIFIED ENERGY CONSERVATION BONDS (QECBS):

QECBs are tax credit bonds similar to CREBs. The advantage of QECBs is that in addition to using them to finance renewable energy projects, QECBs can also be issued for energy efficiency projects and green community programs, among other things. In addition, up to 30% of a QECB allocation can be used for private sector activities. To date, the authors of this Guide are unaware of a community shared solar project that has used QECBs.

SOLARSHARE COMMUNITY SOLAR BONDS

In Ontario, Canada, nonprofit cooperative SolarShare has introduced a new way to engage communities in solar financing. Using their co-op model, SolarShare allows Ontario residents and businesses to benefit from investing in bonds backed by large commercial and smaller rural solar projects. Co-op membership costs \$40, and each member is able to invest \$1000 in bonds. Bond investments are used to finance fully completed projects, which shields bondholders from pre-development and construction risks. Each project is backed with a 20-year PPA with Ontario Power Authority with fixed pricing for the power produced, ensuring a steady and long-term revenue stream. Bond repayments are made semiannually with 5% interest, and are fully repayable after completion of a five-year term. Currently, the SolarShare project portfolio consists of 18 solar installations. For more information, see www.solarbonds.ca.

FEDERAL GRANTS

While not necessarily a source of long-term funding, federal grants can be used to reduce the cost of a community shared solar project. Such grants could lower the cost of the PV system installation or subsidize the cost of participation in a community shared solar project. In 2009 and 2010, enhanced funding was provided for State Energy Programs and Energy Efficiency and Conservation Block Grant Programs (EECBG). For rural communities, there may be USDA grants and loans available through the Rural Energy for America Program (REAP).

Examples of projects benefiting from federal grant funding include Seattle City Light's Community Solar Initiative funded under DOE's Solar Energy Technologies Program, the second phase of St. George, Utah's SunSmart Community Solar program using Recovery Act funding, and APS's Community Power Project using a High Penetration Solar Deployment grant from the DOE's SunShot Initiative.



Photo from St. George SunSmart Program with temporary signs

STATE AND LOCAL TAX CONSIDERATIONS

Tax issues vary considerably from state to state and among localities. However, there are several common issues that project developers should consider when planning and structuring their projects. Taxes in any of the categories below could impose a significant cost on the project. Project developers should determine which taxes will apply to their project and who will be responsible for the cost. Taxation issues can become especially complex when a project involves both taxable and tax-exempt entities.

Considerations include the following:

Net Income Tax: Most states impose a net income tax modeled on the federal system. Thus, any revenue generated by a project will likely be subject to both state and federal income taxes. Some states offer investment tax credits that can be taken in addition to the federal Commercial ITC or other income tax credits and deductions for renewable energy. In Utah, for example, the State's residential income tax credit is available to participants in community shared solar projects owned by qualifying entities (municipalities, counties, etc.), such as the SunSmart program in St. George.²¹

²¹ See Utah Code 59-7-614.3, available at: http://www.le.state.ut.us/~code/TITLE59/htm/59_07_061403.htm.

Sales and Use Taxes: Most states impose a sales tax on sales of tangible personal property. Some states also impose a use tax on sales of certain services or a transfer tax on sales of real property. For solar facilities, most state sales taxes will apply to the purchase of solar equipment, but usually not to the sale and use of electricity. Many states offer sales tax incentives for solar facilities in the form of reduced rates, exemptions or rebates.

Property Tax: Nearly all states impose a property tax that is assessed annually, based on the value of real property. Most states also tax tangible personal property that is used for business purposes. For property tax purposes, assessment values might be determined by a central state authority or by a local assessor's office. As with sales taxes, many states offer property tax incentives for solar facilities in the form of exemptions or special assessments.

Excise Taxes: Some states and municipalities impose excise taxes that could potentially apply to a solar facility. An excise tax is special tax imposed on particular goods or activities, such as a gasoline tax or gambling tax.

INTERACTIONS AMONG STATE AND FEDERAL INCENTIVES

The Commercial ITC is valued at 30% of the tax basis of the solar facility. The “basis” typically means the cost of buying and installing the facility. But certain factors can reduce the basis from which the 30% is taken. Other financial incentives (such as state rebates and grants) will reduce the taxpayer’s basis for calculating the ITC, unless the incentives are considered taxable income to the taxpayer. If the incentive is considered taxable income, it does not need to be subtracted from the cost basis. These rules prevent “double-dipping” that would come from receiving both a tax-free incentive and a tax credit.



Photo from SMUD's SolarShares Installation

Securities Compliance

Community shared solar projects can be structured to create ownership models that monetize financial incentives, capitalize on favorable government and utility policies, and expand ownership opportunities. When devising a creative business model, though, the project organizer should consider whether the model involves the issuance of securities, and, if so, what federal and state securities laws may be involved. A full review of state and federal securities requirements related to small offerings is beyond the scope of this guide, but this discussion is intended to offer a foundation for project organizers to research the issue.

Any entity, no matter how small, that attempts to raise capital may be deemed to be issuing securities if it offers or sells stock, membership units, partnership interests or other types of participation interests. If the project is deemed to be offering a security, the project will incur substantially more time and expense in ensuring that it complies with the applicable state and federal securities laws. The consequences of failing to comply can be severe and the project, its directors, officers, and employees involved in the offer and sale of the security may be subject to liability for such failure.

The securities laws are intended to protect individuals who provide financial support for a project with an expectation to receive profits from the efforts of others, or with the expectation to receive a valuable benefit when the investor does not have control over the managerial decisions of the venture. Compliance with securities laws requires registering the offering with the Securities Exchange Commission (SEC) and the applicable state regulatory agency or finding a specifically-defined state and federal exemption from the registration requirements. Most states' securities laws have parallels to the federal requirements, but many states require additional filings, even if their exemptions are similar in substance to the federal exemptions.

Registration can be a time-consuming and expensive process that includes filing a formal registration statement with the SEC and preparing extensive disclosure documents called an "offering memorandum." However, even with a registration exemption, filings and the preparation of offering documents may still be required, depending on the participants in the project. Many projects will not be able to support the up-front costs of securities compliance.

The definitions of a "security" under federal and state laws include a long list of financial instruments and agreements. Federal and various state definitions are not identical, but commonly include, any note, stock, bond, evidence of indebtedness, certificate of interest or participation in any profit sharing agreement, or investment contract.

A common exemption used by smaller-scale non-utility-owned projects is the private placement exemption, which allows a company to raise investment capital from a certain number of investors. All private placement exemptions limit the number of individuals or entities to whom the securities can be offered. The level of the disclosure requirements is determined according to the net worth or income level of the investor and/or the relationship of the investor to the entity issuing the security (for example, if the investor is acting as the executive officer or director of the entity).

SOLAR CROWDFUNDING

Crowdfunding is a cooperative financing approach that occurs when many small investments are aggregated to collectively finance a single initiative. In November 2011, the House of Representatives overwhelmingly passed the Entrepreneur Access to Capital Act (HR 2930), which would amend the current regulatory landscape by allowing startups to offer and sell securities through crowdfunding and social networking websites. This Act would allow groups of individuals to collectively invest in and own solar systems without having to submit to the SEC's lengthy registration and reporting requirements. One example of solar crowdfunding in action can be found in Solar Mosaic (www.solarmosaic.com), a Berkeley-based company that connects individual investors with solar projects hosted on community sites. The site host leases the solar system from the investors, and investors are paid back over time by monthly lease payments (and other available incentives) processed through Solar Mosaic.

The most relevant test for analyzing whether a contract or an investment is a security under federal law is the “Investment Contract Test.” Many states have additional criteria for determining the existence of a security, but the basic components are similar to the Investment Contract Test. A security exists if (1) a person invests money or property, (2) in a common enterprise (i.e., an enterprise in which the benefit to the investor is dependent on the participation of others), (3) with an expectation of profits or other valuable benefits, (4) solely or primarily from the efforts of someone other than the person providing the money or, in other words, without the right to exercise practical and actual control over the managerial decisions of the enterprise.

It follows that the terminology used to describe participation in a community shared solar project should avoid references to “shares” or “stock,” as those are the classic terms used to describe securities issued by a corporation and might create an expectation of profits and other rights customarily associated with stock or shares. All marketing and promotional materials used for the project should refrain from making any statements suggesting that an investment or other opportunity to make money is being offered to participants. However, regardless of the label applied by the project sponsors, there is always some risk that the securities regulators or a court will deem the participation to be a security.

In a utility-owned model, in which the utility enters into a contract or arrangement with its retail customer to provide electricity generated by a project, there is a risk that the contract or arrangement could be deemed a security if the customer is required to finance a part of the project and if the customer has an expectation of getting some kind of profit over and above the value of the electricity it receives.

To the extent that a retail customer agrees to purchase solar power from a utility and to pay a specified, generally applicable rate for the solar power used and the customer is billed periodically based on recent past use, just like the arrangements for purchasing other power, it is less likely that the customer would be viewed as making an investment of money in the project. In contrast, if the customer is required to buy a panel or make payments in excess of the retail market rate for the solar power, it is more likely that the customer will be viewed as making an investment of money. Therefore, the utility must take care to ensure that the rate charged for the solar power does not contain a charge for the customer's acquisition of an interest in the project or a panel. In addition, a payment is more likely to be an investment if the customer pays an up-front amount in return for an undetermined amount of solar power over a period of time that may also be undetermined.

In order to reduce the likelihood that the contract is a security, payments made under the contract could be: (1) applicable to a specific, relatively short period of time (e.g., monthly, quarterly); (2) due after solar power is provided; and (3) according to a specified, generally applicable market rate per unit that does not include a component for the purchase by the customer of an interest in the project. To the extent possible, the contract, pricing and billing arrangements, and related materials should resemble a customary consumer purchase of non-solar electricity and should not be marketed to emphasize that the amount of solar power sold to customers depends on the participation of other customers or the success of the utility in obtaining subscribing customers or in operating the project. The corollary is that customer dollars cannot be used up front to finance the project.

Getting Started

There are many legal, financial, and project design considerations to address before launching a successful community shared solar project. This section outlines a general process to help community organizers and project developers move concepts to completion efficiently. In addition to consulting this guide, project developers are encouraged to consult The Resource

Innovation Group's online Community Solar Tool for help developing community-owned projects (see <http://communitysolar.dyndns.org>). Although this decision support tool was developed for the University of Oregon and contains state-specific information, it poses questions relevant to all community shared solar projects and is undergoing customization on a state-by-state basis as funding permits.

It took us over two years to develop our project structure and only two months to find our members. –David Brosch, University Park Community Solar

Like many construction projects, community shared solar project development projects can be broken down into phases including: **feasibility, project development, construction, operations and maintenance, and decommissioning**. It is important to note that phases can often overlap and are not necessarily completed in the order listed.

FEASIBILITY ANALYSIS PHASE

The first step is to conduct a comprehensive feasibility analysis. This analysis should determine if there is a good project site with an adequate solar resource, identify a project team and supporters, prepare an initial financing plan, confirm absence of major obstacles, and gauge the local community and utility's receptivity to a project.

PROJECT DEVELOPMENT PHASE

If the feasibility analysis is positive, the project can move to the development phase. At this point, it may be helpful to document the project details in a business plan (which may be required to secure financing) or project charter.

Site Selection and Resource Evaluation

Proper siting includes a site analysis for any potential shading, as well as determining optimal tilt of the modules, location of inverters and other system components, wiring distances, foundation or structural support, and security or public access requirements. Project owners must also obtain exclusive rights to build the solar project if they are not the property owners. This is usually negotiated through a land lease agreement with the property owner and site host. Careful consideration should be given to site selection to minimize the environmental footprint and harmonize with existing land uses.

Understanding the amount of solar resource and the effects of climate and latitude on solar energy production is critical to finalizing the system location and obtaining estimates for financial modeling. Typically, project organizers will rely on solar resource maps or solar energy production calculators, such as PV Watts or RETScreen, to get an initial assessment of the solar resource.

Financing

To obtain financing for a project, a financial pro forma must be created to model the proposed system's costs, revenue (from the production estimates), and the interaction of incentives and financing. This document reveals the financial viability of the project, and is required for any project proposal. A very basic sample budget is provided after this discussion to suggest the broad categories of expenses and income that should be considered.

Ownership Structure

The ownership structure of the project will need to be finalized and the business model chosen. The project owner(s) may also need to consult legal and tax professionals to ensure the entity is properly structured to minimize risks to the site host, investors, and participants.

Permitting and Environmental Review

The permitting process for a community shared solar project depends on the location, size, and type of project. At minimum, the project will require an electrical permit. A building permit is often necessary, especially if the PV array is a stand-alone structure. The best course of action is to check with the local planning department early on, as the permit and environmental compliance requirements may influence the design and siting of the project.

Interconnection and Power Arrangement

The local utility will be involved in interconnecting the system to the electric grid. Utilities generally follow a standard interconnection process and have agreements that must be completed prior to construction. In addition to connecting the system to the distribution system, the agreement must account for arrangements for transferring the power "benefits." This is usually negotiated through a power sales agreement between the project owner and the utility or host in the form of a PPA, SSA, net metering, or other contractual arrangement.

Procurement and Contracting

For this type of project, it is common to issue a request for proposals (RFP). The RFP can be fairly broad, allowing solar professionals to offer their recommended system design and specifications, or fairly specific, to compare bids on pre-determined project specifications. After identifying solar professionals or receiving proposals in response to an RFP, it is important for project owners to evaluate them as they would evaluate other types of installers and contractors. Professional credentials are one indication of a PV installer's knowledge and qualifications. The North American Board of Certified Energy Practitioners (NABCEP) offers a well-respected voluntary certification program for PV installers.

CONSTRUCTION PHASE

Choosing a solar contractor and construction manager is an important decision. In recent years, it has become easier to locate and contact those in the solar field. Tools available to help identify local professionals include www.findsolar.com and the national Solar Energy Industries Association (*SEIA.org*).

OPERATIONS AND MAINTENANCE PHASE

Operating a community shared solar project requires ongoing record keeping and timely filing of paperwork. Among other things, a project administrator may have to file tax forms and business license renewals, distribute incentive payments, sell RECs, and keep the insurance, lease and other payments up to date.

Maintenance, though fairly simple for PV systems, is essential to long-term management of a community shared solar system. Modules may need to be cleaned, but more importantly, meters and inverters need to be monitored to ensure that the system is operating as expected. Various monitoring systems are available, offering options from instant email alerts when an inverter malfunctions to online daily performance monitoring. A good monitoring system enables a system manager to minimize down time, protecting the participants' investment. The project budget should include funds for monitoring, ongoing maintenance costs, and parts replacement. In particular, it is helpful to include a reserve fund for future inverter replacement.

DECOMMISSIONING OR EXIT STRATEGY

Although solar panels could easily last 25 years or longer, every project must consider the ultimate disposition of the solar installation. Whether the plan is to sell the project to the host, renew a lease, or remove the panels, a solid project plan has defined the options for exiting from the community shared solar project and potentially restoring the site to its original condition.

COMMUNITY SHARED SOLAR PROJECT: SAMPLE BUDGET

The following budget template provides sample categories for a typical community shared solar project budget.

Note that the budget does not include the cost of labor to organize and develop the project, which could amount to a one or more years of full-time work. Depending on how the project is developed (by a utility, an SPE or a nonprofit), the developer role could be volunteer or paid.

| SITE DEVELOPMENT COSTS | |
|--|-----------|
| Design | \$ |
| Permits | \$ |
| Electrical/Meter Upgrades | \$ |
| Fencing/Security | \$ |
| Educational Kiosk | \$ |
| PROJECT DEVELOPMENT COSTS | |
| Consulting | \$ |
| Legal | \$ |
| RFP | \$ |
| SYSTEM COSTS | |
| PV Panels | \$ |
| Inverters | \$ |
| Ground Mount/Racking System | \$ |
| Balance of System Costs | \$ |
| TOTAL INSTALLED COST | \$ |
| MINUS GRANTS AND REBATES | |
| 1603 Treasury Grant | \$ |
| Commercial ITC | \$ |
| Other Grants and Rebates | \$ |
| NET INSTALLED COST | \$ |
| ANNUAL OPERATING EXPENSES | |
| Bookkeeping | \$ |
| Accounting | \$ |
| Legal | \$ |
| System Monitoring | \$ |
| Insurance | \$ |
| Lease | \$ |
| Sinking Fund: Inverter Replacement | \$ |
| Taxes | \$ |
| TOTAL ANNUAL OPERATING EXPENSES | \$ |
| ANNUAL INCOME | |
| Sale of Electricity | \$ |
| Sale of RECs | \$ |
| Production Incentive, if Available | \$ |

COMMUNITY SHARED SOLAR PROJECT DEVELOPMENT WORKSHEET

The following worksheet suggests many steps involved in organizing a project, but it is not comprehensive. Project organizers will need to create their own list of steps, based on their unique circumstances.

| FEASIBILITY ANALYSIS | |
|---|--|
| Assess site for solar access | |
| Secure control of property and/or site | |
| Evaluate the solar resource | |
| Understand participant motivation | |
| Conduct market research/focus groups/surveys | |
| Investigate interconnection options | |
| Research financing mechanisms | |
| Gauge community receptivity and support | |
| PROJECT DEVELOPMENT | |
| Prepare a financial plan | |
| Determine ownership structure | |
| Develop operating agreement between host and project owner (if different) | |
| Develop participant agreement | |
| Obtain legal and tax consultation for contracts | |
| Define system and other technical specifications | |
| Execute agreement for the sale of power | |
| Complete permitting and environmental compliance requirements | |
| Execute interconnection agreement | |
| Conduct an RFP for design/build | |
| CONSTRUCTION | |
| Prepare the site for construction: grading, road improvements, other | |
| Dig trenches, lay cables, install transformer(s) | |
| Install fencing and site security features | |
| Complete inspections and commissioning | |
| Restore site/surrounding vegetation | |
| Complete paperwork for incentives | |
| OPERATIONS & MAINTENANCE | |
| Schedule and perform panel cleaning | |
| Save for inverter replacement | |
| Monitor system output | |
| Distribute benefits to participants (incentives, tax credits, etc.) | |
| File tax returns, state production incentive paperwork | |
| File annual business license requirements | |

Resources

Communities interested in implementing a solar project will need a more thorough understanding of many of the topics in this guide. The resources listed in this section can provide much of that information.

ORGANIZATIONS AND INSTITUTIONS

- ▶ Through DOE's SunShot Initiative, local governments are working to accelerate the adoption of solar energy technologies for a cleaner, more secure energy future. The website offers case studies, policy updates, and news of solar activities across the country.
www4.eere.energy.gov/solar/sunshot/resource_center/
- ▶ The Database of State Incentives for Renewables and Efficiency (DSIRE) is a comprehensive source of information on state, local, utility, and federal incentives that promote renewable energy and energy efficiency. www.dsireusa.org
- ▶ The Office of Energy Efficiency and Renewable Energy (EERE) works to strengthen the United States' energy security, environmental quality, and economic vitality in public-private partnerships.
www.eere.energy.gov
- ▶ USDA Rural Development provides funding for the development and commercialization of renewable energy technologies in rural communities. The Rural Energy for America Program (REAP) offers grants and loans to help small rural businesses deploy renewable energy projects.
www.rurdev.usda.gov/rd/energy
- ▶ The Bonneville Environmental Foundation (BEF) supports the development of renewable energy and watershed restoration and empowers people to shrink their carbon footprints. BEF's Project Management Group assists with the funding and construction of solar installations in communities throughout the Northwest. www.b-e-f.org
- ▶ Northwest Sustainable Energy for Economic Development (Northwest SEED) empowers community-scale clean energy through targeted technical assistance, education and outreach. Northwest SEED seeks to increase responsible use of clean, renewable energy with maximum local control by providing on-the ground support to communities in planning and implementing clean energy projects. www.nwseed.org/
- ▶ The American Solar Energy Society (ASES) is a nonprofit organization dedicated to increasing the use of solar energy, energy efficiency, and other sustainable technologies in the United States. This website is a good source for information about solar technology and professionals. www.ases.org/

- ▶ The Interstate Renewable Energy Council (IREC) is a nonprofit membership-based organization that provides a national forum in which public and private organizations involved with renewable energy may gather, disseminate and exchange information and engage in cooperative efforts. IREC's website offers the latest policy and practical solutions for tough renewable energy issues. www.irecusa.org/
- ▶ The Vote Solar Initiative works at the state, federal and local level to implement programs and policies that allow strong solar markets to grow. www.votesolar.org/

PUBLICATIONS AND ONLINE TOOLS

The Online Community Solar Tool, University of Oregon and The Resource innovation Group, is an online decision tool that provides a framework for making program development and design decisions. <http://communitysolar.dyndns.org/>

The Community Power Network offers examples and inspiration for community scale projects across the United States. The site includes a wiki to learn and share from other projects. www.communitypowernetwork.com/

Solar Resource Guide: An Overview for Congregations, California Interfaith Power & Light Network, July 2011. <http://interfaithpower.org/resources/solar-resource-guide>

Solar Powering Your Community: A Guide for Local Governments, U.S. Department of Energy (DOE), 2011, includes case studies and lessons learned from Solar America Communities. www.solaramericacommunities.energy.gov/resources/guide_for_local_governments

Community Solar Power: Obstacles and Opportunities, Institute for Local Self-Reliance, September 2010, profiles community shared solar projects, the policies that enabled them, and the barriers that remain. www.ilsr.org/

Financing Non-Residential Photovoltaic Projects: Options and Implications, Lawrence Berkeley National Laboratory, January 2009, examines the role of financial innovation in PV market penetration. This report looks at how financing structures currently being used to support nonresidential PV deployment have emerged as a way to extract the most value from a patchwork of federal and state policy initiatives. <http://eetd.lbl.gov/ea/ems/reports/lbnl-1410e.pdf>

Lex Helius: the Law of Solar Energy (3rd Edition), Stoel Rives, 2009 (See especially, Chapter 7: Financing) www.stoel.com/showarticle.aspx?Show=2886



Photo from Installing Panels on the Church of the Bretheren, University Park, Maryland

Appendix A

BUSINESS FORMATION AND TYPES: SPECIAL PROJECT ENTITIES FOR COMMUNITY SHARED SOLAR PROJECTS

Below are descriptions of the primary business entities suitable for community shared solar projects, the key characteristics, and the major advantages and disadvantages each entity might have. Note: Characteristics commonly attributable to these business entities are discussed, but legal requirements can vary from state to state. State law may also establish default rules that can be changed by agreement among the business owners.

GENERAL PARTNERSHIPS

A general partnership is an association of two or more people working together in a common business enterprise. There are few formal requirements for establishing a partnership and if the partners fail to enter into a written partnership agreement, the default provisions of the state partnership laws will govern the relationship of the partners. However, most partners choose to enter into a written agreement.

Advantages and Disadvantages of Forming as a General Partnership

The key advantage of organizing as a general partnership is the ease of formation and the flexibility in the relationship between the partners. General partnerships require little, if any, paperwork for formation or operation. General partnerships also allow for “pass-through” taxation, instead of the “double” taxation that may be applied to corporations. Additionally, most general partnership interests will not be treated as securities because all the partners contribute equally to the decision making processes and participate in management of the business. General partnerships, however, have several key disadvantages. First, and most important, each partner is individually liable for the partnership debts. This means that if the partnership cannot pay its debts, the creditors can look to the individual partners to satisfy those debts. Because of the lack of limited liability, general partnerships have fallen in popularity as a business entity in recent years. Second, the preparation of a partnership agreement requires the assistance of legal counsel and can be expensive, depending on the complexity of the partners’ relationships. Third, because of the close personal relationships inherent in a general partnership, partnership interests cannot usually be easily transferred or sold. Unless a partnership agreement so provides, it can be challenging to admit new or substitute partners.

Formalities

As discussed above, in theory there are few, if any, formal requirements for forming general partnerships. Similarly, there usually are few requirements for operation, but states usually establish some default rules to govern if partners do not enter their own agreements. For example, in the absence of an agreement otherwise, the default rules usually provide that partners have equal control over businesses and equal share in profits and losses. Partnerships are “pass-through” entities, which means that profits and losses pass through to individual partners. The partnership is not a separate taxpaying entity; rather, the partners report profits and losses from the partnership on their individual tax returns.

LIMITED PARTNERSHIPS

A limited partnership is a business entity comprised of two or more partners who operate or manage a business together. In every limited partnership, there are two types of partners: general partners and limited partners. The general partner usually invests significantly less capital than the limited partner(s) and has a significantly smaller ownership stake. Unlike general partnerships, limited partnerships have the ability to limit both the liability risk and the business involvement of certain partners known as “limited partners,” but the general partner has unlimited liability. This feature is particularly useful for attracting “passive” investment partners who would like to participate in the profits of the business, but not necessarily take on its risks or daily operations.

General partners manage the company’s day-to-day operations and are liable for the debts of the partnership. Because they are responsible for any debts or lawsuits incurred by the partnership, general partners often form limited liability entities, such as corporations or LLCs (both discussed below), to protect themselves from liability.

Limited partners contribute capital to the partnership but do not (and generally cannot) participate in the daily operations of the company. As an added benefit, they are also shielded from company debts and other liabilities. Limited partnerships are a popular choice for individuals who lack the time or expertise to run a business, but would like to share in the profits.

Advantages and Disadvantages of Forming as a Limited Partnership

There are several advantages to the limited partnership entity. The limited partners have limited liability and the limited partnership interests may be able to be sold easily without dissolving the limited partnership as an entity. The option of being a limited partner can attract investors because the investors’ liability is limited. However, with certain exceptions, the limited partners have to refrain from dabbling in management; if a limited partner becomes too involved in the partnership’s daily operations, the limited partner’s status could be altered to that of a general partner, with the attendant loss of limited liability.

While limited partnerships are relatively easy to form, a limited partnership agreement is essential to govern the relationships of the parties, especially the contribution of additional capital and the allocation of profits and losses.

The major disadvantages of the limited partnership are first, that the general partner of a partnership assumes personal liability for the partnership's obligations and debts, and second, the passive nature of the limited partner's involvement carries the likelihood that the limited partnership interest will be deemed to be a security.

Formalities

Most states impose more requirements for forming a limited partnership than for a general partnership, such as filing a certificate of formation.

LIMITED LIABILITY COMPANIES (LLCs)

A limited liability company, usually called an LLC, is a separate and distinct legal entity. An LLC provides the limited liability protection for its owners (known as members) with the pass-through benefits and flexibility of a partnership. The members of an LLC are not personally liable for its debts and liabilities, and also have the benefit of being taxed only once on their profits.

Because LLCs have only been around for about 30 years, smaller banks may be reluctant to extend credit to LLCs. Further, with such a short history, many legal issues that arise in connection with the LLC format have not been settled.

An LLC may be managed by either (1) the members or (2) one or more managers. If a limited liability company is managed by the members, then the owners are directly responsible for running the company (a "member-managed" LLC). A "manager" is a person elected by the members to manage the LLC. In this context, a manager is similar to a director of a corporation. A manager can be, but is not required to be, a member. If an LLC is managed by managers, then its members are not directly responsible for running the company and the passive nature of a non-managing member's involvement makes it likely that the membership interest will be deemed to be a security.

LLC ownership can be expressed in two ways: (1) by percentage; and (2) by membership units, which are similar to shares of stock in a corporation. In either case, ownership usually confers the right to vote and always confers the right to share in profits.

Advantages and Disadvantages of Forming as a Limited Liability Company

The primary advantage of an LLC is that the members are not personally liable for the debts and liabilities of the LLC. The LLC allows individuals to organize with limited liability with fewer restrictions and fewer formalities that were necessary to form "S" or "C" corporations. Also, most limited liability companies can use the cash method of accounting, which means income is not generally taxed until it is received.

An LLC can be taxed either as a “pass-through” entity, like a partnership, or as a regular corporation. A regular corporation pays a corporate tax on its net income (the first tax), and then the stockholders pay income tax on dividends (the second tax) when the corporation distributes profits. With an LLC, the profits “pass through” to the owners, who pay taxes at their individual tax rates. Also, the members can deduct the business’s operating losses against the member’s regular income to the extent permitted by law, which can be helpful if the project anticipates losses in the first few years.

A member may become liable for LLC debts if the member personally guarantees the debts, if personal funds are intermingled with LLC funds, if the LLC has minimal insurance, or if the members do not contribute enough money to the LLC when it is formed. In order to maintain the separate form of the LLC and maintain the liability protection of its members, LLC owners must carefully maintain separate records and keep personal affairs separate from the LLCs business. In particular, the LLCs money should never be intermingled with personal money.

Formalities

Although an LLC requires fewer formalities than a corporation, there is still more paperwork involved in an LLC than a sole proprietorship or partnership. Formation paperwork (which can usually be found on the state’s website) must be filed. An LLC agreement is essential to govern the relationships of the members, the financial arrangements and regulation of the transfer of membership interests, or admission of a new member. In the absence of an LLC agreement, the state’s LLC laws will be applied to the LLC. In general, the name of an LLC must clearly indicate that is an LLC and end with the words “Limited Liability Company,” “LLC,” “L.L.C.,” or “Ltd. Liability Co.”

COOPERATIVE

A cooperative is a legal entity owned and democratically controlled by its members. Members often have a close association with the enterprise as producers or consumers of its products or services, or as its employees.

A consumers’ cooperative is a business owned by its customers. Employees can also generally become members. Members vote on major decisions, and elect the board of directors from a candidate pool of members.

Generally, cooperatives are organized as non-capital stock corporations under state-specific cooperative laws. However, cooperatives may also be unincorporated associations or business corporations such as limited liability companies or partnerships. Cooperatives often share earnings with the membership as dividends, which are divided among the members according to the members’ participation in the enterprise (such as patronage) instead of according to the value of their shares. However, regardless of the amount of a member’s contribution to the co-op, each member has only one vote. For tax purposes, most cooperatives are taxed as separate entities like corporations, though some are tax exempt.

Advantages and Disadvantages of Forming as a Cooperative

The democratic nature of cooperatives might appeal to community shared solar project organizers, based on compatible goals of creating a collaborative and accessible structure. But there are significant limitations to cooperative structures that have made them an unpopular choice for renewable energy projects. For example, the Clean Energy Collective started out as a cooperative and converted to an LLC. Traditionally, members have little input into business operations and in certain states, members have to personally benefit from the co-op's products and services (example: REI). In those states, the co-op structure is not designed to bring in outside investment from individuals that cannot partake of the co-op's products and services. However, in other states, outside investment is permitted and states are beginning to recognize the value of the co-op structure in a community shared solar setting. The costs of the documentation and filing requirements can be high.

Formalities

Usually, cooperatives are formed by filing articles of incorporation with the state. It is important to create a comprehensive set of bylaws to govern the members' relationship and the duties and obligations of the board of directors that will operate the business without significant input from the members. If the co-op is to be operated as a nonprofit entity, the co-op will need to comply with the formalities for forming such an entity.

Note Regarding the Co-op Model

While solar power production co-ops are popular in Europe, they are rare in the United States. One explanation for this discrepancy may be in the differing regulatory regimes. In the U.S., in order to reduce costs from state and federal securities compliance, co-op members receive limited compensation on capital subscribed as a condition of membership. This makes the co-op model less attractive to investors looking for a monetary return.

FOR-PROFIT CORPORATIONS

A corporation is a separate and distinct legal entity, meaning the corporation does business under its own name. A corporation issues/sells voting common stock and (sometimes) preferred stock, which can be voting or non-voting. The owners of the stock are called "stockholders" or "shareholders."

A corporation is managed by a board of directors elected by the shareholders, which is responsible for making major business decisions and overseeing the general affairs of the corporation. The directors appoint officers, who run the day-to-day operations of the corporation. Each corporation must have at least one director. In a small ("close") corporation, the shareholders, the directors and the officers are usually the same three or four people, but in a larger corporation, the shareholders are passive investors and, other than electing directors, have little control over the business operations of the corporation. In this case, the stock issued to passive shareholders can constitute a security.

Directors, officers, and in some cases, the majority shareholders of a corporation owe “duties of loyalty and care” to the corporation. Generally, this means the directors must act in good faith, with reasonable care, and in the best interest of the corporation. Directors, officers and majority shareholders must not use their positions to gain personally from transactions with corporations without complying with certain legal formalities.

Advantages and Disadvantages of Forming as a Corporation

The primary advantage of a corporation is that shareholders are not generally liable for corporate debts, provided shareholders follow their particular states’ rules regarding formation of the corporate and maintenance of the corporate identity. For example, a shareholder may be liable for corporate debts if the shareholder personally guarantees the debts, if personal funds are intermingled with corporate funds, or if the corporation is undercapitalized (i.e., shareholders do not contribute enough money to the corporation when it is formed). Other actions may affect the liability of the shareholders, so anyone considering this business entity should consult a legal professional to ensure that all the proper formalities are followed. The other major disadvantage is that shares in a corporation are deemed to be securities.

A corporation can elect to be taxed either as a “C corporation” or as an “S corporation.” A “C” (or regular) corporation pays a corporate tax on its net income (the first tax), and then the stockholders pay income tax on dividends (the second tax) when the corporation distributes profits. An “S” corporation is like a pass-through entity, but there are limitations on the number of shareholders and who may be a shareholder.

FORMALITIES

A corporation is required to hold annual meetings of shareholders to elect directors. In most jurisdictions, meetings can be held in person or by electronic means that allow all persons to hear the proceedings. It is important to maintain the corporation’s records scrupulously to prevent creditors making claims against the shareholders. The corporation also must obtain a separate tax identification and separate bank account.

The name of a corporation must contain words that identify the company as a limited liability entity, such as “Inc.,” “Ltd.,” or “Corporation.”

NONPROFIT ENTITIES

A nonprofit entity can be a corporation, or other form of business entity that is organized to meet specific tax-exempt purposes. Common examples of nonprofits include: religious, charitable and political organizations, credit unions, and membership clubs such as the Elk’s Club. To qualify for nonprofit status, the entity must be formed to benefit (1) the public, (2) a specific group of individuals, or (3) the membership of the nonprofit. If the nonprofit has members, it may be able to elect directors and approve a sale or merger; however, many smaller nonprofits do not have members, due to the additional paperwork and required formalities. Even without members, donors may participate as advisors, patrons, or contributors, but do not have a vote in the nonprofit’s operations.

Being a nonprofit does not mean the entity cannot make a profit. Nonprofits can sell goods or services for money and can pay competitive salaries to officers and employees. The primary limitation is that any profits generated by the nonprofit's business operations cannot be distributed to members, but must be retained by the nonprofit and used to further its purposes and run its business. Nonprofits are exempt from income, sales, and property taxes and allow donors to deduct their donations from their taxes. Absent misuse of the nonprofit's resources, directors, officers, and members are not liable for the debts of the nonprofit.

Although tax-exempt entities such as nonprofits are not usually eligible for tax credits, the entities may be eligible for other grants or other sources of foundation funding that would not otherwise be available to a for profit entity.

(Note: The discussion pertains to nonprofit entities that pursue solar projects as part of their core missions. For a discussion of how an existing nonprofit may fund a solar project through donations, see Section 2, Community Shared Solar Project Models: Nonprofit Model.)

Advantages and Disadvantages of Forming as a Nonprofit Corporation

The largest advantage of organizing as a nonprofit is that the entity is exempt from paying taxes on its profits, provided the activities of the entity continue to meet the requirements for exemption. It is important to note that simply forming a nonprofit does not automatically qualify the entity for federal and state tax exemption—only an officially recognized nonprofit entity can apply for federal and state tax exemption. This application is often referred to as the 501(c)(3) application, which is the IRS code section most commonly applicable to nonprofits. In fact, there are more than 20 code sections for nonprofit qualification. Another common one is 501(c)(7), which applies to social and recreational clubs.

Formalities

Unless a nonprofit corporation files a 501(c)(3) application with the IRS, it will not be exempt from paying federal income taxes. If the nonprofit's purpose qualifies under 501(c)(3), then a legal professional can help the nonprofit prepare the application. Each state also requires a tax exempt application; however, most states accept the federal tax exempt application in place of the state's tax exemption.

The process for forming the nonprofit can take several months. Generally, the IRS takes three to five months to examine and approve the 501(c)(3) application.

Like any business entity, it is critical to maintain the separate corporate identity of the nonprofit. This entails setting up a separate bank account, maintaining good corporate records, and holding regular board meetings.

SUMMARY TABLE OF BUSINESS TYPES

| Entity Type | Liability for Owners | Taxation | Primary Advantages | Primary Disadvantages |
|---------------------------------------|---|-----------------------------------|--|--|
| General Partnerships | Personal liability | Pass-through | Ease of formation; pass-through taxation | Personal liability of partners |
| Limited Partnerships | Personal liability for general partners; limited liability for limited partners | Pass-through | Pass-through taxation; limited liability for limited partners | No liability shield for general partner |
| Limited Liability Companies | Limited liability | Usually pass-through | Pass-through taxation; fewer formalities to maintain the LLC structure than corporations | Relatively new structure; may be harder to get financing |
| Cooperatives | Limited Liability | Separate tax entity | Cooperative principles | Inflexible Structure |
| “S” Corporations Limited Liability | Limited Liability | Pass-through | Liability shield; ease of investment; ease of transfer of shares in larger, non-close corporations | Limitations on number and identity of members |
| “C” Corporation | Limited Liability | Separate tax entity | Liability shield; ease of investment; ease of transfer of shares in larger non-close corporations | Complexity; double taxation |
| Non-Profit Entities | Limited Liability | Separate tax identity; tax exempt | Tax-exempt; tax deduction for donors | No return for donors; business purposes are limited; no voting rights for donors |

Appendix B

INTRODUCTION TO IREC'S COMMUNITY RENEWABLES MODEL PROGRAM RULES

Taking into account the various community shared renewables approaches that have been implemented, the Interstate Renewable Energy Council (IREC) worked closely with The Vote Solar Initiative to develop its *Community Renewables Model Program Rules*. IREC designed the Model Program Rules as a starting point to assist stakeholders in developing programs that meet the diverse needs of the communities. The Model Program Rules address issues such as renewable system size, interconnection, eligibility for participation, allocation of the benefits flowing from participation, net metering of system production, and other essential features of a community shared renewable energy program.

The first part of this process was the development of a Community Renewable Power Proposal (Proposal) to generate stakeholder input on best practices in this emerging policy area. As part of the development of the Proposal, IREC collaborated with a diverse set of stakeholders and reviewed current community shared renewables efforts taking place at the municipal and state levels, including efforts in Massachusetts, Colorado, California, Washington, and Utah.

Two key principles greatly influenced the development of the Proposal, and ultimately, the Model Program Rules.

First, as a foundational matter, IREC believes that participants in a community shared renewables program should have an experience that is as similar as possible to that of customers investing in on-site renewable energy. The reason for this is simple: on-site programs in many states have been very successful in motivating energy consumers to invest in renewable energy, so replicating the program elements that spurred this motivation is logical and builds off of foundations already in place. In particular, many customers appear to be highly motivated to zero out their monthly energy bill through net metering. In addition, customers participating in existing programs have been shown to install more energy efficiency measures than nonparticipants, because the customers are highly motivated to reduce their energy bills. On-bill net metering for community shared renewables systems can maintain a participating customer's motivation to reduce his or her energy bill and adopt energy efficiency measures.

Second, community shared renewables should be additive to successful on-site renewable energy programs and not undermine on-site renewable energy programs. Over the previous decades, renewable energy companies have invested considerable resources in building their businesses. This private investment in time and resources has helped expand markets for renewable energy in partnership with ratepayer-funded incentive programs. For this reason, it makes little sense to undermine successful on-site programs, and the businesses based upon these programs, when seeking to expand options for participation.

IREC's proposal generated significant feedback from utilities, industry participants, and other stakeholders, which was used to develop the Model Program Rules. For example, the Model Program Rules specify a renewable system size cap of 2 MW. This size cap was chosen because a 2-MW system maintains economies of scale both in the installed cost of the system and in the participation/marketing costs for a business engaged in developing community shared renewables systems, and still allows for relatively low-cost interconnection on most utility distribution systems. Regarding another program element, the minimum number of participants, IREC considered conflicting program impacts raised by stakeholders. On one hand, if a program requires too many participants, gathering up the minimum number of participants can make participation by smaller systems difficult. On the other hand, if a program requires just one participant, then the "community" aspect of a community shared renewables program is taken out of the picture. In considering these two concerns, IREC has chosen to require a minimum of two participants in a community shared renewables system. This requirement will allow duplex owners, small apartment buildings, and small commercial establishments to participate.

During discussions with stakeholders on the development of these Model Program Rules, five areas emerged as deserving of special attention:

1. Method of allocating the benefits of participation
2. Program administration
3. Financing options for community shared renewables
4. Valuation of the energy produced by the community shared renewables system
5. Utility compensation for program administration

IREC intends to continue to develop and refine its Model Program Rules. IREC anticipates issuing a revised version sometime in 2012.

ALLOCATING THE BENEFITS OF PARTICIPATION

Allocating benefits to program participants is a critical element of developing a successful renewables program. In considering the best method for allocating benefits to participating customers, IREC felt it was important to avoid structuring a program as a wholesale program that could result in taxable income. From an economic standpoint, it makes little sense for customers to invest in greening their energy supply if benefits of doing so will be siphoned off in taxes. Therefore, IREC has chosen to avoid program structures that allocate benefits in a manner that might raise these concerns, such as cutting a check for the value of energy produced and instead choosing virtual net metering (VNM) to allocate the benefits of participation onto a customer's monthly electric bill. Additionally, many customers are motivated to offset as much of their energy bills as possible. While the reasons underlying this motivation are complex, most states' existing net metering programs accommodate this desire by placing net metering credits on a customer's monthly bill. VNM maintains this direct relationship between customers' investments in renewable energy and a reduction in the customers' utility bills. Last, consistent with the principles outlined above, VNM provides a similarity in experience between customers installing on-site systems and those customers who participate in a community shared renewables program.

PROGRAM ADMINISTRATION

Program administration represents another critical area of program design. Existing community shared renewables programs have fallen into two categories with regard to who has program administration responsibilities: customer representatives (as in Vermont's group billing program) or utilities. IREC believes the best approach is to allow utilities to administer a community shared renewables program. This framework allows an entity with significant experience in administering complex energy programs to administer the details of a community shared renewables program, which may have many participants. Use of a utility administrator also prevents concern about creditworthiness of a third-party customer representative.

FINANCING COMMUNITY SHARED RENEWABLES

Renewable energy systems represent significant investments. Accordingly, an array of local, state, and federal incentives have been developed to incentivize customer investment in them. To maximize the availability of funding and to ensure available incentives are used as efficiently as possible, IREC's Model Program Rules support direct ownership, third-party ownership, and utility ownership of community shared renewable systems. Allowing a multitude of ownership options will maximize the availability of funding and ensure federal, state and local incentives are used to the fullest extent. Of particular note, third-party ownership of a renewable energy system can be critical to tapping into funders who are able to use all available federal tax credits. The efficient use of federal tax credits can result in a reduction in the cost of renewable energy by almost 50 percent. Recognizing the important role third-party ownership can play in increasing access to renewable energy, thirteen states have explicitly authorized third-party ownership of on-site renewable energy systems. In addition, legislation enacting community shared renewables programs in Colorado, Massachusetts, Delaware and Washington have made clear that third-party owners of community shared renewable energy systems are not subject to public utility regulation.

An important aspect of allowing utility ownership is a requirement that all system purchase costs, operation and maintenance costs, necessary investment returns, and other costs related to a utility-owned system must be recovered from participants enrolled in a utility program. This requirement is important to maintaining a level playing field between utility offerings and offerings of other parties. It ensures that all costs incurred by a utility to operate a community shared renewable system are recovered from program participants (as in the case with other competitive providers) and not from non-participating ratepayers.

VALUATION OF THE ENERGY PRODUCED BY THE RENEWABLE SYSTEM

At the heart of a successful community shared renewables program is the experience participants have as a result of their participation in a project. With industry input, the regulators must make a threshold decision on whether the net metering credits generated by a project should be transferred to participants as a 1:1 kWh offset on the customer's utility bill or whether the kilowatt-hours should be given a monetary value based on some other rate. This is important because it determines whether the value of a credit can be administratively determined or whether the value will be different for each participant and be based on the amount that a participant would otherwise pay per kWh of electricity provided by a utility.

Under most states' net metering programs, net metering credits generated by an on-site system are used to directly offset kilowatt-hours delivered by a utility when a customer-generator's consumption exceeds the energy supplied by a renewable energy system. Given that most customer-generation is simply used on site without requiring that a customer's billing meter spin backwards to earn net metering credits, this framework makes intuitive sense. However, the vast majority of participants in community shared solar projects will not have generation located behind a billing meter, so the link between excess production and 1:1 kWh offsets is not as important. In addition, it can be more difficult to administer this arrangement once a generation source is separated from the participants who would like to receive electricity from that system. Providing kWh credits can be particularly difficult to track if a customer is on a time-of-use rate structure because kWh production would have to be tracked within time periods and applied to the customers' bills within time periods.

Credits denominated in dollars and cents are often much easier for utilities to administer and often require fewer billing software changes. Accordingly, for ease of administration by utilities, IREC chose to allow kWh generated by a project to be given a monetary value that can be applied to participants' bills. In determining the appropriate monetary value to assign to kWh credits, three approaches are currently in use for community shared solar projects: (1) valuing a kWh credit based on the retail rate in effect where the project is located (MA does this); (2) valuing a credit based on a the retail rate in effect for the participant (CA does this); or (3) valuing a credit based on some other approach, such as the wholesale value of power production (Maine's approach).

IREC chose the second approach for several reasons. First, valuing the kWh credit at the retail rate in effect for the participant maintains the ability of the project to act as a price hedge against future utility rate increases. Second, valuing the kWh credit at the participant's retail rate maintains an outcome that is as close as possible to the experience participants would have if they installed a solar energy system on-site. Third, transforming the kWh credit into a monetary credit should simplify the calculations required for customers that need to compensate a utility for the use of the distribution system. Finally, transforming kWh credits into a monetary credit allows customers that face demand charges to have their participation in solar generation recognized by valuing their kWh credits at a total aggregate retail rate.

COMPENSATING UTILITIES FOR PROGRAM ADMINISTRATION

One of the most complex issues with development of community shared renewables programs is setting an appropriate compensation rate for utilities to administer programs. It should be relatively noncontroversial that utilities should be allowed to recoup administrative fees. However, the propriety of allowing a utility to recover costs for distribution service is a more controversial topic, and one on which California and Massachusetts have taken different approaches.

In Massachusetts, net metering credits created by a “neighborhood net-metered facility” do not contain the distribution portion of a fully bundled retail rate. As a result, participants in a “neighborhood” facility continue to pay distribution charges. However, participants do not pay transmission fees. Currently, the Massachusetts approach seems reasonable because neighborhood net-metered facilities are limited to 2 MW and participating customers may be located anywhere within a distribution utility’s service territory. Although participating systems will be located close to load with no use of the transmission system, a utility would only need to be compensated for use of the distribution system.

Unlike Massachusetts, in California, net metering credits are valued at a fully bundled retail rate. This outcome appears sensible because, unlike the Massachusetts’ program, California’s virtual net metering program is available only to occupants of certain types of multi-tenant buildings. Thus, California participants will be located within the same building on the same distribution circuit and, as a consequence, use of the distribution system will be nonexistent or minimal.

IREC’s Model Program Rules take a nuanced approach to this issue by specifying that customers on the same distribution circuit as the community shared solar project will have their kilowatt-hour credits valued at the full retail rate, while also allowing a stakeholder process to determine an appropriate level of compensation for use of a utility’s distribution system once a number of factors have been taken into account.



Photo from a Steep Roof, University Park, Maryland

IREC'S COMMUNITY SHARED RENEWABLES MODEL PROGRAM RULES

These rules were created by the Interstate Renewable Energy Council and The Vote Solar Initiative to serve as a guide for renewable energy stakeholders to consider when developing community shared renewables policies to meet the needs of their states. The rules provide a framework for building a community shared renewables program that is additive to successful on-site renewable energy programs and uses solar, wind, hydro, biomass and other renewable energy sources to allow communities to promote local job growth. These program rules are solely the recommendation of the Interstate Renewable Energy Council and The Vote Solar Initiative and do not necessarily reflect the recommendation of the authors, DOE, or NREL.

I. DEFINITIONS. AS USED WITHIN THESE RULES, UNLESS THE CONTEXT OTHERWISE REQUIRES:

(a) “Biomass” means a power source that is comprised of, but not limited to, combustible residues or gases from forest products manufacturing; waste, byproducts, or products from agricultural and orchard crops; waste or co products from livestock and poultry operations; waste or byproducts from food processing, urban wood waste, municipal liquid waste treatment operations, and landfill gas.²²

(b) “Community Energy Generating Facility” means Renewable Energy Generation that is interconnected at the distribution system level and that is located in or near a community served by an Electricity Provider where the electricity generated by the facility is credited to the Subscribers to the facility. A Community Energy Generating Facility may be located either as a stand-alone facility, called herein a stand-alone Community Energy Generating Facility, or behind the meter of a participating Subscriber, called herein a hosted Community Energy Generating Facility. A Community Energy Generating Facility may be no larger than two megawatts (MW). A Community Energy Generating Facility must have at least two Subscribers.

(c) “Electricity Provider” means the jurisdictional entity that is required to offer Net Metering service to Subscribers pursuant to [code section for applicable Net Metering rules].

(d) “Locational Benefits” mean the benefits accruing to the Electricity Provider due to the location of the Community Energy Generating Facility on the distribution grid. Locational Benefits include such benefits as avoided transmission and distribution system upgrades, reduced transmission and distribution level line losses, and ancillary services.

(e) “Net Metering” means a methodology under which electric energy generated by or on behalf of a Subscriber and delivered to the Electricity Provider’s local distribution facilities may be used to offset electric energy provided by the Electricity Provider to the Subscriber during the applicable billing period.

²² The definition of Biomass may need to be adjusted to reflect state renewable portfolio standard definitions.

(f) “Renewable Energy Credit” means a tradable instrument that includes all renewable and environmental attributes associated with the production of electricity from a Community Energy Generating Facility.

(g) “Renewable Energy Generation” means an electrical energy generation system that uses one or more of the following fuels or energy sources: Biomass, solar energy, geothermal energy, wind energy, ocean energy, hydroelectric power, or hydrogen produced from any of these resources.

(h) “Subscriber” means a retail customer of a utility who owns a Subscription and who has identified one or more individual meters or accounts to which the Subscription shall be attributed. Such individual meters or accounts shall be within the same Electricity Provider’s distribution service territory as the Community Energy Generating Facility.

(i) “Subscriber Organization” means an organization whose sole purpose is to beneficially own and operate a Community Energy Generating Facility for the Subscribers of the Community Energy Generating Facility. A Subscriber Organization may be any for-profit or non-profit entity permitted by [state] law. The Community Energy Generating Facility may also be built, owned, and operated by a third party under contract with the Subscriber Organization.

(j) “Subscription” means an interest in a Community Energy Generating Facility. Each Subscription shall be sized to represent at least one kilowatt of the Community Energy Generating Facility’s generating capacity; provided, however, that the Subscription is sized to produce no more than 120% of the Subscriber’s average annual electrical consumption. For Subscribers participating in meter aggregation, 120% of the Subscriber’s aggregate electrical consumption may be based on the individual meters or accounts that the Subscriber wishes to aggregate pursuant to these rules. In sizing the Subscription, a deduction for the amount of any existing renewable energy generation at the Subscriber’s premises or any Subscriptions owned by the Subscriber in other Community Energy Generating Facilities shall be made.

(k) “Total Aggregate Retail Rate” means the total retail rate that would be charged to a Subscriber if all electric rate components of the Subscriber’s electric bill, including any riders or other additional tariffs, except for minimum monthly charges, such as meter reading fees or customer charges, were expressed as per kilowatt-hour (kWh) charges.

II. GENERAL PROVISIONS

(a) Subscriptions in a Community Energy Generating Facility may be transferred or assigned to a Subscriber Organization or to any person or entity that qualifies to be a Subscriber under these rules.

(b) New Subscribers may be added at the beginning of each billing cycle. The owner of a Community Energy Generating Facility or its designated agent shall inform the Electricity Provider of the following information concerning the Subscribers to the Community Energy Generating Facility on no more than a monthly basis: (1) a list of individual Subscribers by name, address, account number; (2) the proportional interest of each Subscriber in the Community Energy Generating Facility; and (3) for Subscribers who

participate in meter aggregation, the rank order for the additional meters or accounts to which Net Metering credits are to be applied.

(c) A Subscriber may change the individual meters or accounts to which the Community Energy Generating Facility's electricity generation shall be attributed for that Subscriber no more than once quarterly, so long as the individual meters or accounts are eligible to participate.

(d) An Electricity Provider may require that customers participating in a Community Energy Generating Facility have their meters read on the same billing cycle.

(e) If the full electrical output of a stand-alone Community Energy Generating Facility or the excess generation from a hosted Community Energy Generating Facility is not fully allocated to Subscribers, the Electricity Provider shall purchase the unsubscribed energy at a kWh rate that reflects the full value of the generation. Such rate shall include the avoided cost of the energy, including any Locational Benefits of the Community Energy Generating Facility.

(f) If a Subscriber ceases to be a customer within the distribution service territory within which the Community Energy Generating Facility is located, the Subscriber must transfer or assign their Subscription back to their Subscriber Organization or to any person or entity that qualifies to be a Subscriber under these rules.

(g) If the Subscriber ceases to be a customer of the Electricity Provider or switches Electricity Providers, the Electricity Provider is not required to provide compensation to the Subscriber for any unused Net Metering credits.

(h) A Community Energy Generating Facility shall be deemed to be located on the premises of each Subscriber for the purpose of determining eligibility for state incentives.

(i) Neither the owners of, nor the Subscribers to, a Community Energy Generating Facility shall be considered public utilities subject to regulation by the [responsible agency having regulatory oversight] solely as a result of their interest in the Community Energy Generating Facility.

(j) Prices paid for Subscriptions in a Community Energy Generating Facility shall not be subject to regulation by the [responsible agency having regulatory oversight].

(k) A Subscriber owns the Renewable Energy Credits (RECs) associated with the electricity allocated to the Subscriber's Subscription, unless such RECs were explicitly contracted for through a separate transaction independent of any Net Metering or interconnection tariff or contract. For a Community Energy Generating Facility located behind the meter of a participating Subscriber, the host Subscriber owns the RECs associated with the electricity consumed on-site, unless the RECs were explicitly contracted for through a separate transaction independent of any Net Metering or interconnection tariff or contract.

(l) The dispute resolution procedures available to parties in the Electricity Provider's interconnection tariff shall be available for the purposes of resolving disputes between an Electricity Provider and Subscribers or their designated representative for disputes involving the Electricity Provider's allocation of Net Metering credits to the Subscriber's electricity bill consistent with the allocations provided pursuant to Rule II.b. The Electricity Provider shall not be responsible for resolving disputes related to the agreements between a Subscriber, the owner of a Community Energy Generating Facility, and/or a Subscription Organization or any other party. This provision shall in no way limit any other rights the Subscriber may have related to an Electricity Provider's provision of electric service or other matters as provided by, but not limited to, tariff, decision of [responsible regulatory body or agency], or statute.

III. NET-METERING PROVISIONS

(a) An Electricity Provider shall not limit the cumulative, aggregate generating capacity of Community Energy Generating Facilities.²³

(b) For a Community Energy Generating Facility, the total amount of electricity expressed in kWh available for allocation to Subscribers, and the total amount of RECs generated by the Community Energy Generating Facility and allocated to Subscribers, shall be determined by a production meter installed and paid for by the owner(s) of the Community Energy Generating Facility. It shall be the Electricity Provider's responsibility to read the production meter.

(c) For a hosted Community Energy Generating Facility, the determination of the quantity of kWh credits available to Subscribers of that facility for Net Metering, including the host Subscriber, shall be based on any energy production of the Community Energy Generating Facility that exceeds the host Subscriber's instantaneous on-site consumption during the applicable billing period and the Subscribers' Subscriptions in that Community Energy Generating Facility.

(d) For a stand-alone Community Energy Generating Facility, the determination of the quantity of kWh credits available to each Subscriber of that Community Energy Generating Facility for Net Metering shall be based on the total exported generation of the Community Energy Generating Facility and each Subscriber's Subscription in that Community Energy Generating Facility.

²³ This program rule is based upon IREC's Net Metering Model Rule (b)(2), which specifies that the cumulative, aggregate generating capacity net metered by on-site renewable generation facilities shall not be arbitrarily limited. Some states cap the total amount of aggregate Renewable Energy Generation that can be Net Metered for a particular Electricity Provider. Most commonly, aggregate enrollment caps are expressed as a percentage of an Electricity Provider's peak demand based on the aggregate of nameplate capacity of the generation systems (though it should be noted that capacity calculations are not standardized in their methodology across or even within states). Such percentages can vary from as low as 0.1% to as high as 20%. IREC believes aggregate caps arbitrarily and unnecessarily limit private investment in Renewable Energy Generation and needlessly curtail the flow of benefits that are associated with customer-side Renewable Energy Generation. For states that place an aggregate enrollment cap on net metered generation, that cap should be removed or expanded to ensure that community renewables programs do not undermine successful on-site programs.

(e) For Subscribers that host a Community Energy Generating Facility or where participating Subscribers are located on the same distribution feeder as the Community Energy Generating Facility, the value of the kWh credits for the host Subscriber and those Subscribers on the same distribution feeder shall be calculated by multiplying the Subscriber's share of the kWh electricity production from the Community Energy Generating Facility by the retail rate for the Subscriber. For Subscribers on tariffs that contain demand charges, the retail rate for the Subscriber shall be calculated as the Total Aggregate Retail Rate for the Subscriber.

(f) For all other Subscribers to a Community Energy Generating Facility, value of the kWh credits allocated to each Subscriber shall be calculated by multiplying the Subscriber's share of the electricity production from the Community Energy Generating Facility by the retail rate as charged to the Subscriber, minus a reasonable charge as determined by the [responsible agency having regulatory oversight] to cover the Electricity Provider's costs of delivering the electricity generated by the community electricity generating facility to the Subscriber's premises after taking into account the Locational Benefits and other benefits² provided by the Community Energy Generating Facility. The [responsible agency having regulatory oversight] shall ensure that this charge does not reflect costs that are already recovered by the Electricity Provider from the Subscriber through other charges. In no event, shall the charge, if assessed, be greater than the Subscriber's distribution service charge as determined on a per kWh basis.

(g) The Electricity Provider shall carry over any excess kWh credits earned by a Subscriber and not used in the current billing period to offset the Subscriber's consumption in subsequent billing periods until all credits are used. Any excess kWh credits shall not reduce any fixed monthly customer charges imposed by the Electricity Provider.

For more information, visit:
eere.energy.gov

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COMMUNITY SHARED SOLAR

POLICY AND REGULATORY CONSIDERATIONS

ABSTRACT

Shared solar, also called community solar, is an increasingly popular business model for deploying distributed solar technology. Shared solar projects allow customers that do not have sufficient solar resource, that rent their homes, or that are otherwise unable or unwilling to install solar on their residences, to buy or lease a portion of a shared solar system. The participant's share of the electricity generated is credited to their electricity bill, as if the solar system were located at their home.

The shared solar model expands the availability of distributed solar to a broader customer base, offers economies of scale to project developers, and may reduce the cost of incentive programs and address concerns of cross-subsidization across utility ratepayers. Increasing numbers of utilities, cities, and community groups across the United States are hosting shared solar projects. In some cases, however, policy or regulatory barriers present challenges to program implementation.

This paper explores the ways in which the shared solar business model interacts with existing policy and regulations, including net metering, tax credits, and securities regulation. It presents some of the barriers that shared solar projects may face, and provides options for creating a supportive policy environment.

BACKGROUND

Several business models have recently arisen that bring community stakeholders together to deploy distributed solar projects. These community solar models include aggregated/group purchasing, crowd-funding, and shared



Photo by Western Area Power Administration, NREL 08822

solar projects. Aggregated or group purchasing refers to multiple stakeholders coming together to purchase individual solar systems in order to take advantage of bulk pricing. Crowd funding solar projects (e.g., Mosaic) allow investors to finance a solar project and benefit from the return on their investment. In shared solar projects,¹ participants buy or lease a portion of a large distributed solar system and are able to use that solar generation against their demand on their electricity bill, just as if they had a solar system on their own rooftop.²

This paper focuses solely on shared solar projects. Shared solar projects give customers who cannot or do not want to install a PV system on their rooftop the opportunity to benefit from a solar installation. Given that approximately three-quarters of residential rooftops are not suitable for solar systems, shared solar significantly expands the distributed solar market.³

Banner photos (from left to right): Photo from iStock 13737597; by Dennis Schroeder, NREL 19893; Photo from iStock 12123595; Photo by Toyota Motor Sales, USA, NREL 16933; by Debra Lew, NREL 20528, Photo by Dennis Schroeder, NREL 19163



Photo by iStock, 18306736

HOSTS OF COMMUNITY SHARED SOLAR

Utilities, businesses, local governments, and community groups can host shared solar projects. The shared solar systems may be located on public buildings, private land, brownfield sites, or any location with suitable solar resources. Various program designs and contract terms can be used.⁴ Program design elements include ownership structure, product offering, length of contract, eligibility rules, subscription pricing, and how bill credits are calculated. Different program designs offer their own benefits and balance of risks between stakeholders. For this reason, program design elements should be consciously decided upon, based on the particular situation.⁵

Drivers for public sector entities to offer shared solar projects include meeting local sustainability goals and supporting community members that face barriers to participating in traditional rooftop solar.

Compared to other utility incentive types, shared solar projects may result in fewer costs to non-participating ratepayers. All of the program costs may be covered by participating customers.

For utilities, the shared solar model may contribute to customer engagement and satisfaction. Utilities in states with renewable energy mandates may also be able to apply the renewable energy credits from shared solar projects toward their requirement. In addition, there is increasing interest and research to understand how to locate solar systems in order to provide distribution system benefits, such as reducing congestion or providing ancillary services.

Compared to other utility incentive types, shared solar projects may result in fewer costs to non-participating ratepayers, depending on the pricing structure used.⁶ The costs of traditional utility incentive programs are often spread across all ratepayers. For shared solar, all of the program costs may be covered through the customer participation payment, or deducted from the participant bill credits. The cost of electricity integration and delivery may also be deducted from bill credits.

Colorado, Minnesota, and California have passed requirements that certain regulated utilities develop shared solar projects, and there is similar movement in other states, including New York.^{7,8,9} The state-level policies include direction regarding various program elements, such as customer eligibility and how bill credits will be calculated.

One consideration is the potential impact of proposed policy on the existing solar market and associated solar developers. In addition, providing for ownership structures that allow hosts to make use of tax credits or other incentives should also be considered. The interplay of shared solar and tax incentives is discussed more below.

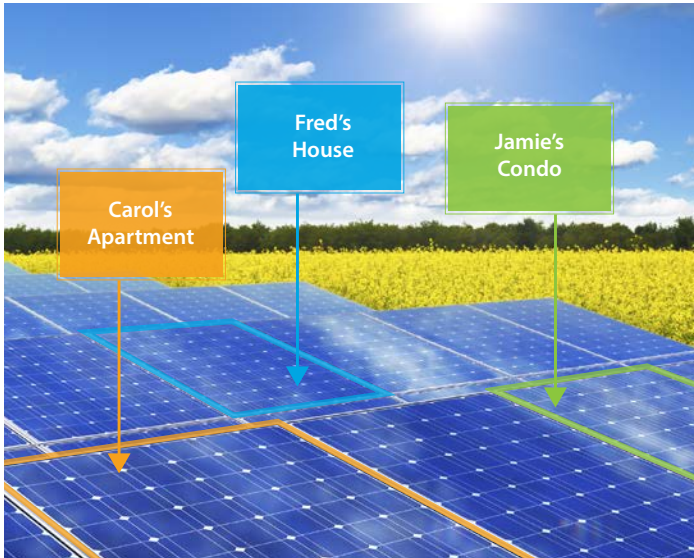
PARTICIPANTS IN COMMUNITY SHARED SOLAR

Shared solar projects can offer a variety of benefits to participants, including increased electricity rate stability and potential bill savings.¹⁰ Homeowners with shaded roofs or historic buildings, residents of multi-tenant buildings, and those who rent apartments may be unable to install rooftop solar systems, but can participate in shared solar projects. Shared solar can also expand access for lower-income energy customers, who are prevented from having their own systems due to lack of credit. Decision makers may choose to set aside portions of shared solar projects for particular customer classes, or facilitate the participation of customers that otherwise would not have access to solar.

Colorado has supported the availability of shared solar for low-income customers as part of the Community Solar Garden Act. By regulation, eligible utilities must reserve five percent of new shared solar projects for low-income participants and waive the minimum level of participation for these customers.¹¹ By providing all customers, despite their circumstances, the opportunity to participate in a distributed solar project, shared solar can address some of

the concern about cross-subsidization between customers who can and cannot have rooftop solar.

In order to ensure that more customers can participate in a shared solar project, maximum single subscriber levels may be set to limit any one participant from holding a majority of the interest in the project. Minimum or maximum participant limits and limits to administration fees may also be defined through state policy.



Shared solar projects allow customers to buy or lease a portion of a shared solar system. *Photo by iStock, 28099878*

INTERACTIONS WITH OTHER POLICIES AND REGULATIONS

This section describes how existing state and federal policy may impact the development of shared solar projects, and provides policy options for decision makers who want to support the shared solar business model.

Net Metering Policy

Net metering is a primary state-level policy that supports the development of distributed solar systems for the excess power they feed onto the electricity grid. Forty-four states have net metering policies.¹² Certain elements of these policies that are relevant to shared solar projects are discussed below.

Virtual Net Metering

A distinguishing characteristic of shared solar is that the solar system is not at the same location as the load of the project participants. Virtual net metering allows

participants in shared solar projects to subtract their portion of the off-site generation from the load at their own residences.¹³

The ability to develop shared solar projects may be inhibited or prohibited if state regulations do not allow for virtual net metering. Some net metering policies do not specify whether shared solar projects are eligible, and some implicitly exclude them by specifying that net-metered generation must serve on-site load. Some states, including California, Delaware, Minnesota, Maine, Massachusetts, New Hampshire, and Vermont have specifically allowed for virtual net metering through legislation.¹⁴

Net Metering Caps

Of the 44 states with net metering policies, 24 set a cap on the total capacity eligible for net metering. In some cases, there are separate caps for public and private facilities. Making sure that policies clarify to which cap shared solar projects apply provides more certainty to project developers.¹⁵

Although the majority of states with net metering caps are currently substantially below their existing caps, five states could reach their program limit in the 2015-2018 time frame, if development predictions are correct and the caps are not increased.¹⁶ In these states, there is a possibility that net metering will not be available by the time a proposed project is completed. This increased risk may significantly slow or halt solar project development, as the net metering limits are approached.¹⁷

To reduce this risk to the developer, Massachusetts has developed a system of assurance for net metering eligibility. The application process is a mandatory requirement for mature projects, and provides a limited time guarantee that the project will be eligible for net metering once it is interconnected. This reduces uncertainty for developers, informs investment decisions, and creates more stability in the market as net metering caps are approached.

Limits to Project Size or Participant Class

Most net metering rules include eligibility criteria that define individual system capacity limits and eligible customer classes. For example, residential customers may be allowed to have net-metered systems up to 10kW, while commercial customers may be allowed

to have larger systems. Rules that limit project size or prohibit residential customers from obtaining credits from commercial-scale projects can create significant barriers to shared solar projects. One benefit of shared solar is that the larger capacities offer economies of scale, which can make the projects more economically attractive for residential customers. It may be necessary to review and adjust state net metering language in order to ensure that shared solar projects can be efficiently designed and that all relevant customers are eligible to obtain net metering from the project.¹⁸

Interconnection Policy

The time and effort required to obtain utility approval for net metering and interconnection varies widely across the states. Some states have implemented simplified application processes for small-scale solar projects or for projects that use certified equipment.¹⁹ Ensuring that shared solar projects are not subject to unnecessarily complex application processes or interconnection approval timelines will help open the market to these projects and reduce the risk that participants will become impatient and drop out of the project during the development phase.

It may be necessary to review and adjust state net metering language in order to ensure that shared solar projects can be efficiently designed and that all relevant customers are eligible to obtain net metering from the project.¹⁸

Federal Tax Credit

The federal government provides a 30% residential investment tax credit for qualifying solar projects through Section 25D of the Internal Revenue Code (IRC).²⁰ In order to be eligible for the credit, the solar system must “generate electricity for use in a dwelling ... used as a residence by the taxpayer.” This language led some to believe that the tax credit was not available to shared solar projects or their participants since the solar system in these cases is not located at the taxpayer residence. However, in 2013, the IRS issued a clarification (Notice 2013-70), stating that shared solar projects that satisfy all other requirements in the IRC do, in fact, qualify for the tax credit.²¹

If a shared solar project offers participants actual ownership of the solar panels (rather than offering the



Photo by Dennis Schroeder, NREL 26962

output of the system), the participant claims the tax credits in proportion to their percentage of the system. Under models in which participants lease panels or have a power purchase agreement for the generation output, the host or developer of the solar project claims the tax credits and the economic benefit is passed through to individuals in the cost of participation.

State regulators have a role to play in assuring that hosts, developers or participants in shared solar projects can obtain these federal tax credits. The IRC requires that solar systems have manufacturer certification. The criteria for this certification are defined at the state level. Defining and supporting the manufacturer certification process at the state level provides important backing for shared solar projects.

State Incentives

If a state tax credit, rebate, or other incentive is provided for solar generation projects, clarification may be necessary to ensure that shared solar projects are eligible to receive the benefits. Doing so ensures a level playing field for all customers, whether or not they are able to install solar on their own property.

The way in which state incentives are distributed can potentially impact the economic viability of shared solar projects. Depending on their design, state-level incentives may or may not be considered taxable income under federal and state tax laws. Some states have designed incentives to avoid the tax issue by avoiding the issuance of government payments directly to residential solar customers.²² State guidance may be necessary to clarify

whether state-level incentives are considered taxable income under state code and the relevance to shared solar projects.

Renewable Energy Credits/Certificates (REC)

In states that have strong REC markets, the generation of RECs by shared solar projects can contribute to the economic viability of the project. The RECs can be handled in a variety of ways, with different benefits for hosts and participants. Some considerations are whether the host or the participant retains the RECs generated by the project, and whether or not the RECs are retired. Individual customers may not understand how to cash in RECs, preferring that the host pass through the value of the RECs in the participation cost.

State guidance may be necessary to clarify whether state-level incentives are considered taxable income under state code and the relevance to shared solar projects.

Securities Compliance

Caution must be taken in the design of shared solar projects in order to avoid structures that make the project subject to securities regulation under the Securities Exchange Commission (SEC). Potential shared solar hosts can submit a request to the SEC describing the business model being used and presenting a technical and legal analysis of why the host believes the business model is not a security. In the past, the SEC has issued a No-Action Letter to one developer,²³ but since there are a variety of business models for shared solar projects, the issuance may not be applicable to other projects.

Preparing a No-Action Letter Request is a significant cost and time burden on project developers. Projects initiated by community groups, for example, may not have the resources to overcome this barrier. Work is underway, sponsored by the Department of Energy's SunShot Initiative, to bring clarity to the securities issue for shared solar projects at the federal level. However, the Securities Exchange Act of 1934 preserves much of the states' actions with regards to securities.²⁴ For this reason, state regulators will need to provide similar clarity at the state level.



Winthrop Community Solar Project. Photo by Ellen Lamiman, Energy Solutions

CONCLUSIONS

Community shared solar provides increased public access to solar technology and helps expand the distributed solar market. The shared solar model may offer economies of scale, reduce the cost of solar incentive programs, and address some of the concerns of cross-subsidization among utility ratepayers. State-level policymakers and regulators wanting to support shared solar projects may need to revise state policy and regulation to remove barriers that are specific to this business model. These include issues related to net metering and interconnection policy, and the ability of project hosts and participants to benefit from federal or state incentives. Decision makers may also consider the option of requiring regulated utilities to offer shared solar projects to customers or otherwise including shared solar within renewable energy mandates.

Community shared solar provides increased public access to solar technology and helps expand the distributed solar market.

ACKNOWLEDGMENTS

This paper was funded through the Department of Energy's SunShot initiative. Special thanks go to the many colleagues who provided useful feedback during its development, and in particular the efforts of Anna Brockway (U.S. DOE), Jim Burns (CommunitySun), Jason Coughlin, Lori Bird, and Jeff Logan (NREL).

For additional information and questions, please contact Joyce McLaren (NREL) at joyce.mclaren@nrel.gov

ENDNOTES, REFERENCES, AND RESOURCES

(1) Often, the term "community solar" is used to describe this business model. This document uses the Department of Energy (DOE) preferred term: shared solar. In Colorado, the term "solar gardens" has been adopted to represent the shared solar business model.

(2) While the focus here is on homeowners participating in shared solar, businesses, non-profits and any other organization with a utility account can participate as well.

(3) Denholm, P. and Margolis, R. "Supply Curves for Rooftop Solar PV-Generated Electricity for the United States." NREL/TP- 6A0-44073. Golden, CO: National Renewable Energy Laboratory, 2008. Accessed 2014: www.nrel.gov/docs/fy09osti/44073.pdf

(4) A model contract between hosts and participants is provided in: "Community Shared Solar: Implementation Guidelines for Massachusetts Communities." Boston, MA: Massachusetts Department of Energy Resources, 2013. Accessed 2014: www.mass.gov/eea/docs/doer/renewables/solar/community-shared-solar-implementation-guidelines-with-contracts-032913.pdf

(5) This report does not aim to provide a complete list or discussion of the many program design elements. For more information on shared solar program design, see the following resources:

Community Solar Scenario Tool (CSST), Version 1. Golden, CO: National Renewable Energy Laboratory, 2014. www.nrel.gov/tech_deployment/tools_community_solar.html (This tool provides a first-cut analysis of the economics and program design options for a potential shared solar project.)

Barth, B.; Campbell, B.; Krishnamoorthy, B.; Siegrist, C.R.; Taylor, M. "Utility Community Solar Handbook: Understanding and Supporting Utility Program Development," Version 1. Washington, D.C.: Solar Electric Power Association (SEPA), 2013. Accessed 2014: www.solarelectricpower.org/media/71959/solarops-community-solar-handbook.pdf

Barth, B.; Campbell, B.; Krishnamoorthy, B.; Siegrist, C.R.; Taylor, M. "Utility Community Solar Handbook: A Development Guide for Utility-Managed Community Solar Programs," Version 1. Washington, D.C.: SEPA, 2013. Accessed 2014: www.solarelectricpower.org/media/8189/sepa-utility-community-solar-handbook_final-1-.pdf

Coughlin, J.; Grove, J.; Irvine, L.; Jacobs, J.F.; Johnson Phillips, S.; Sawyer, A.; Wiedman, J. *A Guide to Community Shared Solar: Utility, Private, and Non-Profit Project Development*. NREL/BK-5200-54570; DOE/GO-102012-3569. Golden, CO: National Renewable Energy Laboratory, 2012. Accessed 2014: www.nrel.gov/docs/fy12osti/54570.pdf

"Increasing Community Access to Solar: Designing and Developing a Shared Solar Photovoltaic System." NREL/FS-7A20-55319/GO-102012-3644. Golden, CO: National Renewable Energy Laboratory, 2012. Accessed 2014: www.nrel.gov/docs/fy12osti/55319.pdf

(6) Barth, B.; Campbell, B.; Krishnamoorthy, B.; Siegrist, C.R.; Taylor, M. "Utility Community Solar Handbook: Understanding and Supporting Utility Program Development," Version 1. Washington, D.C.: SEPA, 2013. Accessed 2014: www.solarelectricpower.org/media/71959/solarops-community-solar-handbook.pdf

(7) Colorado Community Solar Gardens Act. H.B. 10-1342. Second regular session, Sixty-seventh General Assembly.

Colorado Public Utilities Commission Solar Gardens Rule Making Notice. Decision No. C10-1061

Minnesota Solar Energy Jobs Act. H.F. 729. 88th Legislature.

California Green Tariff Shared Renewables Program. S.B. 43.

(8) In June 2014, the Assembly passed A.9931 to establish a shared solar program in New York. The same day, the New York senate introduced the same bill as S.7727.

(9) An interactive map of existing shared solar projects and state actions to support the business model is available at www.sharedrenewables.org/.

(10) The cost of electricity in a solar garden is usually fixed for the life of a subscriber's participation. However, high administration fees currently reduce the level of benefit for participants in some projects.

(11) Colorado Community Solar Gardens Act. H.B. 10-1342. Second regular session, Sixty-seventh General Assembly.

(12) Barnes, J.; Culley, T.; Haynes, R.; Jackson, R.; Passera, L.; Wiedman, J. "Freeing the Grid: Best Practices in State Net Metering and Interconnection Practices." Latham: New York: Interstate Renewable Energy Council, 2013. Accessed 2014: freeingthegrid.org/wp-content/uploads/2013/11/FTG_2013.pdf

(13) Other common terms for virtual net metering are community net metering and shared net metering. They all typically refer to the provision for a participant in a shared solar project to net meter their portion of the generation of the system against their load.

(14) Summaries of state legislation relevant to shared solar are available at www.sharedrenewables.org. The details of California Public Utility Commission's virtual net metering regulations and program are summarized in: "Virtual Net Energy Metering at Multitenant Buildings." San Francisco, CA: SF Environment, 2013. Accessed 2014: www.sfenvironment.org/sites/default/files/fliers/files/virtual_net_energy_metering_at_multitenant_buildings_0.pdf

(15) In Massachusetts, shared solar projects are counted under the public cap for net metering only if: (a) they are owned or operated by a municipality or other government entity, or (b) if a government entity is assigned all of the output from the project and is the host customer and only allocates credits to other government entities.

(16) According to an analysis by Bird, L.; Heeter, J. "Assessing the Potential to Reach Net Metering Program Caps," (forthcoming), California, Delaware, Massachusetts, Nevada, and New York may reach the existing net metering caps in the 2015-2018 time frame. Hawaii has already restricted net metering availability and determines eligibility on a case-by-case basis. New Jersey has passed the trigger point for state review of net metering eligibility limits, although it has not taken action to restrict availability.

(17) For more details on the Massachusetts System of Assurance of Net Metering Eligibility, see www.massaca.org.

(18) For example, in Massachusetts, any net metered project greater than 60 kWAC and owned by a public entity is in the Public Net Metering category. However, credits from publicly net metered projects cannot be credited to non-public accounts. As a result, shared solar projects cannot be more than 60kW in capacity. See Beavers, D.; McGuckin, J.; Sweet, E. "Community Shared Solar: Review and Recommendations for Massachusetts Models." Boston, MA: Massachusetts Department of Energy Resources, 2013. Accessed 2014: www.mass.gov/eea/docs/doer/renewables/solar/community-shared-solar-model-frameworks-032813.pdf

(19) The Interstate Renewable Energy Council points to emerging best practice of breaking the application process at 25 kW, 2 M, 10 MW, and 20+ MW of system capacity. Barnes, J.; Culley, T.; Haynes, R.; Jackson, R.; Passera, L.; Wiedman, J. "Freeing the Grid: Best Practices in State Net Metering and Interconnection Practices." Latham: New York: Interstate Renewable Energy Council, 2013. Accessed 2014: freeingthegrid.org/wp-content/uploads/2013/11/FTG_2013.pdf

(20) Internal Revenue Code Section 48 provides for a federal investment tax credit for commercial enterprises that install distributed solar systems.

(21) Internal Revenue Service Notice 2013-70. (November 18, 2013). www.irs.gov/irb/2013-47_IRB/ar09.html

(22) Gillette, L.; Gouchoe, S.; Herig, C. “Are solar rebates and grants for homeowners and business taxable?” American Solar Energy Society Conference Proceedings. 2004, Portland, OR. Accessed 2014: www.lambentenergy.com/Taxability_ASES_2004.pdf

(23) Office of the Chief Counsel Division of Corporation Finance Securities and Exchange Commission. “Re: CommunitySun, LLC™.” Washington, DC, August 29, 2011. www.sec.gov/divisions/corpfin/cf-noaction/2011/communitysun082911-2a1.htm

(24) The Securities Exchange Act of 1934, 15 U.S.C. § 78bb(a) states, “[n]othing in this chapter shall affect the jurisdiction of the securities commissioner (or any agency or officer performing like functions) of any State over any security or any person insofar as it does not conflict with the provisions of this chapter or the rules and regulations thereunder.”

National Renewable Energy Laboratory

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Reforming the Energy Vision

Clean Energy Fund



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NYSERDA

The Clean Energy Fund (CEF) is one of the Reforming the Energy Vision's three pillars designed to achieve a clean, resilient, and affordable energy system.

NYSERDA's proposed 10-year, \$5.3 billion CEF will support clean energy market development and innovation.

BENEFITS TO NEW YORKERS

The CEF is designed to deliver on New York State's commitment to reduce ratepayer collections, drive economic development, and accelerate the use of clean energy and energy innovation. The CEF reshapes the State's energy efficiency, clean energy, and energy innovation programs.

The CEF offers solutions that will:

- Reduce greenhouse gas emissions through increased efficiency and use of renewable energy.
- Make customer energy bills more affordable.
- Accelerate growth of the State's clean energy economy.
- Mobilize private investment.
- Provide more value to the customer while reducing ratepayer collections by \$1.5 billion by 2025.

The theme of the CEF is market transformation.

PROGRAM PORTFOLIOS

Through the CEF, NYSERDA will focus its efforts in four program portfolios.

1 **Market Development** activities to stimulate consumer markets to seek clean energy alternatives and foster clean energy supply chains to meet that growing customer demand.

2 **Innovation and Research** activities to accelerate the pace of innovation; move to a cleaner, more efficient, more distributed energy system; and drive cleantech business growth.

3 **NY-Sun** to increase the scale of the solar electric industry across New York State by stimulating the marketplace, reducing soft costs, and simplifying permitting, so that costs associated with installing solar electric systems for residents and businesses are reduced.

4 **NY Green Bank** to leverage the private sector to expand the availability of capital and increase confidence in the lending industry for clean energy.

CLEAN ENERGY FUND TIMELINE

THE CEF AIMS TO

- Encourage private investment and achieve scale for clean energy.
- Focus on innovative solutions that remove barriers, solve customer needs, and provide value.
- Shift NYSERDA's strategies toward engaging market forces, and its capital through investments that lower soft costs and make clean energy more affordable.
- Measure and manage performance and use a test, measure, and adjust evaluation method to continuously improve.
- Continue to be a catalyst for advancing energy innovation and technology, transforming New York's economy and empowering consumers to make informed energy choices.

WE WILL GET THERE WITH

- Strategies to reduce soft costs and make clean energy more investable.
- Pilots, demonstration projects, community engagement, partnership development, and training to support the rollout of the CEF across all sectors.
- Technical assistance and quality assurance to bring expertise and trust to the market.
- Bridge incentives to help scale up clean energy in the State, moving toward self-sustaining markets; and the continued strong clean energy infrastructure to ensure a smooth transition as new strategies are introduced.
- Collaboration with utilities to foster economy-wide market transition to collectively address critical barriers to energy efficiency and clean energy.
- Customer experience redesigned to provide better service to NYSERDA's industry and community partners.

A CRITICAL COMPONENT OF NEW YORK'S REV STRATEGY

80%
Reduction
in greenhouse gas
emissions over 1990
2050
by

Reforming the Energy Vision (REV) is New York's strategy to develop a clean, resilient, and affordable energy system for all New Yorkers. This comprehensive effort will set New York on a realistic path to achieving its long-term environmental and economic development goals, including an 80% reduction by 2050 in greenhouse gas emissions over 1990. Other components of REV include groundbreaking regulatory reform and leading by example through public investment in energy efficiency and renewable energy.

2014

May 8

Order Commencing Proceeding (CEF Order) by the New York State Public Service Commission

June-July

NYSERDA sponsors six stakeholder roundtables

September 23

NYSERDA submits CEF Proposal

November 18

NYSERDA submits Reallocation Supplement

2015

January 14

Clean Energy Fund Forum

June 25

NYSERDA submits Clean Energy Fund Information Supplement and comment period opens

August 14

Comment period closes

August 28

Reply comment period closes

nyserderda.ny.gov/CEF



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NY-Sun

Community Distributed Generation Overview for Project Developers

Community Distributed Generation (Community DG), also known as Shared Renewables, allows customers who cannot site solar, small wind, or other DG on their own property to participate directly in off-site projects through net metering. This document provides an overview of Community DG rules, roles, and responsibilities, as well as information about NY-Sun support and other resources. Project developers should always refer to the operating procedures of the relevant utility and the NY-Sun Program Manual when planning a project.

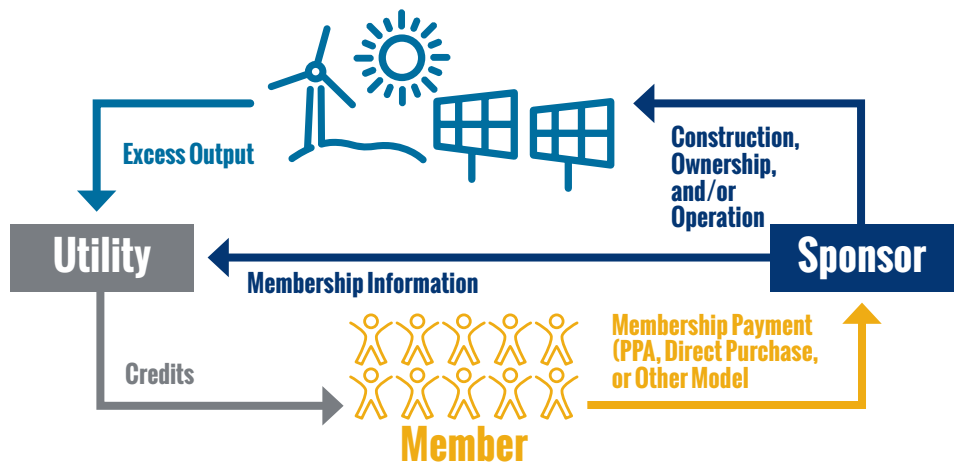
Phase I of Community DG began on October 19, 2015. Community DG projects may interconnect at this time if they:

- are located in the new Community DG Opportunity Zones designated by the utilities; OR
- include low-income residential customers, defined as a customer participating in a State or utility energy assistance program, as at least 20% of the project membership.

Community DG projects may interconnect statewide beginning May 1, 2016. Preliminary interconnection applications may be filed at any time.

NY-SUN.NY.GOV
1-866-NYSERDA

Community DG Roles and Responsibilities



Community DG Sponsors and Members

- Each project must have a sponsor, who owns or operates the project, organizes the membership, and interfaces with the utility. The sponsor may be the project developer, a private company, or other entity.
- The sponsor provides the utility with a list of members and their percent allocation of the project's net metering credits prior to interconnection and may update that list on a monthly basis.
- Any utility customer may be a member of a project in the same utility and NYISO zone.
- Each project must have a least 10 members, and each member must be allocated at least 1,000kWh per year (not to exceed their historic average annual consumption). No more than 40% of the Community DG host's excess generation may serve members with an average monthly peak demand of 25kW or greater.
- The terms of membership, including payment structure and provisions for exiting membership, are set by the agreement between the member and sponsor.

Community DG and Net Metering

Community DG was enabled by the State of New York Public Service Commission’s July 2015 Order Establishing a Community Distributed Generation Program ([Case 15-E-0082](#)). This Order extends New York’s current net energy metering policy guidelines, under the following terms:

- A project using any net-metered technology may participate, subject to the same rules applicable to any other net-metered project using that technology.
- Community DG projects must be located behind a non-residential host utility meter.
- Projects generate net metering credits for electricity production in excess of the host’s usage, which are allocated to the project’s members as described below.

| Host Meter Classification | Crediting Method | Value to Member |
|---------------------------|------------------|-----------------------------------|
| Non-demand | Volumetric (kWh) | Member’s retail rate ¹ |
| Demand | Monetary (\$) | Host’s retail rate ² |

¹ Volumetric offset to volumetric charge.

² Dollar offset to volumetric charge.

When volumetric crediting applies, excess solar electric production at the host site is credited to member accounts on a kwh-by-kwh basis. When monetary crediting applies, all excess production from the DG system is converted to a monetary credit, based on the host account’s rate. The monetary value is then applied to the member account’s utility bill.

Community DG Credit Allocation

- Net metering credits are allocated to members each month based on the percentage provided to the utility by the sponsor.
- Credits that are not allocated during a period are held at the host meter. These credits are then available, along with new credits, in the next distribution period.
- New members may be allocated credits that were accrued while they were not members.
- Sponsors have a final opportunity to allocate excess credits before the final month of the year. If credits remain on the sponsor’s account, they are forfeited and do not roll over to the next year.
- Credits held at the member account can be rolled over indefinitely; however, if a member leaves the Community DG project, any excess credits on their account after their final bill will be forfeited.

NY-Sun Support and Community DG

- Project developers can participate in NYSERDA programs for the relevant technology.
- Solar electric projects using Community DG (also known as “Shared Solar”) may participate in either the Residential/ Small Commercial Program or the Commercial/Industrial Program, based on project size.
- Modifications to the [NY-Sun incentive application process](#) include:
 - The NY-Sun Program Manual will be modified to address Shared Solar/Community DG
 - Incentive applications must indicate whether a project is using Community DG
 - Project size limitation of 110% of host load does not apply
 - Projects in the Commercial/Industrial Program (CIP) will receive volumetric incentive
 - Binding customer agreement and electric bills not required for CIP application
 - Customer list and proportion of customer load paying into Renewable Portfolio Standard (RPS) required for first CIP payment.

Additional Resources

Public Service Commission Orders in [Case 15-E-0082](#):

- [Filing # 31](#): Establishing a Community DG program in the State of New York
- [Filing # 53](#): Granting partial reconsideration of Community DG

Net metering and remote net metering overview: nysERDA.ny.gov/Cleantech-and-Innovation/Power-Generation/Net-Metering-Interconnection

Utility Tariffs, Operating Agreements, and CDG Opportunity Zone Maps

| | |
|---|---|
| <p>Central Hudson Electric and Gas Tariff Submission Operating Agreement CDG Opportunity Zone Map</p> | <p>New York State Electric and Gas Tariff Submission Operating Agreement CDG Opportunity Zone Map</p> |
| <p>Con Edison Tariff Submission Operating Agreement CDG Opportunity Zone Map</p> | <p>Orange & Rockland Tariff Submission Operating Agreement CDG Opportunity Zone Map</p> |
| <p>National Grid Tariff Submission Operating Agreement CDG Opportunity Zone Map</p> | <p>Rochester Gas and Electric Tariff Submission Operating Agreement CDG Opportunity Zone Map</p> |



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NY-Sun PV Trainers Network

Zoning for Solar Energy

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Types of Solar Energy Systems



Building Integrated



Small-Scale Roof



Large-Scale Roof



Small-Scale Ground



Large-Scale Ground

Planning for Solar Energy

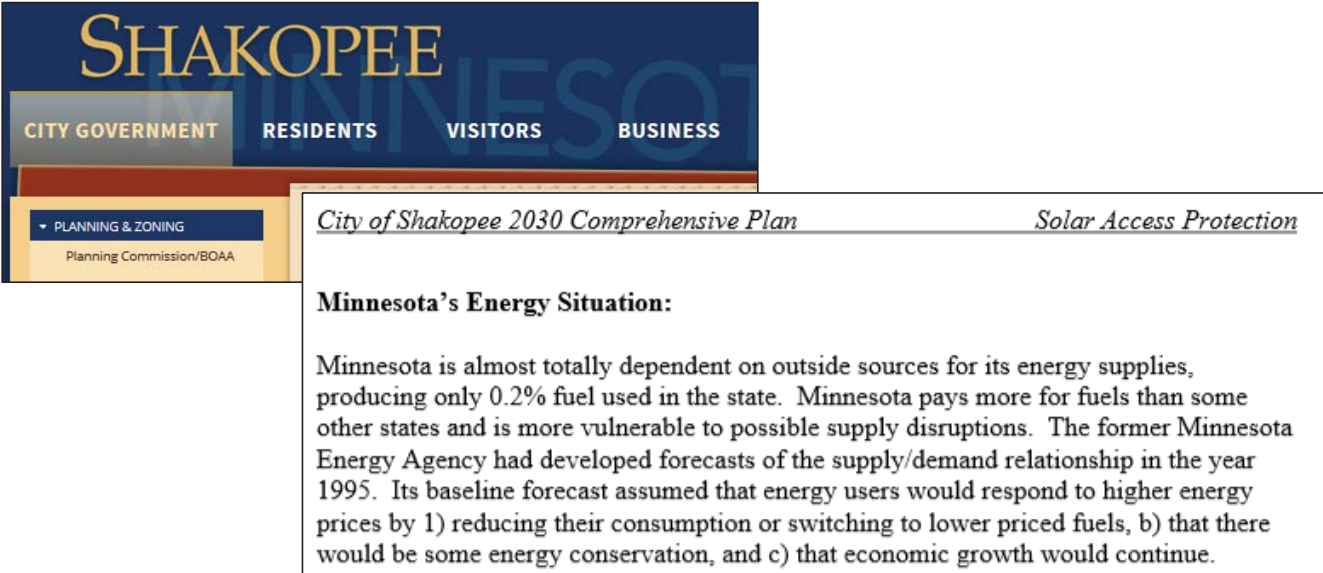
Zoning Must Be in Accordance with Comprehensive Plan



Photo Credit (from top left to bottom right): Sunation Solar, OnForce Solar, Hudson Solar, & Monolith Solar

Example: Plan Making

Comprehensive Plan Best Practice



The image shows a screenshot of the City of Shakopee website. The header features the city name 'SHAKOPEE' in large gold letters, with 'MINNESOTA' in smaller blue letters below it. Navigation tabs include 'CITY GOVERNMENT', 'RESIDENTS', 'VISITORS', and 'BUSINESS'. A sidebar menu is open to 'PLANNING & ZONING', with 'Planning Commission/BOAA' selected. The main content area displays the title 'City of Shakopee 2030 Comprehensive Plan' and the specific section 'Solar Access Protection'. The text discusses Minnesota's energy situation, noting its dependence on outside sources and its vulnerability to supply disruptions.

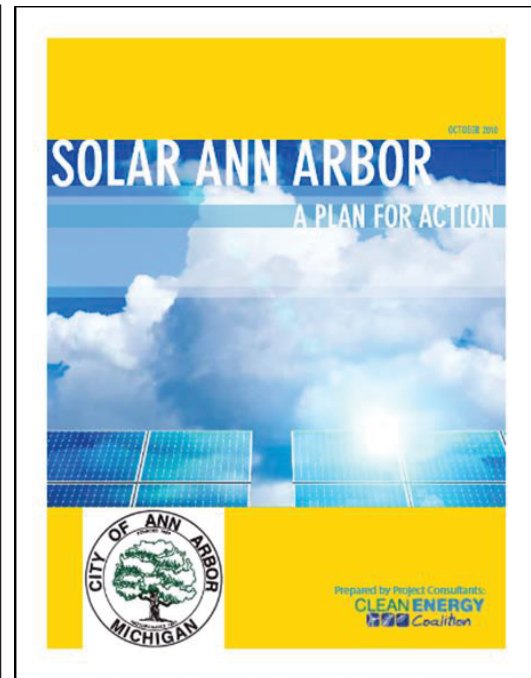
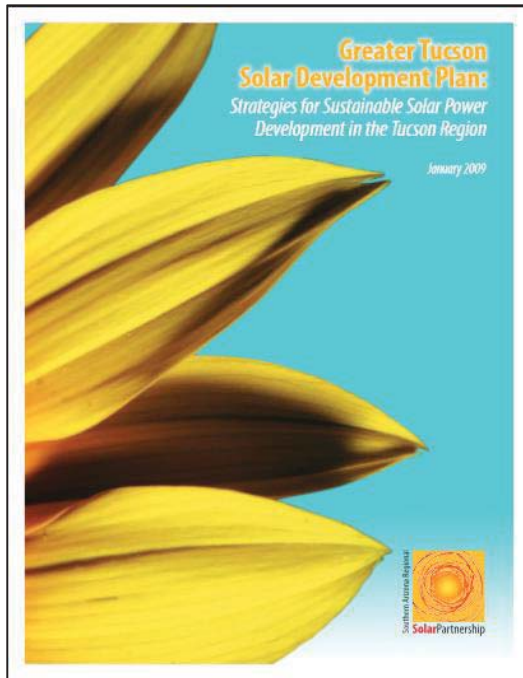
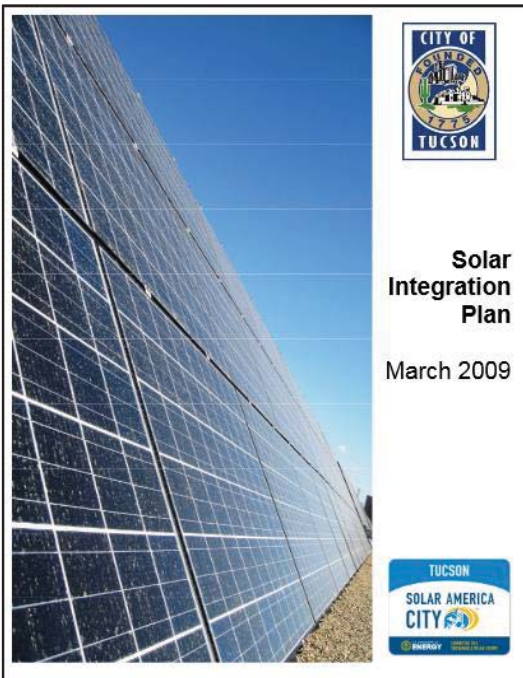
City of Shakopee 2030 Comprehensive Plan *Solar Access Protection*

Minnesota's Energy Situation:

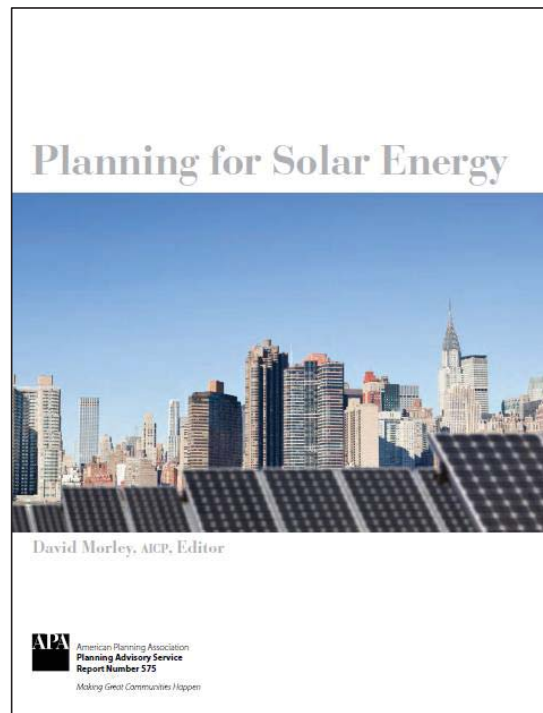
Minnesota is almost totally dependent on outside sources for its energy supplies, producing only 0.2% fuel used in the state. Minnesota pays more for fuels than some other states and is more vulnerable to possible supply disruptions. The former Minnesota Energy Agency had developed forecasts of the supply/demand relationship in the year 1995. Its baseline forecast assumed that energy users would respond to higher energy prices by 1) reducing their consumption or switching to lower priced fuels, b) that there would be some energy conservation, and c) that economic growth would continue.

Example: Plan Making

Functional Plan Best Practice



Resource: Planning for Solar Energy



Example Zoning Chapter

- Purpose
- Definitions
- Establishment of Districts & Zoning Map
- District Use, Lot and Bulk Regulations
- Special Permit Regulations
- Supplemental Regulations
- Off-street Parking, Driveways and Loading Areas
- Nonconforming Uses, Buildings and Structures
- Site Plan and Special Permit Review & Approval

Defining Solar Energy Systems

Zoning Definitions Section

■ § 300-4 Definitions and word usage.

- A. Word usage. Except where specifically defined herein, all words used in this chapter shall carry their customary meanings. Words used in the present tense include the future, and the plural the singular. The word "lot" includes the word "plot"; the word "building" includes the word "structure"; the word "shall" is intended to be mandatory; and "occupied" or "used" shall be considered as though followed by the words "or intended, arranged or designed to be used or occupied."
- B. Definitions. As used in this chapter, the following terms shall have the meanings indicated:

Defining Solar Energy Systems



Solar Electric Systems

Small-Scale Solar

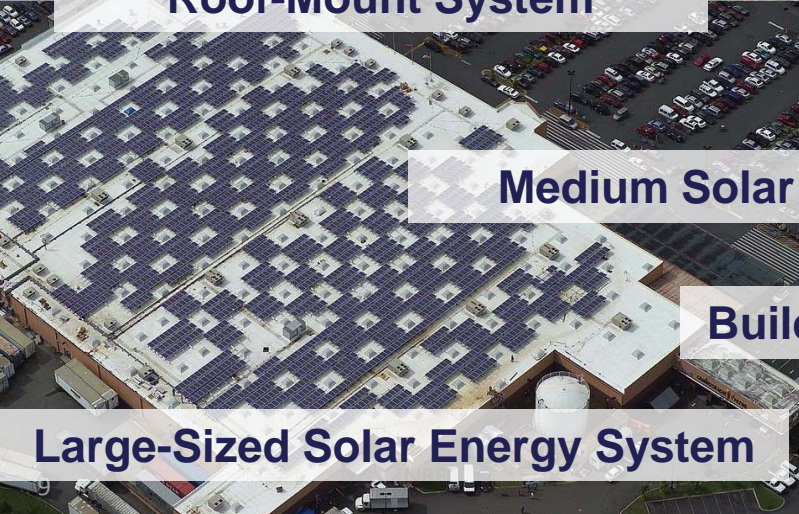
Roof-Mount System



Ground-Mounted Solar Facility

Principal Solar Energy System

Solar Energy Facility



Medium Solar Energy System

Large-Sized Solar Energy System



Building-Integrated Photovoltaic Systems

Defining Solar: Four Factors To Consider

- Energy System Type
- Location Where System-Produced Energy is Used
- Bulk & Area of System Dimensions
- System Energy Capacity

Example: System Type and Energy Capacity

New York State Unified Solar Permit

Expedited Solar Permit Process for Small-Scale Photovoltaic Systems

Expedited review for combined building and electrical permit for Small-Scale Solar Electric Systems:

- Rated capacity of 12 kW or less
- Roof-Mounted

Example: Model Solar Zoning Law

- Building-Integrated Photovoltaic
- Ground-Mounted System
- Roof-Mounted System
- Large-Scale System → primarily offsite energy consumption

Amending District Use Regulations to Allow Solar

Land Uses Allowed in Districts As:

1. Principal Use
2. Accessory Use
3. Secondary Use
4. Special Use

1. Solar as Principal Use



2. Solar as Accessory Use



3. Solar as Secondary Use



4. Solar as Special Use



Example: Model Solar Zoning Law

- Roof-mounted systems are permitted as an **accessory use** in all zoning districts when attached to lawfully permitted principal and accessory structures, subject to the requirements.
- Ground-mounted solar energy systems are permitted as an **accessory structure** in [*Insert district(s)*], subject to the requirements.
- Large-scale solar energy systems are permitted through the issuance of a **special-use permit** within [*Insert district(s)*] subject to requirements.

Review and Approval Process

Project review and approval requirements generally intensify as impacts associated with permitted solar energy systems increase.

Land Use Review Options

For Building-Integrated:

- Building parts exempt from land use review
- Subject to building code compliance



Land Use Review Options

For Small-Scale, Accessory Systems:

- Review by Zoning Enforcement Officer
- Building Permit Review
- Some may Require Site Plan Review



Land Use Review Options

For Larger Systems with Greater Impacts:

- Major & Minor Site Plan Review
- Special Use Permit Review



Example



Minor Site Plan Review for:

- Ground-mounted
- Between 2,000 sq.ft. & 10 acres in size

Preliminary & Final Site Plan Review for:

- > 10 acres in size
- Site plan must include: transmission line/equipment location, changes to existing substations, how facility will connect to grid, landscape maintenance plan, decommissioning plan, etc.

Reviewing Bulk & Area Requirements

| SEC. | DISTRICT | MAXIMUM HEIGHT | | MINIMUM REQUIREMENTS | | | | MINIMUM YARDS (7) | | | |
|------|-------------------------------|---|--------|--|-----------|-----------|----------------------------|-------------------|------------------|------------|-----|
| | | FT. | STY. | LOT AREA Sq. Ft. | LOT WIDTH | LOT DEPTH | FRONT DEPTH | EACH SIDE YARD | TOTAL BOTH SIDES | REAR DEPTH | |
| 1 | R-1 Single Family Residential | 35 | 2.5 | 20,000 | 100' | 100' | 30' | 10' | 30' | 30' | |
| 2 | R-2 Two-Family Residential | 35 | 2.5 | 7,000 | 50' | 100' | 20' | 6' | 16' | 20' | |
| 3 | R-3 Multi-Family Residential | 40 | 4 | 1 FAMILY: 7,000 | 50' | 100' | 20' | 1,2,2.5 STORY: | 6' | 16' | 20' |
| 7 | C-3 Commercial | | | 3+FAMILY: 1,500@DU | 40' | | | 3 OR 4 STORY: | | | |
| | | | | TOWN HOUSE: 2,000(2) | 18' | | | | | | |
| | | | | | | | | | | | |
| 4 | B-1 Neighborhood Business | 35(3) | 2.5(3) | For Dwls: same as R-3 Other Bldgs: -- -- -- | | | 50' | NOTE (4) | | | |
| 5 | C-1 General Commercial | 40(3) | 3(3) | | | | 50' | NOTE (4) | | | |
| 6 | C-2 Central Commercial | 45(3) | 3 | | | | | NOTE (4) | | | |
| 8 | M-1 Light Industrial | 45(3) | 3 | (11) 1500 @DU | NONE | NONE | 50' | 20' | 50' | NONE(5) | |
| 9 | M-2 Heavy Industrial | 125(6) | -- | (11) 1500 @DU | NONE | NONE | 50' | 20' | 50' | NONE(5) | |
| 10 | FW Flodway | NO BUILDING PERMITTED | | NONE | NONE | NONE | NO BUILDING EXECPT UTILITY | | | | |
| 10 | FF Flod-Fringe | DEVELOPMENT SHALL BE UNDERTAKEN IN STRICT COMPLIANCE WITH FLOOD-PROOFING AND RELATED PROVISIONS CONTAINED IN ALL OTHER APPLICABLE CODES AND ORDINANCES. | | | | | | | | | |

Example



- SES allowed as as-of-right accessory structures in all zones subject to bulk & area reqs.
- SES exempt from max building height reqs.

Example: Model Solar Zoning Law

- Roof-mounted systems:
 - Height and setback requirements from underlying zoning
 - Height exemptions granted to building-mounted mechanical devices or equipment apply
- Ground-mounted
 - Size: Systems are limited to [Insert Lot Coverage Percentage].
 - Panel surface area shall be included in total lot coverage
 - Setback: Requirements of the zoning district.
 - Height:

| Ground-mounted Height and Setback Requirements | |
|--|--------------------|
| Setback | Permissible Height |
| Less than or equal to 10ft | 6ft |
| Greater than 10ft and less than or equal to 15ft | 12ft |
| Greater than 15ft | 15ft |

Development Standards

Some municipalities impose specific development standards to mitigate land use impacts associated with solar energy system

Development Standards for Accessory-Use SESs

Roof-Mounted:

- Max height
- Min tilt, angle
- Color & location restrictions
- Setback from roofline*



Ground-Mounted:

- Setback, yard requirements
- Max height
- Blending or screening



Development Standards for Principal-Use SESs

Requirements To Mitigate Impacts:

- Siting
- Height Limits
- Setbacks
- Screening
- Safety (fencing, signage)
- Utility Interconnection
- Required Studies (environmental, economic)
- Decommissioning/Site Restoration

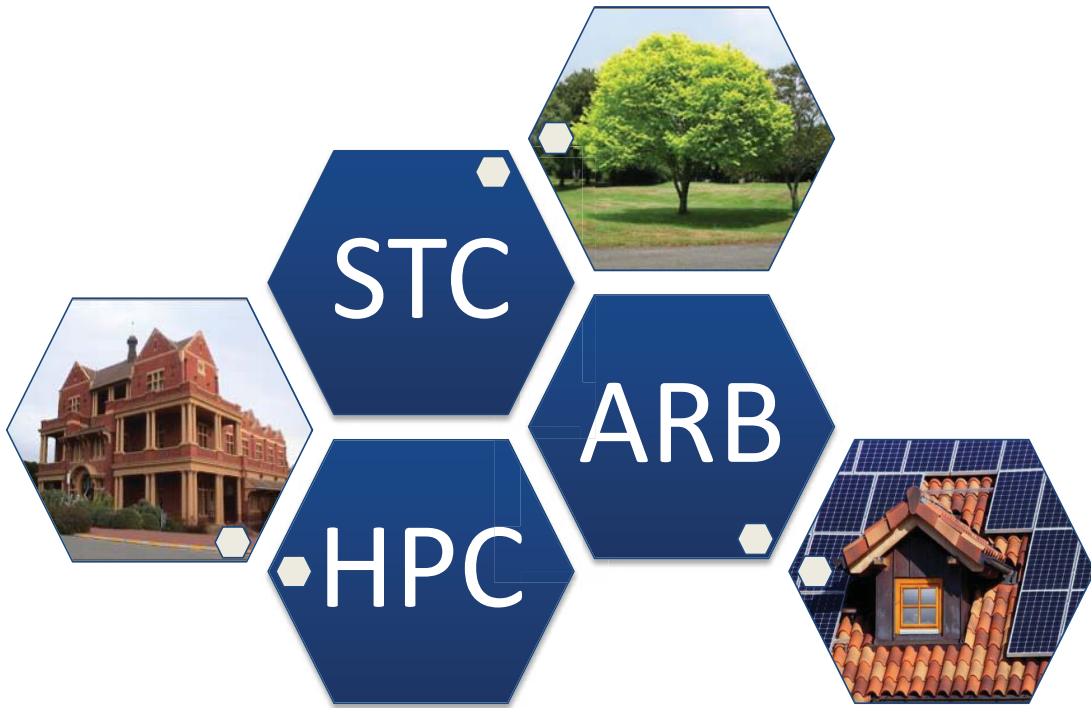


Community Engagement

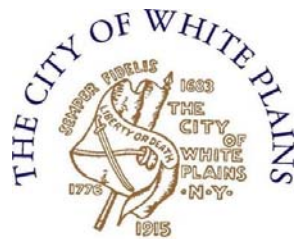
Potential Competing Interests & Priorities



Special Districts



Example



SES exempt from design review if:

- On 1- or 2-family structures w/o variance
- Rated capacity \leq 12 kW
- Mounted parallel to roof or with minimal tilt

Resource: APA's Solar Planning & Zoning Data Search

The screenshot shows the American Planning Association (APA) website. At the top, there is a navigation menu with links for About APA, Membership, Events, Education, Outreach, Resources, Jobs & Practice, and APAPanningB. Below the navigation is the APA logo and the tagline "Making Great Communities Happen". A search bar is visible on the right side of the header.

The main content area is titled "SolarOPs" and features a "Search Solar:" section with a search input field and a "GO" button. Below the search bar, there is a "Geographic Region" dropdown menu and a map of the United States. The main heading is "Solar Planning & Zoning Data Search".

Welcome to the Solar Planning & Zoning Data Search! From this portal you can search hundreds of examples of solar-supportive plans, development regulations, and other planning-related implementation tools. Whether your community is large or small and has mild or harsh winters, you're likely to find some peers here that have taken steps that make it easier for residents and businesses to use solar energy.

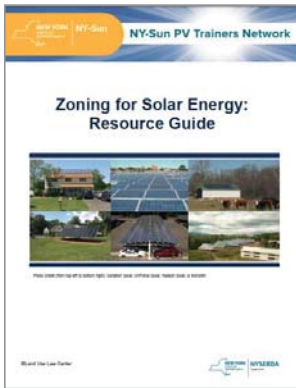
The Solar Planning & Zoning Data Search is a new pilot program. [Suggestions or comments? Let us know.](#)

| | |
|--|---|
| Type of Place | ▼ |
| City (633) | |
| County (124) | |
| State (80) | |
| Population Range | ▼ |
| <25K (291) | |
| 100K to 250K (108) | |
| 250K+ (120) | |
| Population Density | ▼ |
| <1,000/square mile (215) | |
| 1,000-2,999/square mile (297) | |
| 3,000-4,999/square mile (169) | |
| >5,000/square mile (107) | |
| Tool Type | ▼ |
| A Map (5) | |
| Comprehensive Plan (181) | |
| Design Guidelines (29) | |
| Development Guide (31) | |
| Development Regulations (486) | |
| Model Development Regulations or Plan Policy Statements (22) | |
| Subarea Plan (8) | |
| Sustainability Plan, Energy Plan, Climate Plan (76) | |
| Solar Practice | ▼ |
| Addresses Competing Priorities (105) | |
| Limits Covenants, Conditions, and Restrictions (15) | |
| Supports Accessory Solar Energy Use (655) | |
| Supports Primary Solar Energy Use (206) | |
| Supports Solar Access Protections (217) | |
| Supports Solar Siting (212) | |
| Supports Solar-Ready Homes (50) | |

www.planning.org/solar/data/

Resources: NY-Sun PV Trainers Network

Zoning for Solar Energy: Resource Guide

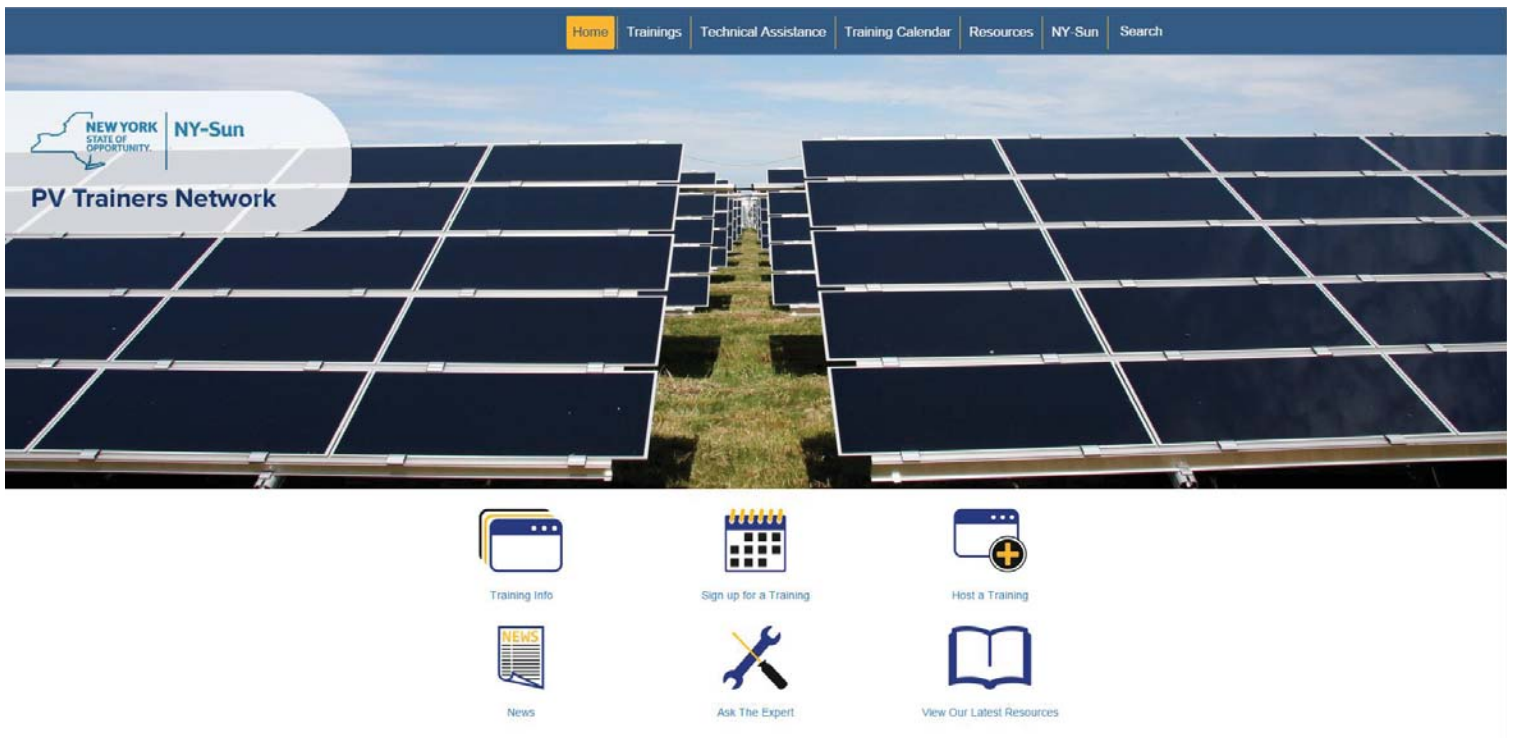


https://training.ny-sun.ny.gov/images/PDFs/Zoning_for_Solar_Energy_Resource_Guide.pdf

Zoning for Solar: Webinar

<https://training.ny-sun.ny.gov/zoning-for-solar-webinar>

Resources: NY-Sun PV Trainers Network



Visit: <https://training.ny-sun.ny.gov/>

Upcoming Trainings

| | |
|-------------------|---|
| January 30, 2016 | Saturday, January 30, 2016 06:00pm - 09:00pm Safety and Fire Considerations for Solar PV Woodstock, Ulster County |
| February 06, 2016 | •Saturday, February 06, 2016 09:00am - 04:00pm Solar PV for Engineers and Architects Orchard Park, Erie County |
| February 09, 2016 | •Tuesday, February 09, 2016 09:00am - 11:00am Solar Procurement for Municipal Governments Troy, Rensselaer County |
| February 16, 2016 | •Tuesday, February 16, 2016 09:30am - 12:30pm Planning, Permitting and Zoning for Solar Coxsackie, Greene County •Tuesday, February 16, 2016 06:00pm - 09:00pm Safety and Fire Considerations for Solar PV Poughkeepsie, Dutchess County |
| February 17, 2016 | •Wednesday, February 17, 2016 06:00pm - 09:00pm Safety and Fire Considerations for Solar PV Gerry, Chautauqua County |
| February 20, 2016 | •Saturday, February 20, 2016 09:00am - 04:00pm Solar PV for Engineers and Architects Wellsville, Allegany County |
| February 25, 2016 | •Thursday, February 25, 2016 08:30am - 03:30pm Solar PV Permitting and Inspection Methods and Fire Considerations for Solar PV Waterloo, Seneca County |
| February 26, 2016 | •Friday, February 26, 2016 11:00am - 12:00pm Overview of Solar PV for Engineers and Architects Albany, Albany County |
| March 03, 2016 | •Thursday, March 03, 2016 06:00pm - 09:00pm Safety and Fire Considerations for Solar PV Fonda, Montgomery County |
| March 05, 2016 | •Saturday, March 05, 2016 09:00am - 12:00pm Safety and Fire Considerations for Solar PV Orchard Park, Erie County |
| March 14, 2016 | •Monday, March 14, 2016 09:00am - 12:00pm Safety and Fire Considerations for Solar PV Orchard Park, Erie County |

Zoning for Solar Energy: Resource Guide



Photo Credit (from top left to bottom right): Sunation Solar, OnForce Solar, Hudson Solar, & Monolith

Authors

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Acknowledgement

The Land Use Law Center at Pace Law School created the Land Use Planning for Solar Energy Resource Guide through its work under the NY-Sun PV Trainers Network. Established in 1993, the Land Use Law Center is dedicated to fostering the development of sustainable communities and regions through the promotion of innovative land use strategies and dispute resolution techniques. The Center thanks editorial consultant Meg Byerly Williams, student researchers Roisin Gorzewski and Marissa Weiss, and former student associate Radina Valova for their contributions to this resource guide.

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Introduction

Despite their invention in the 20th century and countless technological advances since, many municipalities have not amended their zoning ordinances to allow and accommodate solar energy systems. From simple roof-mounted panels on single-family homes in the 1970s, solar energy has expanded to include materials integrated into buildings, small- and larger-scale, ground-mounted structures, and large-scale solar arrays or farms, as well as medium-scale, roof-mounted systems on large office and commercial buildings. Currently, local land use authorities may discourage solar energy projects because they are not clearly permitted under local zoning. As solar energy technology progresses and the economy requires cleaner, often cheaper, renewable fuels, it is imperative that local governments advance their economic development and sustainability plans by reviewing and amending local zoning laws to permit the types of solar energy systems that each community desires for its homeowners and businesses.

This document is designed to help New York State localities amend zoning and other land use regulations to permit the development of solar energy systems in their jurisdictions. While it applies to many types of solar energy systems, this resource guide focuses primarily on solar electric or photovoltaic (PV) systems. It begins by describing the local government's role in land use planning and regulation. It then discusses the importance of defining all solar energy systems that a community wants to allow in existing zoning districts and shows how to incorporate those definitions in the zoning ordinance. Next, the guide explains how a municipality can amend zoning to permit these systems either as principal, secondary, accessory, or specially permitted land uses in existing zoning districts, as well as how to exempt certain systems from zoning altogether. The resource then explains how relevant bulk and area requirements must be amended to accommodate permitted solar energy systems. Subsequently, the guide discusses how to amend site plan requirements to include standards for solar energy systems, examines how local governments can modify environmental impact review under SEQRA, and considers the role of other local boards in streamlining the approval process for solar energy systems. Beyond permitting solar energy systems, the guide discusses ways to amend land use laws to either require or encourage them. Throughout, this document provides helpful resources and examples that communities can use when regulating to allow, encourage, or require various solar energy systems. Although land use terminology may vary by regional and jurisdictional practice, the examples generally represent approaches discussed throughout the guide.

1. The Role of Local Governments in Planning & Zoning for Solar Energy

Although both the federal and state levels of government have a strong interest in encouraging the deployment of renewable energy systems, the power to permit solar energy systems under land use law has been delegated by most states to local villages, towns, and cities. This is the case in a home-rule state like New York where state objectives involving land use, with few exceptions, are accomplished only in cooperation with local governments. It is New York State policy to defer to local discretion in these

matters, allowing local policy makers to determine the types of renewable energy systems they want to permit and encourage and helping them accomplish their goals. Local governments do this by utilizing the tools and strategies made available to villages, towns, and cities under the local land use system.

Approximately 1,600 local governments exist in New York. All of them enjoy the discretion and power to adopt comprehensive land use plans, zoning, and land use laws and to establish a variety of local land use boards to administer land use controls, including planning boards, zoning boards of appeal, and special boards for historic preservation, environmental conservation, and architectural review. The land use system's legal framers intended localities to adopt comprehensive plans first, followed by the adoption of zoning provisions that carry out a plan's goals and objectives and that establish and designate the proper role for land use boards. Under New York law, land use regulations must conform to local comprehensive plans, and local boards cannot act if not empowered to permit certain land uses, subject to legislated standards.

Local officials who want to encourage solar energy systems should adjust the local land use system by first adding a solar energy component to the comprehensive plan or adopting a special solar energy policy or plan to guide the reform of land use regulations. To help accomplish this, the NY-Sun PV Trainers Network offers a planning workshop featuring the Land Use Planning for Solar Energy resource guide, which describes how NYS localities can develop and adopt solar friendly policies and plans. This guide highlights the Land Use Law Center's model Resolution Supporting Implementation of a Solar Energy Program, a comprehensive policy statement that municipalities can adopt. The resolution includes relevant findings, authorizes a task force to conduct research and report recommendations to city council, and lists potential techniques a locality should consider during this process.

After adopting a solar energy policy and plan, local governments can amend zoning regulations to permit and encourage these systems. Most New York municipalities have adopted zoning ordinances that establish various zoning districts within which certain land uses are allowed as principal, accessory, secondary, or specially permitted uses. If a land use, such as a certain type of solar energy system, is not permitted in a zoning district, it is prohibited unless the zoning board of appeals issues a use variance. Use variances are subject to strict state-established standards and are very difficult to obtain.

For each district, zoning must specify land uses allowed and set density, bulk, and area requirements, as well as other applicable standards. To further regulate land development, local governments may adopt site plan and subdivision regulations to supplement zoning law prescriptions. Site plan regulations allow administrative agencies, usually the planning board, to review and approve specific site design and features and adjust them to mitigate their impact on the neighborhood and community. Subdivision regulations require the submission of a plat or map of a proposed subdivision, showing layout and approximate dimensions for roads, sewers, water systems, and other important features, for similar approval.

When adopting a zoning ordinance, the local legislature must create a zoning board of appeals to review the zoning administrator's decisions and respond to requests for variances. Additionally, local legislatures often create planning boards to review site plan, subdivision, and other land use applications. A municipality's building department approves building permit applications to ensure construction accords with State building codes, and depending on local circumstances, the local legislature may create other boards to review land development applications, ensuring proposed projects do not harm historic, architectural, or natural resources. New York's State Environmental Quality Review Act (SEQRA) further adds to the land use process, requiring local boards to determine whether certain proposed local actions will have significant adverse environmental impacts and to consider alternatives and impose conditions to avoid or mitigate any impacts.

Zoning ordinances typically require the local building inspector or a designated building department officer to serve as the Zoning Enforcement Officer (ZEO). Under this charge, the ZEO must know the zoning ordinance thoroughly, offer formal zoning interpretations as applied to proposed projects, and determine whether adopted land use regulations permit an applicant's project, as well as the process an applicant must follow to secure required approvals. When a homeowner, business entrepreneur, or developer proposes a solar energy system installation on an existing building or on its surrounding lot, the ZEO must determine whether zoning permits the system, the type of land use the system is, and the requirements it must meet. Because the ZEO must disapprove all land uses not permitted in zoning, it is important for the local legislature to determine which solar energy systems it wants to permit, define these systems, add those definitions to the zoning ordinance, ensure that each defined system is a permitted land use in zoning, and make sure that a local board is designated to approve that use. Below, this resource shows how local governments can amend zoning and other land use regulations to allow and accommodate solar energy systems. For more information about the local land use system and how it operates, consult the resources highlighted below.

Resource: NY DOS James E. Coon Technical Series

The NY Department of State Division of Local Government Services offers the James E. Coon Technical Series of short guides on a range of planning and zoning topics for New York municipalities. Guide titles include Adopting Zoning for the First Time, Creating the Community You Want: Options for Land Use Control, Governmental Immunity from Zoning, a Guide to Planning and Zoning Laws of New York State, Land Use Moratoria, Local Open Space Planning Guide, Questions for the Analysis and Evaluation of Existing Zoning Regulations, Record Keeping Tips for Zoning Administration, Site Plan Review, Subdivision Review in New York State, Transfer of Development Rights, Zoning Board of Appeals, Zoning and the Comprehensive Plan, and Zoning Enforcement. To access this series, visit <http://www.dos.ny.gov/lg/publications.html>.

Resource: New York Planning Federation’s Planning and Zoning Training Series:

The NYPF provides specialized training opportunities for New York municipalities, including a Planning and Zoning Series that offers five trainings: a land use training session on the basics of local land use regulation for planning and zoning boards and others; an advanced land use training session focused on specific community needs; an environmental review training that covers SEQRA requirements and the role of municipal boards and coordination with local planning and land use regulations; a comprehensive plan primer that presents the benefits and content of a comprehensive plan; and a subdivision training that covers the basics of subdivision review, as well as new techniques for creative development. For more information, visit <http://www.nypf.org/editable/training.html>.

Resource: Well Grounded

Well Grounded: Using Local Land Use Authority to Achieve Smart Growth is an easy-to-use and practical reference for land use officials and professionals, academics, and citizens who wish to better understand New York State’s remarkable land use regime. It places land use practice into the national perspective of sprawl and smart growth by comprehensively describing one of the nation’s most complete state land use regimes. Well Grounded covers the history of land use practice from its evolution in 1916 and describes the political history of land use law in New York. Each chapter provides basic definitions of all topics before delving into more complicated applications of them. To order a copy of Well Grounded, visit <http://www.law.pace.edu/center-publications>.

Resource: The Zoning School

Created in 1999 by the Land Use Law Center for the New York Municipal Insurance Reciprocal (NYMIR), The Zoning School is a land use training program for local officials. Local governments can self-certify their boards after a majority of a board’s members have satisfactorily completed five of the program’s nine lessons. Each lesson covers a different aspect of law and practice applicable to the work of local land use boards. The tutorials include Zoning—the Basics, Comprehensive Planning, Subdivision Approval, Site Plan Approvals and Conditions, Variances, Special Use Permits and Permit Conditions, Environmental Review, Local Boards, and Strategic Local Laws. To learn more about The Zoning School, go to <http://www.law.pace.edu/zoning-school>.

2. Defining Solar Energy Systems in the Zoning Code

2.1 Important Role of Zoning Definitions in Regulating Solar Energy Systems

Typically, a zoning code has a section called “definitions” that defines all land uses permitted in any zoning district in the community. To properly permit and regulate solar energy systems, the zoning code must include definitions that delineate each type of system that the community wishes to permit. Generally, solar energy systems transform energy from sunlight into electricity or heat using specialized electrical or mechanical equipment that varies greatly in type, shape, size, and capacity from system to system. For example, solar photovoltaic systems create electricity from solar energy using photovoltaic cells in rooftop or ground-installed panels or incorporated into building

materials. Similarly, solar thermal systems use radiant heat from the sun to warm fluids in a series of tubes or panels that are typically roof-mounted to heat water or cool and/or heat buildings.

Because solar energy systems vary greatly in size and shape, they require varying levels of review depending on magnitude of impacts. A municipality should amend its zoning ordinance to include a definition for each type of solar energy system it wishes to allow and regulate. After drafting clear zoning definitions, the municipality must determine where to permit and how to regulate each defined system in the zoning code, as each must be subject to clear standards and have an appropriate required approval process or exemption.

2.2 Using Solar Energy System Factors to Determine Zoning Definitions

Since solar energy systems vary significantly by type, location of usage, size, and energy capacity, zoning definitions generally are based on these factors. Once a municipality determines the various solar energy systems it wants to permit, these systems can be categorized into several different zoning definitions using these factors. In particular, local governments should use these factors to organize solar energy systems according to their impacts on land and neighboring properties, thus enabling stricter standards and review processes for systems with higher impacts.

The number of factors used to create zoning definitions varies among municipalities. Sometimes definitions are very simple, using a single factor to differentiate between systems, such as distinguishing between system types. For example, a community might permit roof-mounted systems but choose to prohibit ground-mounted systems in some residential districts. Alternatively, zoning definitions can use many factors to define several solar energy system categories. The four factors municipalities consider when creating zoning definitions include:

1. Energy system type,
2. Location where system-produced energy is used,
3. Size and shape of the system, and
4. System energy capacity.

These factors are described in more detail below:

System Type

A municipality may create zoning definitions for solar energy systems based on the system type. Many types of systems exist; however, most municipalities distinguish among three types of solar energy systems: (1) roof- or building-mounted, (2) ground-mounted or freestanding, and (3) building-integrated.

- Roof- or building-mounted solar energy systems are attached to the top of a building or structure. Generally, a roof-mounted system is secured using racking

systems that minimize impacts and is mounted either level with the roof or tilted toward the sun.

- Ground-mounted or freestanding solar energy systems are installed directly in the ground and not attached to any existing structure. Single or multiple panels can be mounted on individual or multiple poles when space, structural, shade, or other constraints inhibit roof-mounted systems. Much larger freestanding systems, including solar farms, can be constructed on the ground.
- Finally, building-integrated solar energy systems are incorporated into a building or structure rather than existing as separate equipment. Building-integrated systems are used as a structural component of the building, such as a roofing system or building façade. This can include roof shingles or tiles, laminates, glass, semi-transparent skylights, awnings, and fixed awnings. As a rule, zoning usually does not include definitions for building materials because the building code is responsible for their regulation, but municipalities may include zoning definitions for building-integrated solar energy systems to clarify differences in approval process requirements for the different system types.

Municipalities should take care when defining solar energy systems based on type, as ground-mounted systems are often associated with large impacts and the size of both roof- and ground-mounted systems influences their effect on surrounding properties.

Example: Penn Future Solar Zoning Ordinance

Penn Future’s Western PA Rooftop Solar Challenge Final Solar Zoning Ordinance provides an example of solar energy systems defined based on type. The ordinance defines a “building-mounted system” as one “attached to any part or type of roof on a building or structure that has an occupancy permit . . . and that is either the principal structure or an accessory structure” Additionally, the ordinance defines a “ground-mounted system” as one “mounted on a structure, pole or series of poles constructed specifically to support the photovoltaic system and not attached to any other structure” and defines a “building-integrated system,” in part, as one “constructed as an integral part of a principal or accessory building or structure and where the building-integrated system features maintain a uniform profile or surface of vertical walls, window openings, and roofing.” To view the entire Penn Future model ordinance, visit http://www.pennfuture.org/SunShot/SunSHOT_Ord_Zoning.pdf.

Energy Usage

Municipalities also consider where system-produced energy is utilized when defining solar energy systems in zoning. For example, Solar PV systems produce electrical energy that is used in three ways: (1) onsite, (2) offsite, or (3) both onsite and offsite. Onsite generation occurs when the energy produced serves only the property owner, occupant, or onsite facilities. An onsite solar PV system primarily provides electricity to one property, rather than multiple parcels. Solar PV systems that generate electrical power for offsite use export all PV-system produced electricity to a utility to help meet its customers’ energy demand. A solar PV system must be interconnected with the

electrical grid to transfer energy onto the grid to a utility. Once interconnected, both onsite and offsite solar PV systems may sell excess PV-system generated electricity back to the grid through a process called net-metering. Solar energy systems that generate power for onsite and offsite use serve the property owner, occupant, and/or onsite facilities, as well as offsite customers. Generally, systems that serve onsite uses are smaller and sited on residential or small commercial properties as accessory uses, and systems that serve offsite uses are utility-scale solar farms sited on industrial parcels as the principal use. Solar energy systems that serve both onsite and offsite uses are often medium-sized systems sited on commercial or agricultural parcels designed to provide additional revenues. Although these generalities typically hold true, municipalities should proceed carefully when using this factor to define solar energy systems, as location of energy usage does not always correlate directly with land use impacts.

Example: Casco Township, ME

Casco Township’s zoning ordinance includes solar energy provisions that define solar energy systems, in part, based on energy usage. For example, small solar energy systems “produce utility power primarily to on-site users or customers,” medium systems “produce utility power to on-site uses and off-site customers,” and large systems “produce utility power to off-site customers.” For more information about these regulations, visit <https://www.planning.org/pas/infopackets/open/pdf/30revpart13.pdf>.

Bulk & Area

Zoning may define solar energy systems according to their physical size using measurements similar to those found in the zoning ordinance’s bulk and area requirements. Typically, bulk and area standards limit the size of a system using a minimum or maximum footprint or disturbance zone measured in acres, square feet, percent lot coverage, or percent of the primary structure’s footprint.

Example: Template Solar Energy Development Ordinance for NC

The Template Solar Energy Development Ordinance for North Carolina defines solar energy systems, in part, based on their physical size measured in acres. According to the state’s model ordinance, Level 1 Solar Energy Systems include those that are “ground-mounted on an area of up to 50 [percent] of the footprint of the primary structure on the parcel but no more than [one] acre,” and Level 2 Solar Energy Systems are ground-mounted systems with a footprint of less than or equal to a half acre in residential districts, less than or equal to 10 acres in general commercial business and office-institutional districts, and of any size in industrial districts. Finally, solar energy systems that do not satisfy the parameters for Level 1 or 2 systems are designated as Level 3 Solar Energy Systems. For more information about this template ordinance, visit http://nccleantech.ncsu.edu/wp-content/uploads/Template-Solar-Ordinance_V1.0_12-18-13.pdf.

Energy Capacity

Often, municipalities define solar energy systems based on energy capacity because the physical size of a solar energy system generally increases as kilowatts produced increases. Further, communities often use energy usage metrics to define solar energy systems because many grants are available based on how much energy a system produces. For example, the NY-Sun Initiative provides incentives to help reduce installation costs associated with solar electric systems up to 25 kilowatt (kW) for residential applications and up to 200 kW for nonresidential applications (larger multi-unit buildings, schools, non-profits, and government) in most of New York State. When defining systems using energy capacity as a factor, zoning definitions delineate the systems based on a minimum or maximum generating capacity, rated capacity, or rated storage volume, all measured in kilowatts (kW) or kilowatts per hour (kW/hour). When considering whether to define systems based on energy capacity, local governments should keep in mind that solar PV technology will change over time, increasing panel efficiencies so that kW output will not necessarily correlate with system size and land use impacts in the future.

Example: Worcester County, MD

In its alternative energy facilities regulation, Worcester County defines solar energy systems, in part, based on energy capacity. It defines large solar energy systems as those with a rated capacity of two hundred kilowatts or greater. Medium solar energy systems are ground-mounted systems with a rated capacity greater than five kilowatts but less than two hundred kilowatts or roof-mounted systems of any capacity in excess of five kilowatts. Finally, small solar energy systems have a rated capacity of five kilowatts or less. Worcester County, M.D., Code § ZS 1-344.

2.3 Example Zoning Definitions for Solar Energy Systems

Below, several local and model examples are listed to demonstrate a variety zoning definitions that use the factors described above to define solar energy systems. Although land use terminology varies by regional and jurisdictional practice, these examples generally represent the approaches discussed above.

Example: Kent County, MD

Factor Used—Energy Usage

Kent County's Renewable Energy Task Force released recommendations for regulating renewable energy systems, including suggested land use ordinance language for solar energy systems. The recommendations suggested defining utility-scale solar energy systems as any device that relies upon direct sunlight as an energy source, including but not limited to any device that collects sunlight to generate energy primarily for use offsite. Small solar energy systems are defined as any device that relies upon direct sunlight as an energy source, including but not limited to any device that collects sunlight to generate energy for use onsite. The small system definition allows energy to be delivered to a power grid to offset the cost of energy on site. To access these recommendations, go to http://www.kentcounty.com/gov/planzone/RETF_WHITE_PAPER_Final.pdf.

Example: NYS Model Solar Zoning Ordinance
Factors Used—System Type and Energy Usage

The City University of New York's Sustainable CUNY is preparing a model solar zoning ordinance as part of the U.S. Department of Energy's SunShot Initiative Rooftop Solar Challenge II. The model ordinance will define building-integrated photovoltaic (BIPV), ground-mounted systems, large-scale systems, and roof-mounted systems. The model solar zoning ordinance is expected to be released in late 2015.

Example: Goodhue County, MN
Factors Used—System Type and Energy Usage

Goodhue County adopted solar energy system (SES) regulations in Article 19 of its zoning ordinance. These regulations define a ground-mounted SES as a solar collector located on the ground surface that is physically affixed or attached to the ground, including pole-mounted systems. The regulations define a roof-mounted SES as a solar collector located on the roof of a building or structure that may be physically affixed or attached to the roof. For both ground-mounted and roof-mounted SESs, the regulations include sub-definitions for residential, commercial, and utility scale SESs. The regulations define a residential SES as accessory to the primary use of the land, designed to supply energy for onsite residential use with excess energy sold back to the grid through net metering. A commercial SES is defined as accessory to a permitted farm or business use of the land, designed to generate energy to offset utility costs or as an additional revenue stream. Finally, the utility Scale SES is defined as an energy system that is the primary use of the land, designed to provide energy primarily to offsite uses or for export to the wholesale market. Goodhue County, M.N., Zoning Ordinance Art. 19, *available at* <http://www.co.goodhue.mn.us/DocumentCenter/View/2428>.

Example: Model Ordinances for Solar Energy Projects in Virginia
Factors Used—System Type and Bulk & Area

A local government outreach group convened by the Virginia Department of Environmental Quality developed two model zoning ordinances, one for smaller-scale solar energy projects and one for larger-scale projects. These ordinances define both smaller-scale and larger-scale projects as those that (1) generate electricity from sunlight using one or more photovoltaic systems and other appurtenant structures and facilities onsite OR (2) utilize sunlight as an energy source to heat or cool buildings or water or produce electrical or mechanical power by collecting, transferring, and/or converting solar-generated energy. The definitions also delineate how these projects differ. A smaller-scale project is defined as one that (1) has a disturbance zone equal to or less than two acres, (2) is mounted on or over a building or parking lot or other previously-disturbed area, OR (3) utilizes integrated photovoltaics only. A larger-scale project is defined as any solar energy project that does not meet these criteria. For more information about the model ordinances, go to <http://www.deq.virginia.gov/Programs/RenewableEnergy/ModelOrdinances.aspx>.

Example: Village of Croton-on-Hudson, NY

Factors Used—System Type and Energy Capacity

Croton adopted the NY-Sun Unified Solar Permit (USP), a combined building and electrical permit for certain solar energy systems developed by the New York State Energy Research and Development Authority (NYSERDA), the New York Power Authority (NYPA), and the City University of New York's Sustainable CUNY. The USP expedites the permitting process for "small-scale solar electric systems," that have a rated capacity of 12 kW or less and that are installed on a permitted roof structure of a building, or on a legal accessory structure, among other requirements. The USP streamlines the permitting process for small-scale solar electric systems, requiring permit determinations to be issued within 14 days of complete application submission. USP-eligible systems are subject to building and electrical code review but are exempt from any zoning requirement. To view Croton's USP application, go to http://www.crotononhudson-ny.gov/Public_Documents/CrotonHudsonNY_Engr/Application-UnifiedSolarPermitfinal.pdf.

Example: Casco Township, ME

Factors Used—System Type, Energy Usage, and Bulk & Area

Casco Township passed Ordinance #30-83 to add provisions addressing small, medium, and large solar energy systems in its zoning ordinance. The ordinance defines small solar energy systems as single residential or small business-scale solar energy conversion systems consisting of roof panels, ground-mounted solar arrays, or other solar energy fixtures, and associated control or conversion electronics, occupying no more than one-half acre of land and that produce utility power primarily to onsite users or customers. Medium solar energy systems are defined as private onsite or utility-scale solar energy conversion systems with many ground-mounted solar arrays in rows or roof panels, and associated control or conversion electronics, occupying more than one-half acre but no more than ten acres of land and that produce utility power to onsite and offsite customers. Finally, the ordinance defines large solar energy systems as utility-scale solar energy conversion systems with many ground-mounted solar arrays in rows, and associated control or conversion electronics, occupying more than ten acres of land and that produce utility power to offsite customers. To access this ordinance, go to <https://www.planning.org/pas/infopackets/open/pdf/30revpart13.pdf>.

Example: Town of New Hartford, NY

Factors Used—System Type, Energy Usage, and Energy Capacity

The Town of New Hartford's solar energy system regulation defines freestanding or ground-mounted solar energy systems as those directly installed in the ground and not attached or affixed to an existing structure. Rooftop mounted or building mounted systems are defined as those with solar panels mounted on top of a roof structure either as a flush-mounted system or modules fixed to frames that can be tilted toward the south at an optimal angle. The regulation defines small-scale solar as solar photovoltaic systems rated up to 10 kW per hour of energy or solar thermal systems that serve the building to which they are attached. Town of New Hartford, N.Y., Code § 118-74.

Example: Worcester County, MD

Factors Used—System Type, Energy Usage, and Energy Capacity

Worcester County’s alternative energy facilities regulation defines large, medium, and small solar energy systems. Large solar energy systems are ground-mounted with a rated capacity of 200 kW or greater and with a principal purpose to provide electrical power for sale to the general power grid. Medium solar energy systems are ground-mounted systems with a rated capacity greater than 5 kW but less than 200 kW or a roof-mounted system of any capacity in excess of 5 kW and serving, or designed to serve, any agricultural, residential, commercial, institutional, or industrial use on a single lot or parcel or group of adjacent lots or parcels. Lastly, small solar energy systems have a rated capacity of 5 kW or less and serve, or are designed to serve, any agricultural, residential, commercial, institutional, or industrial use on a single parcel or lot. The small solar energy system definition further states that individual or small groups of photovoltaic cells that are attached to and used to directly power or charge a battery for an individual device such as a light fixture, fence charger, radio, or water pump are not considered a small energy power generation facility and may be used in any zoning district without regard to lot or setback requirements. Worcester County, M.D., Code § ZS 1-344.

Example: Model Small-Scale Solar Siting Ordinance

Factors Used—System Type, Energy Usage, and Energy Capacity

Columbia Law School’s Center for Climate Change Law developed the Model Small-Scale Solar Siting Ordinance, which includes several helpful solar energy system definitions. The model ordinance defines building-integrated photovoltaic (BIPV) systems as those that integrate photovoltaic modules into the building structure, such as the roof or façade, but which do not alter roof relief. The model defines freestanding or ground-mounted solar energy systems as those directly installed in the ground and not attached or affixed to an existing structure and defines rooftop or building mounted solar energy systems as those mounted on top of a structure or roof as a flush-mounted system or as modules fixed to frames that can be tilted toward the south at an optimal angle. Finally, the model ordinance defines small-scale solar as solar photovoltaic systems that produce up to ten kW per hour of energy or solar-thermal systems that serve the building to which they are attached and that do not provide energy for any other buildings. To access this model ordinance, go to <http://web.law.columbia.edu/sites/default/files/microsites/climate-change/files/Resources/Model-Ordinances/Model-Small-Scale/Model%20ordinance%20Solar%20v%207.pdf>.

3. Updating Zoning Codes

After creating solar energy system definitions for the zoning code, a municipality must determine in which zoning districts to permit each defined system, as well as how to permit each system and appropriate amendments for bulk & area requirements to accommodate these systems. In most zoning codes, the local government must modify the Article that creates zoning districts by adding defined solar energy systems to the list of permitted uses for each district and by amending dimensional requirements in the

bulk and area schedule for each permitted system. In some zoning codes there is an Article on Supplemental Regulations where these can be added.

3.1 Adding Defined Solar Energy Systems to Appropriate Zoning Districts

First, the municipality must decide in which zoning districts to permit each defined solar energy system. Generally, municipalities allow various types of systems in residential, agricultural, commercial, industrial, and mixed-use districts based on their impacts on surrounding properties.

When amending an existing zoning district to allow solar energy systems, defined systems are added as new land uses listed in the district's use regulations. Use regulations in zoning categorize allowed land uses as principal, accessory, secondary, or special. A principal use is allowed as-of-right on a parcel, while accessory uses are allowed on the parcel if they serve the principal use while being subordinate, incidental to, and customarily found in connection with that principal use. In contrast to an accessory use, a secondary use is another use on a parcel that is not a subordinate use; instead, it rises to the level of a second principal use and is also allowed as-of-right. Finally, a special use is a principal use of the land that is not as-of-right. Special uses must meet certain conditions and undergo a special use approval process before they are permitted. When updating use regulations in zoning to include solar energy, a municipality should add each defined solar energy system as one of these use types in appropriate zoning districts. Below, the four use types are described further as they relate to solar energy systems.

Principal Use

For each district, zoning lists certain uses as principal uses of land that are permitted as-of-right. In most municipalities, one principal use is permitted on each building site. Typically, a solar energy system is considered a principal use when most or all of the energy it produces is consumed offsite. Often, such a system consists of a large-scale, ground-mounted solar field, raising concerns regarding land disturbance, increased impervious surface, and aesthetic consequences. Large solar farms with greater impacts usually are permitted only in industrial, agricultural, or similar districts.

Accessory Use

A solar energy system is an accessory use when it generates power solely for onsite use to benefit the principal use of the land. Accessory uses exist on the same lot as the principal use and are subordinate, incidental to, and customarily found in connection with the principal use. Often, a solar energy system that is an accessory use is small-scale, roof- or ground-mounted system designed to supply energy for a principal use on a residential, commercial, or mixed-use parcel. A municipality may expressly list solar energy systems as accessory uses in particular districts or choose to allow these systems in all zones because they meet the qualifications of the municipality's general definition for accessory uses, which states that accessory uses are customary, incidental, and subordinate to the principal use. For example, New Rochelle, New York,

allows certain small-scale, roof-mounted systems as accessory uses under the City's general accessory use definition. Solar energy collectors on one- or two-family dwellings, as well as those that cover less than 1,000 square feet of the roof area of other buildings, require only a building permit.

Secondary Use

A solar energy system is a secondary use if it provides energy mostly for onsite uses but ships some offsite. Usually, a system is deemed a secondary use requiring more oversight when it is installed separately as a second use on the same lot as the principal use and exports over a certain threshold amount of power to offsite uses. For example, a medium-scale system sited on a commercial or agricultural parcel might be a secondary use if it provides solar energy for the onsite, principal use while shipping a significant amount of energy offsite to generate additional revenues.

Special Use

Where appropriate, zoning can designate a solar energy system as a special use requiring a special use permit issued by a local board. In these cases, the special use is a principal use allowed but conditioned upon compliance with specific requirements imposed to limit any negative effects on adjacent properties and the community. For example, a municipality may require special use permits to ensure screening or noise attenuation of certain solar energy systems in sensitive locations. If an applicant can demonstrate conclusively that the project complies with all conditions and no negative impact will result, the special use permit usually is granted.

3.2 Land Use Review Options for Solar Energy Systems

Zoning codes contain provisions that subject various land use proposals to a review and approval process involving local administrative officials and land use boards. The local legislature is responsible for zoning code amendments to permit various types of solar energy systems. In most cases, the planning board or commission is responsible for review and approval of special use permits, as well as site plan and subdivision applications, involving solar energy systems; in some cases the zoning board of appeals may be the approval body. Zoning code provisions that express project review and approval requirements generally intensify as impacts associated with permitted solar energy systems increase. For example, smaller systems with few or no land use impacts may be exempt from review or enjoy a streamlined administrative review process with fewer standards, while larger systems require a more rigorous, time-consuming, and intense review process before one or more local boards.

Because they have few or no land use impacts, municipalities often "exempt" building-integrated solar energy systems from board review, requiring only a building permit. As a component of the principal use, building-integrated systems are subject only to building code compliance. In these cases, the application is approved administratively through the building permit process, in which the building inspector ensures compliance with the building, electrical, and other codes. The review process is similarly

uncomplicated for small-scale systems that are accessory uses, such as a roof-mounted system on a house in a residential district. Small-scale systems allowed as accessory uses generally require review by the zoning enforcement officer to ensure that the system complies with relevant use, bulk and area, and other relevant zoning requirements. If compliant, such systems are approved administratively through the building permit process.

To streamline the review process for small-scale, roof-mounted solar energy systems, municipalities can adopt the NY-Sun Unified Solar Permit (USP), which expedites the process to obtain a building permit. If a system qualifies for the Unified Solar Permit, the building department runs it through an accelerated, 14-day approval process. The USP is based in part on a similar unified solar permitting process developed by the Long Island Unified Solar Permitting Initiative (LIUSPI). Several Long Island municipalities have adopted LIUSPI's Solar Energy System Fast Track Permit Application, which waives or imposes minimal application fees and provides permit determinations within 14 days of complete application submittals for "standard" residential solar electric and solar hot water systems. For more information about the USP and the LIUSPI application, see the resource box below.

Resource: NY-Sun Unified Solar Permit

The New York State Energy Research and Development Authority (NYSERDA), New York Power Authority (NYPA) and City University of New York's Sustainable CUNY developed the Unified Solar Permit (USP) to reduce costs for solar projects by streamlining municipal permitting processes. Municipalities can adopt the USP, part of Governor Cuomo's NY-Sun initiative, to expedite the time it takes qualifying solar energy systems to obtain a combined building and electrical permit for a grid-tied system. To be eligible, systems must have a rated capacity of 12 kW or less, cannot be subject to an architectural or historical review board, must not need a zoning variance or special/conditional use permit, and must be roof-mounted, compliant with building and related codes, and meet mounting and weight distribution requirements, among others. Along with the application, USP applicants must submit an eligibility checklist, a set of plans that include a site plan, a one- or three-line electrical diagram, specification sheets for manufactured components, and a permit fee. Permit determinations are issued within 14 days of complete application submission. Municipalities that adopt the USP are eligible for grants between \$2,500 and \$5,000 to implement the new procedures, depending on population, through NYSEDA's Cleaner, Greener Communities program. The City of White Plains and several other New York municipalities have adopted the USP. For more information about the USP, visit <http://ny-sun.ny.gov/-/media/Files/About/Statewide-Initiatives/CGC-Plans/Guidance/NYS-unified-solar-permit.pdf>. To view White Plain's USP application, go to <http://www.cityofwhiteplains.com/DocumentCenter/View/253>.

Resource: LIPA Fasttrack Permit

A collaborative effort led by the Long Island Power Authority (LIPA), the Suffolk County Planning Commission, and the Nassau County Planning Commission, the Long Island Unified Solar Permitting Initiative (LIUSPI) developed the model LIPA Fasttrack Permit Application to help Long Island municipalities streamline and standardize the building permit application process for “standard” installations of grid-tied PV or Residential Solar Hot Water (RSHW) systems. Such installations are qualified for the streamlined process if they are roof-mounted to a residential building or legal accessory structure, meet certain mounting height and weight limits, are not subject to architectural or historical board review, are installed by pre-screened contractors, use certified and approved equipment, and are in compliance with current National Electrical Code (NEC) requirements, among others. Applicants must submit an application fee of no more than \$50 if not waived, a completed application requirements checklist, an application information sheet, and three sets of plans that include property and contact information, a property survey, and professional configuration diagrams. Permit determinations are provided within 14 days of complete application submittal. The Town of Babylon and several other Long Island municipalities have adopted this model application. For more information about the LIPA Fasttrack Permit Application, go to <http://ny-sun.ny.gov/For-Local-Government/Local-Government>. To view Babylon’s solar energy system fast-track permit process, see Town of Babylon, N.Y., Code Ch. 89, Art. X.

Larger solar energy systems with greater potential land use impacts may require heightened land use review. In these cases, a municipality can subject systems to site plan approval if they exceed certain thresholds for size, total lot coverage, height, energy capacity, or energy usage. For example, many communities require site plan approval for secondary-use solar energy systems installed on nonresidential buildings or lots because the project size is larger and some energy will be used offsite. Major site plan review is required frequently for ground-mounted, principal use systems with large impacts such as land disturbance, increased impervious surface, and aesthetic consequences. Generally, major site plan review involves heightened review with more standards. Minor site plan review has fewer requirements and is appropriate for medium-sized systems with reduced impacts. See Section 4 below for more information about major and minor site plan review. Alternatively, local governments can allow solar energy systems with greater potential land use impacts as special uses. The planning or zoning board must review proposed special uses to determine whether they meet required standards in the special use permit regulations designed to minimize negative impacts.

Example: Goodhue County, MN

Goodhue County’s solar energy system regulations require all solar energy systems that have greater than a 2 kW capacity to obtain a building permit and a zoning approval in the form of an administrative review; a zoning permit; or a conditional or interim use permit, depending on the zoning district in which the system is located. The County Board may require an interim use permit in lieu of a conditional use permit for land use activities that the board determines should be permitted for limited duration. Where allowed, utility-scale photovoltaic rooftop and ground-mounted solar energy systems always require a conditional or interim use permit. Commercial-scale rooftop and

ground-mounted solar energy systems require a conditional or interim use permit in certain environmentally sensitive zoning districts and a zoning permit in all other districts where allowed. All small-scale residential rooftop and ground-mounted solar energy systems may be approved administratively. Goodhue County, M.N., Zoning Ordinance Art. 19, available at <http://www.co.goodhue.mn.us/DocumentCenter/View/2428>.

Example: Town of New Hartford, NY

New Hartford's solar energy systems regulation permits rooftop- and building-mounted solar systems, as well as solar-thermal systems, as accessory uses in all zoning districts with the issuance of a building permit. The regulation also permits freestanding or ground-mounted solar collectors as accessory uses in all zoning districts with a building permit but subjects systems on lots less than 10,000 square feet to planning board review to ensure appropriate solar access, avoid future solar access conflicts, and minimize aesthetic impacts. Town of New Hartford, N.Y., Code § 118-74.

Example: Yolo County, CA

Yolo County's solar energy regulations allow approval of small solar energy systems for onsite uses through the issuance of a building permit and a zoning clearance, provided the application meets setback and other standards set forth in the solar energy regulation. If the County's chief building official believes a small solar energy system could have a specific, adverse impact upon the public health and safety, the official may require the applicant to apply for a use permit. Medium-sized solar energy systems for onsite and/or offsite uses may be approved through site plan approval, provided the application meets specific standards set forth in the solar regulation for medium-sized systems. The site plan review approval is ministerial (not discretionary) and does not require a public hearing. If an application for a medium-sized system fails to meet any of the standards, the zoning administrator must review it as an application for a minor use permit. The board of supervisors approves large and very large utility-scale solar energy systems through the issuance of a major use permit, following the planning commission's recommendation, provided the application is consistent with conditions and standards set forth in the County's solar regulations for large and very large systems. Yolo County, C.A., Code § 8-2.1104, .1105, available at <http://www.yolocounty.org/home/showdocument?id=26308>.

3.3 Reviewing Bulk & Area Requirements

When adding solar energy systems to zoning districts and choosing a review process for each defined system, municipalities should review the bulk and area charts in those zoning districts to determine whether any requirements will create barriers to these systems. In cases where existing bulk and area requirements would prevent the construction of a solar energy system, the municipality should consider amending setbacks, yard requirements, height limitations, and lot and impervious coverage requirements to accommodate these systems. Also, local governments can exempt solar energy systems from some or all of these requirements where possible, as in Bedford, New York (see example below).

Example: Town of Bedford, NY

Bedford allows solar energy collectors as as-of-right accessory structures in all zoning districts subject to maximum area, height, and setback requirements. However, the Town's zoning also exempts solar energy collectors from maximum building height limitations provided they do not extend more than 15 feet above the roof and they do not cover more than ten percent of the roof area. Town of Bedford, N.Y., Code §§ 125-20, -27.

3.4 Development Standards for Solar Energy Systems

Beyond bulk and area requirements or waivers, some municipalities impose specific development standards to mitigate land use impacts associated with solar energy systems, requiring applicants to adhere to these standards prior to granting approvals. As with bulk and area requirements, a municipality should adopt development standards that avoid creating unnecessary burdens for solar energy system development. Such development standards generally vary according to system and approval type, with more stringent requirements associated with greater land use impacts. To minimize the visual impacts of roof-mounted, accessory-use systems, a local government may impose maximum height requirements; solar panel tilt or angle provisions; equipment placement within building envelope; and color or location restrictions that prevent system visibility from a public right of way. Similarly, local zoning may require ground-mounted, accessory-use systems to meet limited setbacks or maximum height requirements; be located underground or within rear or side yards; avoid extending beyond the building façade; blend with surroundings; or employ screening from public view.

Because they dramatically increase impervious coverage, habitat and farmland loss, and aesthetic impacts, large-scale, principal-use systems often must adhere to more rigorous development standards. Such requirements usually address system siting issues; maximum system height; minimum setbacks from adjacent lot lines or structures; minimum lot size; screening methods; system operation and maintenance; safety precautions; utility notification and interconnection agreements; leasing and easement information; compliance with relevant state and federal requirements, such as Federal Aviation Administration (FAA) regulations; required environmental and economic studies; financial surety; and abandonment, decommissioning, and site restoration.

Example: Town of Ballston, NY

Ballston's solar collection systems regulation allows building-integrated photovoltaic (BIPV) systems in all zoning districts and requires no building permit for a BIPV system if it is installed when the structure to which it belongs is constructed. The regulation also allows rooftop and building-mounted solar collectors in all zoning districts through the issuance of a building permit and subject to certain setback, engineering, and installation requirements. Similarly, the regulation permits ground-mounted and freestanding pole-mounted solar collectors as accessory structures in all zoning districts. Ground- or pole-mounted systems less than 10 feet in height are approved via the building permit process, while those that exceed this height require an area use permit from the Zoning Board of Appeals with input from abutting property owners. Ground- and pole-mounted systems must meet all applicable setback requirements and be installed in a side or rear yard. All solar energy collectors are subject to certain safety requirements, and the regulation exempts small experimental solar panels for charging batteries (less than one kilowatt) from obtaining any permits. Town of Ballston, N.Y., Code Ch. 89.

Example: Township of Bethlehem, NJ

Bethlehem's solar energy facilities regulation includes requirements for both principal-use and accessory-use facilities. Requirements for solar energy facilities that are permitted or conditional principal uses include a minimum lot size of 20 contiguous acres; 50- to 200-foot front, side, and rear yard setbacks; substation and inverter setbacks to maintain existing noise levels at property lines; year-round visual screening from neighboring residential properties; six-foot fencing where necessary; facility location away from sensitive environmental, aesthetic, and historic areas; grid-scale facility location on properties with 85-percent or fewer prime agricultural soils (unless located in certain zones); and a deforestation prohibition for grid-scale facilities. Requirements for accessory-use solar energy facilities include the maximum building height in underlying zoning for roof-mounted facilities; accessory structure setbacks in underlying zoning for ground-mounted facilities; five-foot screening or higher for certain ground-mounted facilities using existing vegetation, new plantings, and solid fencing; and tree-clearing limits for certain single-family residential sites. Additionally, Bethlehem's solar energy facilities regulation features conditions specific to farm-scale facilities, as well as general requirements that apply to all facilities, such as requirements to minimize site disturbance and impervious surfaces; limit cut and fill of soil that will return to agricultural use; label and secure electrical and control equipment; and define facility abandonment and related procedures, among other requirements. Township of Bethlehem, N.J., Code § 102.37.3.

Example: Township of Wall, NJ

Wall's solar farm regulation allows solar energy systems as a permitted principal use in some of the Township's industrial, office, and related zoning districts subject to site plan approval. Requirements for these installations include 50-foot property-line setbacks; a 20-foot maximum height limit for ground-mounted arrays oriented at maximum tilt; a 25-foot-wide, densely planted, landscaped perimeter with a six-foot-tall black vinyl-coated chain link fence inside the perimeter and plantings at least as tall as the array; 80-percent maximum lot coverage for the installation; minimized glare from panels; system and related structure design featuring colors, materials, textures, non-reflective finishes, screening, and landscaping to blend with surroundings and avoid visual blight; prohibition of advertising displays; installation by qualified solar installer; required inspections; storage and disposal provisions for solar storage batteries; limitations on natural vegetation clearing and tree removal with a plan demonstrating the need to remove trees, if necessary; and abandonment and decommissioning provisions. Township of Wall, N.J., Code § 140-139.1

Example: Town of Brookhaven, NY

Brookhaven's solar energy production facilities regulation allows these facilities as a principal use in certain zoning districts subject to a special permit and all other necessary approvals. Special permit requirements for these facilities include a minimum lot area of 20 acres; a maximum lot coverage of 60 percent for freestanding solar panels; a maximum height of 20 feet; a minimum setback of 100 feet from any neighboring dwelling or adjacent residential zone; and a minimum 25-foot perimeter landscaped buffer of native, drought-resistant evergreen plants around all mechanical equipment and solar panels to provide screening. Special permit design standards for solar energy production facilities require facility location on previously cleared or certain agricultural lands; prohibit clearing of large trees six inches in diameter or greater; require low-maintenance, drought-resistant, natural ground cover under and between panels; prescribe limited construction of pervious roadways within facility site; mandate on-site utility and transmission line placement underground where possible; require facility design and location that prevents reflective glare toward neighboring buildings and street rights-of-way; compel enclosure of mechanical equipment by a minimum six-foot-high fence with a self-locking gate and landscaped screening; and require a "proof of concept letter" from the local utility acknowledging interconnection where relevant. Finally, applicants must post a sign with owner contact information and warning signage at the facility and must include a decommissioning plan with the special permit application. Prior to building permit issuance, the facility owner or operator must post a performance bond or other suitable guarantee in a face amount of not less than 150 percent of the estimated cost to ensure facility removal in accordance with the decommissioning plan. Town of Brookhaven, N.Y. Code § 85-812.

4. Amending Site Plan Requirements

If a municipality wants to require site plan review for large solar energy systems, the site plan regulations must be amended where they were created to consider the particular circumstances of solar energy systems. Local site plan regulations can apply to solar energy systems added to an existing building or developed lot, as well as to new developments that include these systems. Site plan regulations require applicants to submit a drawing or site plan prepared according to required specifications showing the arrangement, layout, and design of the proposed land use for review and approval by a local board. Typically, the site plan must show certain elements, such as access, parking, landscaping and buffering, drainage, utilities, roads, curbs, lighting, and the location and dimensions of the principal and accessory buildings and any other intended improvements. Some communities require site plans, particularly those of larger projects, to show adjacent land uses and to provide a narrative statement of how the site's development will avoid or mitigate adverse impacts on them.

Depending on the type, location, and size of impacts associated with a solar energy system, a municipality may amend its regulations to require major or minor site plan review and approval or to exempt the system from site plan review. Generally, major site plan review is reserved for larger projects and requires site plan applications to include more information, while minor site plan review is required for smaller projects and entails a simpler application process.

4.1 Major Site Plan Review

Because they involve larger projects with bigger impacts, major site plan applicants must submit additional information with the site plan, such as a transportation or stormwater management plan. Additionally, major site plan regulations typically require two review phases, preliminary and final, and involve required public notice and hearings on site plan applications prior to taking final action.

Example: Town of Marion, MA

Marion adopted a solar bylaw that requires major site plan review and approval for ground-mounted solar farms in residential districts. Further, ground-mounted solar panel arrays in non-residential districts greater than 1500 square feet and not classified as solar farms are subject to major site plan review. In addition to submission requirements in the Town's site plan regulations, the planning board may require major site plan applicants for solar projects to provide electrical diagrams detailing solar PV systems; associated components; electrical interconnection methods; all National Electrical Code compliant disconnects and overcurrent devices; documentation of major system components, including PV panels, the mounting system, and inverter(s); the designed annual electrical output of the system; and evidence of annual onsite consumption in watt-hours. Additionally, the planning board may require contact information for the proposed system installer and any agents representing the project proponent, as well as evidence of site control and utility notification, an operation and maintenance plan, an

emergency response plan, and a description of financial surety. Town of Marion, M.A., Bylaw § 16.5.3, -.8, -.11, *available at* http://www.marionma.gov/Pages/MarionMA_Clerk/Bylaws%205.12.14.pdf.

Example: Township of Bethlehem, NJ

Bethlehem's solar energy facilities regulation requires minor site plan approval for ground-mounted solar energy facilities between 2,000 square feet and 10 acres in size, while requiring preliminary and final site plan approval for systems greater than 10 acres in size. The planning board or an appointed site plan subcommittee may waive the minor site plan approval requirement if the proposed facility is reasonable and adheres to the solar regulation's general purpose and intent. In addition to Bethlehem's standard site plan requirements, site plans for solar energy facilities must include (1) the location of proposed and existing overhead and underground utility and transmission lines, (2) the location of any proposed or existing substation, inverter, transformer or equipment enclosures, (3) a description of any necessary upgrades or modifications to existing substations or the necessity for a new substation, (4) a description of how the facility's generated energy will connect to the electrical distribution or transmission system or the intended user's electrical system, (5) for solar energy facilities over two MW, the location and elevations of all transmission lines, support structures, and attachments to the substation(s), (6) the location of existing hedgerows and vegetated windbreaks; a landscape maintenance plan that demonstrates how the ground cover and screening plantings will be maintained, (7) a decommissioning plan documenting how the property will be restored once the solar energy facility has been removed and an estimate of the cost of decommissioning, and (8) an interconnection agreement with the regional electricity transmission organization PJM for projects over two MW. Major site plan applicants also must include an acoustical analysis and, if the facility is over two MW, documentation detailing the available capacity of the region's existing electric infrastructure and the effect the proposed facility will have on this infrastructure. Township of Bethlehem, N.J., Code §§ 102-37.3(C)(9), -(22).

4.2 Minor Site Plan Review

In contrast to major site plans, some municipalities adopt minor site plan requirements to streamline the permitting process for smaller projects by requiring less information and providing faster review. Generally with minor site plan review, the legislative board can waive certain requirements for approval, no public hearing is required, and, in some cases, administrative staff can complete the review in lieu of planning board review.

Example: Town of Marion, MA

Marion's solar bylaw requires minor site plan review for ground-mounted systems that provide onsite electrical use in residential districts and that are greater than 600 square feet or 1.5 percent of the lot size, whichever is larger. The bylaw also subjects non-residential, ground-mounted systems that are not classified as solar farms to minor site plan review if the solar panel array is greater than 900 square feet or 1.5 percent of lot size, whichever is greater, but has a maximum system size of 1500 square feet. In addition to the Town's standard site plan submission requirements, the planning board

may require minor site plan applicants for solar projects to provide electrical diagrams detailing solar PV systems; associated components; electrical interconnection methods; all National Electrical Code compliant disconnects and overcurrent devices; and documentation of major system components, including PV panels, the mounting system, and inverter(s). Town of Marion, M.A., Bylaw § 16.5.2, -6.2, -7, *available at* http://www.marionma.gov/Pages/MarionMA_Clerk/Bylaws%205.12.14.pdf.

5. Navigating SEQRA

Under New York's State Environmental Quality Review Act (SEQRA), local land use boards are sometimes responsible for conducting an environmental analysis before they approve a project, including those that propose solar energy systems. This includes but is not limited to the land use boards described above that review applications for variances, special use permits, site plans, and other submissions as applicable. SEQRA review also applies to a governing board while amending zoning. To assist with this review, applicants must attach to their applications a short or long Environmental Assessment Form (EAF), depending on the type of action their application triggers. The local board then must make a determination of significance, establishing whether the project is likely to have a significant adverse environmental impact. If that declaration is negative, no further environmental review is required. Where that declaration is positive, a full Environmental Impact Statement (EIS) must be prepared. The time and expense involved with a full EIS are significant.

Under state SEQRA regulations, actions are grouped as Type I, Type II, or Unlisted Actions. Type II Actions are exempt from review and include actions such as construction, expansion, or placement of minor accessory structures. Local governments may create their own Type II lists and include building-integrated solar components and small-scale, roof- or ground-mounted systems on their list, exempting them from all SEQRA requirements, including the submission of an EAF. Type I Actions are those that meet thresholds contained in the SEQRA regulations; they are considered more likely than others to have a significant adverse environmental impact. When reviewing Type I Actions, however, a complete Environmental Impact Statement (EIS) is not required if the project is unlikely to have a significant adverse environmental impact. Unlisted Actions are neither exempt nor Type I Actions. The local board can avoid requiring an EIS for an Unlisted Action by issuing a conditioned negative declaration where a few conditions are proven to eliminate any significant adverse environmental impact.

To appropriately limit the SEQRA review process for solar energy projects, local governments can take several steps:

1. Because Type II actions are exempt from SEQRA, a community should consider adding small-scale solar energy systems to its local Type II list to ensure systems with negligible impacts do not trigger SEQRA review. State SEQR regulations present a list of Type II actions that includes the "construction, expansion or placement of minor accessory/appurtenant residential structures, including

garages, carports, patios, decks, swimming pools, tennis courts, satellite dishes, fences, barns, storage sheds or other buildings not changing land use or density.” 6 NYCRR § 617.5(c)(10). This regulation does not specifically mention accessory-use solar energy systems but can be so interpreted, since these systems’ impacts are similar to those of the items listed. Therefore, to be certain that small-scale solar systems are exempt from SEQRA review, a community may add them specifically to the local Type II list.

2. Where a solar energy system does not meet the regulatory thresholds for a Type I Action, making it an Unlisted Action, an EIS can be avoided where the local board finds there is no significant adverse environmental impact or where such impacts can be mitigated through the use of a conditioned negative declaration.
3. Municipal staff should negotiate with developers in a pre-application meeting to remove from their plan any problems that will lead to a positive declaration that the project may involve one or more significant environmental impacts, thus requiring the completion of an EIS. In *Merson v. McNally*, 90 N.Y2d 742 (1997), the New York Court of Appeals sanctioned informal multi-party negotiations during the local environmental review process. The court found that a proposed project involving several potentially large environmental impacts can be mitigated through project changes negotiated early in the SEQRA review process to which involved stakeholders agreed, including the proposing party.

Municipalities also should ensure their application forms clarify the level of review required for each type of action. For example, the application should state that no EAF or environmental review is required for Type II actions. Further, local governments should consider providing unsophisticated applicants with technical assistance for difficult EAF provisions. Municipalities can maintain maps and databases that help applicants answer questions about connections to public water, sewer, or transit and proximity to environmental justice communities of concern, all information required in the short EAF.

6. Review by Additional Local Boards

In addition to building permits, land use approvals, and SEQRA review, solar energy projects may require review by other local boards in some localities. These include the zoning board of appeals, design or architectural review boards, and historic preservation commissions.

Zoning Board of Appeals

If zoning is updated as described above, the need for variances is eliminated; however, if a developer applies to the local building department for permission to build a solar energy system and the application does not comply with the use, setback, height, or area requirements of the zoning ordinance, the proposal must be denied. The applicant then may apply to the zoning board of appeals for a use or area variance, prolonging the approval process. Local governments can eliminate this extra step in the process by

amending appropriate use, bulk and area requirements to accommodate allowed solar energy systems or including setback or height exemptions for solar energy systems in zoning. See Section 3 above for more information.

Design or Architectural Review Board

Design review laws authorize a design or architectural review board (ARB) to advise on or review and approve proposed new construction and building improvements in zoning districts or areas of special scenic, architectural, or aesthetic importance, as defined by the law. During its review, the ARB verifies that a proposed project's exterior design and treatment conforms to the regulation's design review standards. Often, design review laws require the board to determine whether proposed construction is "excessively dissimilar" to an established design pattern, authorize the board to eliminate "visual offensiveness," and/or empower the board to conform design in discrete areas to the character of specific landmarks or architecture of distinction. Under these standards, an ARB may determine that solar energy systems do not conform to required design review standards. Additionally, the design review process can add weeks to the approval process for solar energy systems. Local governments can prevent this conflict and streamline the process by amending design review laws to exempt or accommodate solar energy systems. Regulations can eliminate design review for systems with negligible impacts, like building-integrated systems and small-scale roof-mounted panels, and include requirements to minimize the visual impact of larger systems.

Example: White Plains, NY

White Plains exempts solar energy systems from review by the City's design review board when they: (1) are installed on one- or two-family structures that do not require a variance; (2) have a rated capacity of 12 kW or less; and (3) are mounted parallel to the roof surface or tilted with no more than an 18-inch gap between the module frame and roof surface. City of White Plains, N.Y., Zoning Ordinance § 4.4.21.2.

Example: Village of Mastic Beach, NY

The Village's solar energy systems regulation exempts systems from architectural review board approval if they meet standards set forth in the regulation. For example, roof-mounted solar systems may not extend beyond the exterior perimeter of the building on which the system is mounted or built, and ground-mounted solar energy systems may not extend into the required rear yard accessory setback when oriented at minimum design tilt. Additionally, system design must make best efforts to blend into the architecture of the building or be screened from routine view from public rights-of-way, and the system's color must be consistent with roofing materials. Mastic Beach's solar regulation also allows building-integrated photovoltaic solar systems regardless of visibility, provided that the building component in which the system is integrated meets all required setback and regulations for the district in which the building is located. Village of Mastic Beach, N.Y., Code Ch. 415.

Historic Preservation Commission

A local historic preservation commission (HPC) is authorized to review and approve any demolition, relocation, new construction, or exterior alteration affecting designated historic properties within its jurisdiction. Solar installations on or adjacent to designated historic properties require HPC approval, usually in the form of a certificate of appropriateness. HPC review lengthens the approval process for a solar energy system considerably and may result in its disapproval. Generally, an HPC meets monthly, often creating a weeks long waiting period for applicants. Also, historic district and landmark preservation regulations and guidelines may conflict with local solar energy initiatives because solar panels and related equipment frequently clash with historic building aesthetics and architecture. To avoid conflicts and process delays, a local government can amend these regulations and guidelines to make them compatible with local solar energy laws or include exemptions for solar energy systems. Amended regulations can allow solar energy systems on historic properties if their design and location do not impair the historic district's character and appearance. Historic district regulation is a complex area of law, so municipalities authorized by the State to control development in designated historic districts may need state agency permission to streamline approvals.

Example: Milton, WI

Milton's regulation for historic preservation districts includes solar apparatus criteria for the HPC's review of alterations in historic districts. The review criteria allow passive and active solar apparatus that do not detract from a building's architectural integrity and that are as unobtrusive as possible. Solar devices may not hide significant architectural features from street view, result in the loss of these features, or become a major feature of the design because they are large in scale. City of Milton, W.I., Code § 34-162.3.

Example: Farmington, CT

Farmington's historic district regulation states that its historic district and properties commission will not deny a certificate of appropriateness for an exterior architectural feature, such as a solar energy system, unless the commission finds that the feature cannot be installed without substantially impairing the historic character and appearance of the district. The certificate of appropriateness for a solar energy system may require design modifications and location limitations that do not significantly impair the system's effectiveness. City of Farmington, C.T., Code § 111-26.

7. Requiring and Incentivizing Solar Energy Systems

In addition to allowing solar energy systems in zoning, municipalities can amend other land use regulations to require or incentivize solar energy systems in certain development projects. These include amendments to subdivision and site plan requirements, building ready standards in building and related codes, solar mandates, solar access protections, and zoning incentives in certain districts. To further encourage solar energy systems, local governments can implement other incentives, such as approval process streamlining and fee reductions.

Subdivision & Site Plan Requirements

Subdivision regulations can require solar-ready lot and building orientation, and site plan regulations can require site layout that maximizes solar access. Building orientation affects a building's ability to utilize solar energy systems, as well as natural lighting and passive heating. Subdivision regulations can require developers to orient streets and buildings so that the buildings' longer dimensions are south facing, ensuring maximum solar access. To further facilitate solar energy generation, subdivision requirements can mandate builders to equip homes so they are panel ready, where roof top panels are not provided in the first instance. Subdivision regulations also may require a community solar system to serve the energy needs of a new subdivision's homes, compelling the homeowners' association to manage the community system and charge members for its operating costs. Similarly, site plan regulations may require site plans that orient structures to maximize solar access on the applicant parcel, as well as adjacent lots.

Example: Boulder, CO

Boulder's subdivision regulations require the subdivider to maximize solar energy usage by requiring solar siting criteria for new subdivisions. The subdivider must orient lots and buildings and site structures to maximize the solar potential of each principal building, avoid shading by other nearby structures, allow owner control of shading, and minimize off-site shading of adjacent properties. Additionally, the subdivider must design building shape to maximize utilization of solar energy and must locate open space areas to protect buildings from shading by other buildings. City of Boulder, C.O., Code § 9-12-12(a)(1)(O). Boulder's subdivision regulations also require compliance with the City's solar access requirements in Code § 9-9-17, which divide the City into three Solar Access Areas (SAA). Solar siting requirements for new subdivisions require residential units in all SAAs to have a roof surface oriented within thirty degrees of a true east-west direction and to be flat or not sloped towards true north. Each residential unit in SAA I must have an exterior wall surface that is oriented within thirty degrees of a true east-west direction and located on the southernmost side of the unit, and each nonresidential building with an anticipated hot water demand of one thousand or more gallons a day must have a roof surface that is flat or oriented within thirty degrees of a true east-west direction.

Building Ready Standards in Codes

Where authorized, municipalities can require solar-ready construction standards in local building and related codes. These standards may include electrical and plumbing accommodations for future solar energy systems.

Example: Chula Vista, CA

Chula Vista's electrical code includes photovoltaic (PV) pre-wiring requirements that mandate all new residential units to include an electrical conduit specifically designed to allow the later installation of a PV system that utilizes solar energy as a means to provide electricity. Similarly, Chula Vista's plumbing code requires all new residential units to include plumbing specifically designed to allow the later installation of a solar water heater that utilizes solar energy as the primary means of heating domestic potable water. To obtain a building permit, the applicant's building plans must include both PV pre-wiring and solar water heater pre-plumbing. The building official may modify or waive these provisions if the applicant demonstrates that the requirements are impractical due to shading, building orientation, construction constraints, or parcel configuration. City of Chula Vista, C.A., Municipal Code §§ 15.24.065; 15.28.015.

Solar Mandates

Where authorized, local governments may require certain new developments to include solar energy systems or contribute to another solar energy project elsewhere in the community.

Example: Lancaster, CA

Lancaster's solar energy system implementation regulation requires all new single-family homes to have a solar energy system to receive a building permit. The mandate includes subdivisions, requiring the subdivider to meet the aggregate energy generation requirement within the subdivision (as calculated by the per-unit energy generation requirement multiplied by the number of homes in the subdivision). Alternatively, a homebuilder may choose to meet the solar energy generation requirement by purchasing solar energy credits from another solar-generating development located within Lancaster. City of Lancaster, C.A., Code § 17.08.305.

Solar Access Protections

When regulating development in new subdivisions, municipalities can protect access to sunlight for solar energy systems in several ways. First, local governments can sanction or require solar easements for solar energy systems. A solar easement is a legal agreement between adjacent property owners to protect solar access for a solar energy system on one of the properties. Typically, these regulations require written and recorded solar easements that define easement dimensions, how the easement will terminate, and compensation for easement maintenance or interference, among other provisions. Additionally, local governments can grant solar access permits for solar energy systems. After submitting evidence showing system installation, the applicant receives a solar access permit that protects the system from future shading by construction or vegetation on adjacent properties, effectively creating a solar easement.

Some localities protect solar access by mandating “solar fences” for new development. Solar fences are defined areas within a lot in which access to sunshine is protected regardless of whether a solar energy system exists. Finally, local regulations may require building orientation, design, or setbacks to prevent shading and preserve access to sunlight for neighboring properties.

Example: Ashland, OR

Ashland’s solar access regulations require structures on all lots to comply with solar setbacks that define the minimum distance between a structure and the property boundary. The regulations classify each City lot according to the magnitude of its north-south lot dimension. Based on these measurements, the regulation requires solar setbacks from the northern lot line designed to minimize shadows at the north property line of each lot. In addition, Ashland’s solar access regulations allow applications for a solar access permit to protect new solar energy systems from shading by vegetation on neighboring properties. Solar permit applicants must submit a fee, contact information, a solar energy system installation statement, system site and location information, a sun chart, tax lot information for adjacent properties, a parcel map showing existing buildings and vegetation, and solar access permit height limitations for adjacent properties as defined by the regulation. When a solar access permit is granted, City staff advisor will file the permit with the County Clerk, file a notice on each affected tax lot, and send a certified letter to the applicant and property owners of affected tax lots stating that the permit was granted. Ashland, O.R., Municipal Code § 18.4.8.

Zoning Incentives

Sometimes the economics of a project will not sustain a solar energy system installation. By allowing developers to build beyond maximum development densities in local zoning, they can earn additional profits and use these to install solar energy systems. New York municipalities are authorized to adopt incentive zoning systems and may amend zoning to include bonus zoning or density incentives that allow developers to build at greater densities than otherwise permitted or to adjust certain bulk requirements like height or required parking spaces in exchange for installing a solar energy system. When creating a zoning incentive, municipalities must research local market conditions and engineer the incentive to provide an appropriate bonus in exchange for the amenity.

Example: Town of Gorham, ME

Gorham’s density bonus provisions provide a maximum density bonus of 25 percent over the allowable base density for residential and nonresidential uses in planned unit developments (PUD) in exchange for public amenities, including solar access and energy efficient design, layout, and construction. To qualify for a bonus of 5 percent above the allowable base density, a PUD may provide solar access to 40 percent of the dwelling units and ensure through appropriate deed restrictions that dwelling units will utilize solar energy systems for water and space heating purposes. Town of Gorham, M.E., Land Use and Development Code, Ch. IA, Section IV, available at http://www.gorham-me.org/public_documents/gorhamme_codes/land_ord/landuse.

Other Incentives

In addition to zoning incentives, local governments can provide other incentives to encourage solar energy system installation. Possible financial incentives include property tax abatements, reduced or discounted application fees, or fee waivers associated with solar energy systems. A municipality can create an educational incentive for these systems by establishing an information clearinghouse that directs residents to resources providing technical assistance and financial assistance for solar energy system installations. Additionally, local governments can seek funding from federal and state agencies and leverage state and federal grants and incentives to assist residents with system installations. For example, NYSERDA's Cleaner Greener Communities Program and the NY-Sun Initiative's Community Solar NY provide grant opportunities for municipal solar PV projects and programs. Moreover, municipalities and their residents can take advantage of state solar PV incentives through the NY-Sun Incentive Program. Finally, a municipality can streamline the project review and approval process for solar energy systems to reduce process duration and increase certainty.

Example: Town of Chicago, IL

The "Chicago Solar Express" is a streamlined permit approval system for solar installations on residential and commercial properties. Part of the City's Easy Permit Process, the solar permit approval process for small installations (with an energy capacity of less than 13.44 kW) reduced the process time from 30 days to one day and decreased the fee schedule by \$100, from \$375 to \$275. The streamlined process applies to existing structures, not new developments or major building remodeling or new additions. For more information about the Chicago Solar Express, visit http://www.cityofchicago.org/city/en/progs/env/solar_in_chicago.html.

8. Helpful Resources

The following resources provide helpful recommendations for local governments embarking on an initiative to plan and regulate for solar energy systems.

Resource: NY-Sun PV Trainers Network

Together with Meister Consultants Group, Sustainable CUNY, Entech Engineering and other partners, the New York State Energy Research and Development Authority (NYSERDA) launched the three-year NY-Sun PV Trainers Network in August 2014 to help local officials streamline solar PV permitting, installation, inspection and approvals. Training workshops are available for free or minimal cost to local policy makers, code enforcement officials, inspectors, engineers, architects, and first responders. Offered training workshops include an introduction to solar policy, developing a solar strategy, solar PV permitting and inspection methods, and solar PV safety and fire considerations. Additionally, the Network offers in-depth technical training assistance for incorporating solar energy goals into comprehensive plans, drafting solar energy regulations, streamlining the solar permitting and inspection processes, identifying local solar financing options, and procuring solar for municipal facilities. For more information

about the Network visit <https://training.ny-sun.ny.gov>.

Resource: Planning for Solar Energy

With support from DOE's SunShot Initiative, the American Planning Association's Planning for Solar Energy provides communities with a basic rationale for planning for solar energy use, summarizes fundamental characteristics of the U.S. solar market related to local solar energy use, and explains how communities can promote solar energy use through public engagement, planning and regulatory best practices, development services and public-private partnerships, public solar installations, and economic and educational programs. To access this resource, visit the Resources page at www.planning.org/resources/.

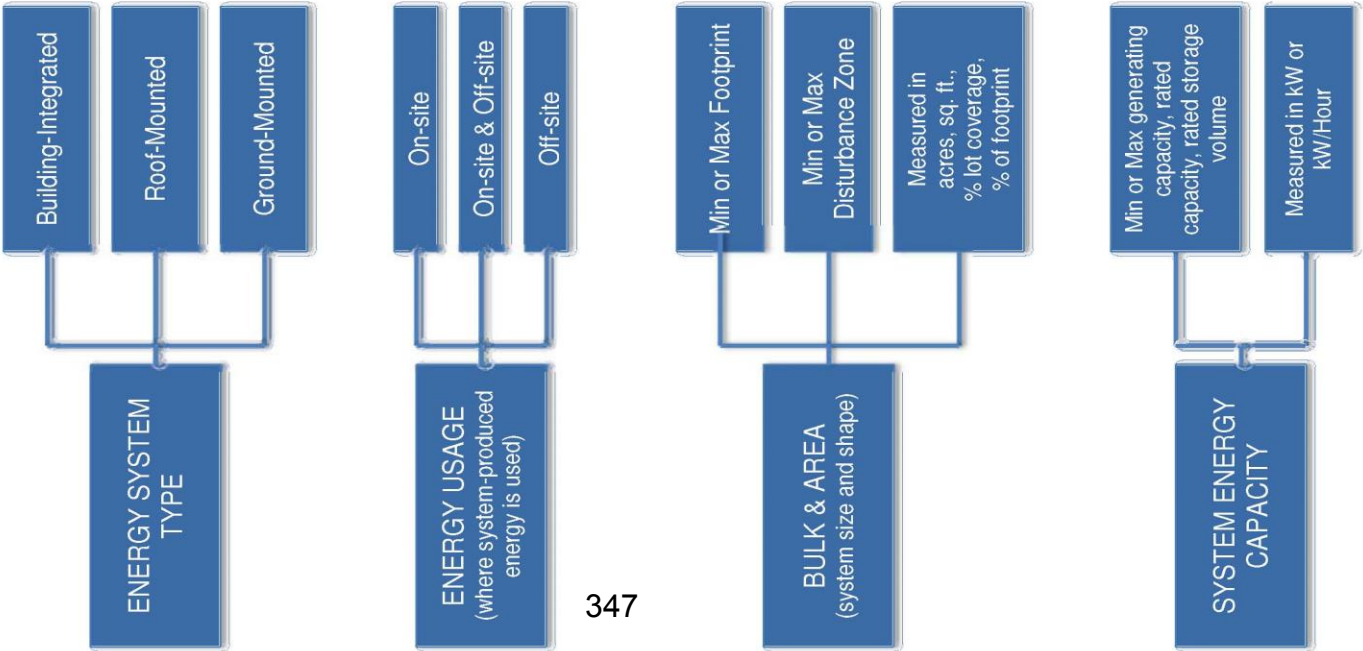
Resource: APA's Solar Planning & Zoning Data Search

The American Planning Association hosts an online Solar Planning & Zoning Data Search database. From this portal, users can search hundreds of examples of solar-supportive plans, development regulations, and other planning-related implementation tools by place type, population range and density, tool type, and solar practice. The database includes example policies, plans, and regulations from communities across the nation. To access the portal, go to <https://www.planning.org/solar/data/>.

9. Appendix

The chart below summarizes the factors local governments use to define solar energy systems in zoning, methods for approving defined solar energy systems once permitted in zoning, the SEQRA review process, and possible additional board reviews for solar energy systems.

Factors Used to Create Zoning Definitions



Land Use Review Options

Building Permit Review Only

- Administrative review by building inspector
- For building-integrated systems; no land use impacts

Zoning Review & Building Permit Review

- Administrative review by ZEO and building inspector
- Often used for small-scale, accessory-use systems that have few or no land use impacts

NY-Sun Unified Solar Permit

- Model expedited, 14-day building/electrical permit process with no zoning review
- For small-scale solar energy systems that are roof-mounted and have a rated capacity of 12 kW or less, among other requirements

Special Use Permit Review

- System approval conditioned upon adherence to specific requirements
- Can be a tiered process with different standards and conditions attached to each tier of SES project

Site Plan Review

- Generally required for larger systems with greater land use impacts
- **Minor Site Plan Review** → Town Board can waive requirements for approval; no public hearing; can be subject to planning board discretion
- **Major Site Plan Review** → heightened review process for SES projects with large impacts

SEQRA Review Process

Type II Actions

Type I Actions

Unlisted Actions

Possible Additional Board Reviews

Zoning Board of Appeals

Design Review Board/
Architectural Review Board

Historic Preservation Commission

Requirements & Incentives

Subdivision Requirements

Building Ready Standards

Solar Mandates

Solar Access Protections

Zoning Incentives

Other Incentives

Zoning for Solar Energy: Resource Guide at <https://training.ny-sun.ny.gov/resources#for-planners-and-policy-makers>

Biblical Origins of Environmental Law Ethics

Presenters:
Lawrence P. Schnapf, Esq.

Moderator:
Alita J. Giuda, Esq.

The Bible and the Environment

By Larry Schnapf

The governing principle of the George W. Bush Administration was “Compassionate Conservatism.” Biblical Principles were at the core of this concept. One question raised by this governing approach was what does the Bible say about the environment and how can those teachings effect public policy or how lawyers conduct themselves?

At first glance, one might ask what could a 3000-year old religious document that was developed for an agrarian society conceivably have to say about acutely modern environmental issue like Climate Change, species extinction or toxic waste sites? While the Bible does not have specific commands regarding Climate Change or destruction of wetlands, it does contain teachings that can be applied to today’s problems. The key is how we interpret those principles. Good interpretation does not ignore cultural differences between ancient and modern times, but rather sees past them. It is important to understand Scripture by pulling back from it and understanding the larger themes that are repeatedly expressed and the context that they are given.

All of God’s creation (including humanity) is interconnected. While we are created in God’s image, the Bible tells us that we are not to exercise our power in a way wantonly destroys or abuses nature. Instead, we have been given a special responsibility to act on his behalf towards nature. We are to act as humble and faithful stewards who take care of God’s creation and bring shalom to it. The Bible promises us that we will be blessed if we honor this role of being careful managers of God’s creation but will suffer if we disobey this command.

I. Nature Has an Intrinsic Value

A. Three Views of Nature

1. *Anthropocentrism* –This is the traditional interpretation of the Bible that reflects a misunderstanding of the texts and tradition. The world is viewed in terms of how it can serve human needs. Government’s role is to free entrepreneurs from excessive regulation. Government should prevent fraud, theft, violence or murder and then stay out of the way to allow for economic growth. Nature was created for the benefit and pleasure of humanity. Human dominion over nature was viewed as unlimited. Humanity could use it for his pleasure and profit. Science was viewed as a means for humans to obtain information necessary to exert dominion over creation. Moreover, since God was to destroy the Earth at the end of time, there was no need to be concerned about Creation. Indeed, there was nothing that humans could do that would have any enduring impacts or effects on the world

2. **Biocentrism** – *This is the basis for modern environmental ethic. Nature is at the center and humans are part of Nature. However, if humans are just another part of nature, then everything we do is by definition “natural” which means that creating pollution is “natural.”*
3. **Theocentrism** – God is at center with humans having a special set of responsibilities and obligations unique in creation. Humans are given dominion over the Earth and Creation but are under God’s authority. In essence, there is a chain of command with God at the top.

B. What does the Bible Say About the Natural World and its relationship to humans?

- Gen. 1:10-“God created the land and seas and saw it was good
- Gen 1:12-God created plants and trees and saw that it was good.
- Gen. 1:20-21- "***Let the water teem with living creatures***, and let birds fly above the earth across the expanse of the sky ... And God saw that it was good").
 - What does goodness mean? (Inherent value in Creation separate and apart from Humans)
 - Be Fruitful: Diversity of species is fundamental to the created order
- Gen. 1:22)-"***Be fruitful and increase in number*** and fill the water in the seas, and let the Birds increase on the earth ". This shows that non-human have the same mandate as humans and we cannot exercise our mandate at the expense of theirs. They have their own inalienable right to exist.
- (Gen 1:24)- "***Let the land produce creatures according to their kinds***: livestock, creatures that move along the ground, and wild animals according to their kind.”
- Gen. 1:25-And God "...saw that it was good".
 - The creation of non-human and particularly wild animals (i.e., wildness is non-usefulness to humans) is not only good but also a fundamental part of the created order.
 - Wild animals do not recognize human accomplishments. Their very existence strips us of our righteousness.
 - This is also illustrated in Job 41:1-8 (God answers Job by telling him that the leviathan is completely useless to him). God is teaching Job about human’s limits. The animals are used to give us humility.

- Exodus. 19.5 (“The Whole Earth is Mine”)
- Isaiah 24- shows the relationship between man and earth. This relationship is likened that of a priest to his people, the master to his slave, a mistress to her maid, a seller to its buyer and a lender to its borrower (Isaiah 24:1-3). In all these cases, one party is responsible but both parties are affected.
- Psalms 24:1 (“It is not said and cannot be said that the beasts belong to man for earth is the Lord's and all those who dwell within”)
- Psalm 50:11 (“every wild animal belongs to God”).
- Psalm 104:10-26. Praise for wild things that have no relationship or value to humans (e.g. the Leviathan). Their intrinsic value is a reflection of the Creator.
- Psalm 104:27-29. Both humans and animals look to God for life and will die if God takes away his breath. Thus, both animals and man live and die together at the pleasure of God.
- Psalm 145:9- God loves all of his creation
- Psalm 145:16 -God takes care of all of his creation and satisfies all of their needs.

C. Humans are at the top of Creation but are still a part of Creation. Creation it will survive without humans but we cannot survive without it. (Psalm 104:14-15).

D. Animal world is not simply an adjunct to human existence whose purpose is to feed and clothe humans. Need to look beyond gastrocentric view of the animal world.

1. Genesis 1:29 suggests vegetarian pre-fall world. Man to eat from plants and fruit of trees.
2. Deuteronomy 12:20 seems to allow meat-eating

II. Human Role For the Environment- (“Edenic Covenant” or “Creation Care Command”)- Humans are given a number of responsibilities (multiply, subdue the earth, have dominion over creation, take care of the garden and eat its fruits, and do not eat from the tree of knowledge).

A. Genesis 1:28 "Be fruitful and increase in number; fill the earth and subdue ["kabash"] it. Rule ["have dominion"] ["radah"] over the fish of the sea and the birds of the air and over every living creature that moves on the ground."

1. The presence of the word “dominion” has often been used as a basis for justifying the exploitation of the earth’s resources and creatures. Much of western world has argued that nature is a blessing to humanity precisely because animals can be bent to our will.
 - a. The Gnostic movement believed that God did not care for the material world.
 - b. Thomas Aquinas believed in the order of Creation and that Creation was good. All things are directed towards God. There is harmony and beauty in the diversity of things that reflect God’s goodness. All of Creation is interconnected so nothing in nature is unneeded and nothing live entirely for itself. However, creation is fundamentally ordered for human ends. Therefore, we may do what we will to animals to serve our needs for food and other life necessities. He believed that the Fall did not alter the relationship with the non-animal world but that it was no longer accessible without hindrance or labor
 - c. This order of nature was affirmed by John Calvin who concluded that Lord by the very order of Creation, has demonstrated that he created all things for the sake of man. The divine elect are distinguished from the rest of Creation. Even in its unfallen state, Creation had no inherent goodness other than its capacity to witness to the saving grace of God for the elect and its only legitimacy rested on its potential to be of service to those souls. While he argues against the abuse of nature, his emphasis is on how it is to serve the elect. This helps to transform the view of Creation to something that simply here to serve humans.
 - d. The focus of the Reformation on the salvation of the individual comes at the expense the relationship between Creation and God. Nature gradually ceases to be the object of God’s relational and redeeming love.
 - e. Francis Bacon believed that humans could recover the domination over Creation lost through the Fall through the sciences and that this did not violate God’s purpose.
 - f. Science soon views the non-human world is simply comprised of matter and sub-human life that have either been formed through chance or God but solely for the service of humans. There is nothing inherently good about nature nor it is constructed on some divine plan.
 - g. Rene Descartes argued that animals were not rational and that nature makes them behave as they do according to the disposition of their organs, just as a clock. In other words, animals were not only beneath humans but also had the same status as machines
 - h. What about fox that kills endangered birds, deed that eat endangered plants or black bears that encroach onto human property. Is it right to use leg hold traps to capture

fox? Can we justify wiping out entire species to prevent inhumane treatment of individual animals?

2. Meaning of "subdue" ("kabash")

- a) Exercise of force to bring something resistant under control or bondage. Bringing a conquered enemy into subjection, etc.
- b) Most sound interpretation: to control the earth in the sense of extracting sustenance from it.
- c) God Subdues Evil. How does he do that?
- d) Man's dominion is limited by nature's rights (be fruitful and multiply)
- e) Must be viewed in conjunction with "radah" -- control is exercised as part of right of authority in God's image.

3. Meaning of "dominion" ("radah"):

- a) To exercise right of authority. To rule as a righteous king. Not a cruel, heartless ruler but like a loving and caring relationship like a Shepard.
 - Dominion" does not mean dominance, but rulership and authority. Parents have authority, teachers have authority
 - The real question is by what set of ethical principles do you exercise it. You can choose to be a tyrant or a benevolent manager.
- b) We are created in his image. We are to represent God's righteous rule on Earth. Akin to God's rule over us. Jesus is the perfection of this image. He serves in love, to heal, not hurt, and to save, not sever.
- c) Our rule should not be at the cost of creation's ability to carry out its Biblical command to be fruitful and multiply but more like Jesus. You cannot rule over something that you have driven into extinction.
- d) Humans have a great responsibility because God gives us a capacity of understanding
- e) English translation not adequate. The word "**Yirdu**" also connotes dominion (radah) and descent (yarad). Thus, when humans are worthy, they have dominion over the animal kingdom but when they fail to exercise that power properly, they will descend below their level and the animals will rule them.

- f) Concept is that if you destroy something, you are no longer a man but an animal with no rights to the things around you. The rabbis say " As soon as you use something unwisely, be it the greatest or the smallest, you commit treachery against My world, you commit murder and robbery against my property, you sin against me."

B. Genesis 2:15- "The Lord God took the man and put him in the Garden of Eden to work it ["**avad**"] and take care ["**shamar**"] of it." (Gen. 2:15).

1. "Work" or "Tend"

(a) **Avad**- Means not only to work or cultivate but also to serve and worship (e.g., to work for a master, to serve/worship a deity).

(b) Thus, is properly understood as service to God's Earth- a critical part of our relationship and worship with God.

2. "Take care" or "Keep":

(a) **Shamar**- To watch or guard; safekeeping of something for someone else.

(b) **Shomrin**- guard property that does not belong to them but is entrusted to them

(c) We are to help creation fulfill its mandate to be fruitful and multiply.

(d) A garden is a place of rest and meditation where people can commune with nature. Paradise in the Greek meant an enclosed park or orchard.

(e) Jewish sources say God created the gnat before humans to prevent us from becoming too arrogant.

C. Stewardship- Similar to Shamar

1. Steward comes from old English words "**Stig**" or "House" and "Weard" or "warden". This was the word that the Bible translators used to translate the Greek word "**Oikonomos**". Consists of two Greek words "oikos"(house) and "Nomos"(putting into order, planning and administering).
2. Thus, it means to put the affairs of a household into order. It involved acquiring things that were necessary to meet the actual needs of the household and not to the uninhibited pursuit of wealth. Stewardship is the taking care of something that belongs to someone else.
3. The position of steward is one of great responsibility and authority. The steward is a special, privileged servant and the "charge over the household" requires great care and

continued supervision. It is a picture of responsible manager of a royal estate. (Gen. 44:1-13. Story of Joseph and his brothers). However, there is a limit to this authority. A steward can rule with full power within its authority but oversteps its authority when it acts like an owner instead of an overseer. When a steward fails to carry out its duties, it is a very serious matter and the steward will be severely punished. (See Isaiah 22:15-23 where the steward Sheba has abused the privilege of his office).

4. Humans are held responsible for everything we are given in this world as well as our children. Nothing belongs to us, it all belongs to the Lord. Humans receive it on “credit.”

D. The principle of stewardship is closely linked to the concept of grace. (See Luke 12:35-48 and Corinthians 4:1-2) Everything that comes from is a gift and must be administered faithfully on his behalf. The theme of stewardship is recognition of the unity of creation and the need to take care of the entire earth.

1. What does a steward do? Protect and help increase value of the master’s estate? (Gen. 1:28)
2. To carry out duties given the master (Matthew 24:45-51). We are to serve our master (Jesus- Mt. 20:28)
3. We are answerable to our master (Gen 2: 16-17; 3:14-19).
4. God owns the world. Nature is not un-owned. All things have an inherent value to God and the rights of living things are based on God’s value of them.
5. Bailment situation.
6. Animals exist to serve God’s pleasure. They manifest God’s glory on their own terms. Humans are to rule over animals not because of special trait but by God’s appointment. We are to exercise this power in his name like an agent/principal.
7. Thus, when dominion is read together with stewardship, dominion is the exercise of kingship in the image of Christ. Implies service, sacrifice, and covenant.
8. Do those in power have an obligation to those who are relatively powerless? If our power over animals confers any right, it is to serve.
 - a) For the Christian, this means to minimize the suffering of animals even if it comes at great costs to us.
 - b) We should not just prevent the worst, but promote the good.
 - c) When we make animals suffer harm or pain for our pleasure or entertainment when show a lack of generosity towards God and a lack of understanding of divine Grace.
 - d) Some people believe that domestication is not a sign of humanity’s power over animals, but domestication is actually a sign of the original harmony

9. God voluntarily descended to a lower form of life and gives up privileges to establish a relationship with us. This should model our relationship with animals.

10. How do we harmonize the violence that occurs in nature? Does caring for Creation mean eliminating that violence? Some animal suffering has nothing to do with humans.

11. What about evolution and all the animals who have perished. Is the pain necessary? Why would an intelligence designer make animals with useless parts? Why would God work through accident and chance? What does evolution which spends life so easily and proliferates it so messily tell us about God? Can evolution be reconciled to an ultimate order? Does it tell us we should be kind to animals because we are of the same origin?

12. Christians are to raise their voices on behalf of the poor and powerless.

E. Other rabbinical teachings about Stewardship:

1. Bal Tashhit (Do not destroy)- Prohibition against wanton destruction or wasting of anything in Creation. Has been applied to a whole range of transgressions such as cutting off water supplies to trees, over-grazing, unjustified killing, feeding them harmful foods, hunting animals for sport or to extinction, destruction of cultivated plants, over-consumption of natural resources, and pollution. It has also been applied to hoarding property or doing nothing with rather than using it wisely.

2. Za'ar baalei hayyim (avoid imposing pain on living things without good reason)- Relieving suffering animals was one of the exceptions to the Sabbath and kindness towards animals is one of the few virtues that Jewish tradition specifically associates with the promise of heavenly reward.

3. Tzedek- Usually translated as righteous and refers to the proper order of life, particularly social order (justice to the poor, the oppressed, the widow, the orphan, and the resident alien). It also refers to the saving actions of God (Isa. 40-66) and hence an example of our role as stewards. We are not to corrupt Tzedek (Lev. 19:35-6, Deut. 25:15 and Ez 45:10). Instead, we are to endeavor to restore or correct imbalances in the order created by humanity in society and the natural world.

4. Humans are given power by God. The test is how we exercise it.

III. Impact of the Fall

1. Animals live in harmony with Humans before the Fall. The fall alienated humans from animals.

2. Human/earth relationship- Humans do the sinning. They defy God and bring punishment upon themselves and the earth. The created world of plants and creatures had no choice, no will and no sin. It was human choice and sin that takes damages the earth.

3.. This point is made clear in passages 5 and 6 where it is said that the earth is “defiled” by its inhabitants because they have “transgressed the law” and it is their guilt that has brought down punishment upon the earth.

4. Thus, humans cannot justify abuse of the earth because it is “cursed.” Second century Irenaeus said that nature and the material world were fundamentally good and blessed by God. It remains near to God despite the fall and subject to his purposes and designs.

5. It has been said that man’s relationship with the ground was reversed by the Fall. Instead of ruling over the ground, he shall return to it and it shall swallow his body upon his death.

6. The Fall was in essence a misuse of nature by Adam by exercising ownership over the Tree of Knowledge. The penalty for misappropriation of the authority over nature was death!

IV. The NOAHIC COVENANT (Gen 8:15-21)-

1. Following the Flood, God makes a covenant not to punish Creation for man’s sins.

2. Noah is commanded to release the animals so that they may multiply, be fruitful and multiply in number (Gen 8:15).

3. God lifts the curse on the ground. “ I will never again curse the ground because of man...and never again will I destroy every living things as I have done.” (Gen. 8: 21).

4. The order of nature is restored. Creation is given back into the hands of man. What God created, he wants Humans to continue to take care of Creation.

5. However, sin has created disharmony between the world that God created with Adam and the one Noah now inherits. Humans cannot deal with creation without restrictions. Because of man’s evil heart, God places the dread of humans in every living creature. God says that everything that lives and moves shall be food for humans. (Gen 9:2). Some have said that this expanded the human dominion over creation to include exploitation for food. In the pre-fall time, man’s diet was limited to plants. (Gen. 1:29).

6. God gives Noah the so-called Third Dispensation of Human Government to rule righteously. Man is to safeguard life as a gift from God that is not to be lightly dispensed with. (Gen 9-4).

7. God promises as part of his covenant “ Never again will all life be cut off by the waters of a flood, never again shall there be a flood to destroy the earth.” (Gen. 9:11). The sign of this covenant that is made with Noah and “every living creature on earth” is a rainbow (Gen. 9:12-17).

8. Note that man is not at the center of this covenant. Wild animals are included in the blessings of God.

V. LAND ETHIC OF THE MOSAIC LAW -

A. Abrahamic Covenant- *God gives Israel land as one of his good gifts (Gen. 15:18)*

1. *God retains ownership of the land.* Humans possess the land not as an inalienable right but within the covenantal restrictions placed upon the land by God. Lev. 25:23

(a) God gives them the land for their use, their livelihood and their enjoyment.

(b) **Shomer**- one who leases, usually referred to as a guardian.

(c) What are the rights of a landlord?

2. *Conditions placed on the Use of the Land-* God gave instructions with the gift. Like lease covenants. Not a code of laws to be directly applied to modern times, but a set of ancient laws based on principles that can be applied to modern times. *What are these principles?*

(a) The ***land belongs to God***, and people are tenants: Leviticus 25:23: “The land must not be sold permanently, because the land is mine, and you are but aliens and my tenants.” The Whole Earth is Mine (Exodus. 19.5)

1. Focus is on almost exclusively on responsibilities of landowners, not their rights. The land was to be managed in a way that benefited society as a whole, sometimes at considerable economic expense to the landowner.
2. Particular emphasis on managing land for the benefit of the defenseless, human and non-human alike: aliens, widows, servants, working donkeys, wild animals, and the land itself.

Examples:

Exodus 23:10-12: For six years you are to sow your fields and harvest the crops, but during the seventh year let the land lie unplowed and unused. Then the poor among your people may get food from it,

and the wild animals may eat what they leave. Do the same with your vineyard and your olive grove.”

Leviticus 19:9-10: When you reap the harvest of your land, do not reap to the very edges of your field or gather the gleanings of your harvest. Do not go over your vineyard a second time or pick up the grapes that have fallen. Leave them for the poor and alien. I am the Lord your God.”

(Lev. 19:16). The land is to be used in trust to be cultivated with care. Do not do anything that endangers your neighbor’s life

This applies not only to those living around us but for future generations. (Deut. 29:13-14). See also 1 Chr. 28:8 (Be careful to seek out the commands of the Lord your God, that you may possess this good land, and leave it as an inheritance for your children after you forever)

(b) ***Significant restrictions on placed ownership-*** The land is to be managed for the benefit of all its inhabitants:

Do not take advantage of each other...the land must not be sold permanently, because the land is mine and you are but aliens who have become my tenants”. Lev. 25-14.

(c) **Specific Instructions Against Abusing the Land-**

Numbers 35:33- “Do not pollute the land where you are. Bloodshed pollutes the land, and atonement cannot be made for the land on which blood has been shed, except by the blood of the one who shed it.

Numbers 35:34- Do Not Defile the land where you live and where I dwell for I, the Lord, dwell among the Israelites

Deut 20:19 (Rules of Warfare)- When laying siege to a city, do not destroy the trees...do not cut them down. Are the trees of the field people that you should besiege them? However you may cut down trees that are not fruit trees.

Deut. 22:1-4- Helping another’s donkey to stand when it has fallen under a heavy load.

Deut 22:6- If you come across a bird’s nest besides the road either in a tree or on the ground and the mother on the young or on the eggs do not take the mother with the young.

Lev. 22:28- Mother cattle not to be slaughtered with their young on the same day

Prov. 12:10-A righteous man cares for needs of his animal

Rabbinic teaching to relieve suffering of living things.

Hebrews are to treat domesticated animals as pets.

(d). Do Not Overwork The Land- The concept of not overusing resources and sustainable growth.

1. Sabbath- what grows of its own accord during the Sabbath shall be food for all including the animals on the land, not be harvested for it is food. (Lev. 25: 4-7). The Sabbath provides a sense of restraint on humanity and a limit on our power or right of stewardship.
2. Jubilee- Every 49 years the land was to be returned to its original owners. Humans are not to sow or reap on the land and eat from it only what it produces
3. Can we push productivity advances too far? What are the consequences? Wearing out soils by not rotating crops or letting land stand fallow. Over-fertilization of land contaminating water. We are creation and we are feeling stressed out by working too hard.

IV. General Biblical ethical principles (what most people associate with Christian teaching)

A. Love your neighbor as yourself. Christ taught that neighbors needed to be understood as broadly as possible. Had to cross even the boundary of enmity between Jews and Samaritans. Today, that suggests that “neighbors” include all those in the world affected by our actions toward the earth.

B. We have an obligation to make our choices with compassionate concern for our neighbors next door, downstream or downwind and for future generations. While it may be tempting to ignore information about the possible effects of our actions and lifestyles upon others, it is sinful to do so especially now knowing that the ability of technology to cause harm to our neighbors’ lives and their livelihood. The increase in potential harm and the increased knowledge of these impacts increases our responsibility to consider this information

1. Those who own wilderness land need to manage it in a way that is mindful of “neighbors” who enjoy and benefit from its ecosystem.
2. Actions in the US that create extraterritorial harm are not “loving” toward our neighbors in developing nations. When we purchase petroleum that was extracted in a manner that harms indigenous people, we’re a part of that and need to consider its moral consequences.
3. Need to love our intergenerational neighbors. Our “neighbors” are not just those living today.

V. Application of Biblical Environmental Ethic- When attempting to analyze a modern environmental policy in Biblical terms, best method is to:

- listen to the policy statement being made
- break it down into its philosophical assumptions
- compare those philosophical assumptions with those of the Christian environmental ethic

A. Question of regulatory taking of private property. In litigation, it is fundamentally a constitutional question. But it often arises as a policy question in context of proposals for across the board compensation for diminution of property value as a result of environmental regulation.

1. **Statement:** *“The government has not right to tell me I cannot destroy wetlands”*

2. **Component assumptions:**

- This property, and the wetland on it, belongs unreservedly to me.
- I have a baseline right to use it in a manner that achieves maximum economic benefit
- The primary value of my land lies in its economic potential
- I have no inherent responsibility to manage my land in a manner that benefits anyone other than myself

3. **Contrasting Biblical Ethical Assumptions:**

- The property fundamentally belongs to God even though I have legal title to it for certain purposes

- My ownership of the property carries with it inherent responsibility to manage it for the benefit of society at large and nature itself, in particular its most defenseless elements such as endangered species.
- The value of my land is not merely economic, but spiritual, in that it reflects the nature of God
- I have an obligation to manage my land in a way that doesn't merely benefit me, but reflects love for my neighbors.

B. Global climate change.

1. ***Statement.*** *“The United States Should Not Sign the Paris Treaty because it will damage economy”*

2. Component assumptions:

- We have an inherent right to a certain level of economic prosperity, and any who would propose diminishing that prosperity in any way has the burden of proof.
- The primary relevant issue is the effect of greenhouse gas emissions on the U.S. economy

1. Contrasting Biblical Ethical Assumptions:

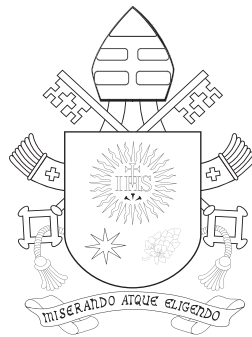
- We are commanded not to prioritize wealth (“Love of money is the root of all evil” “It is easier for a camel to go thru the eye of a needle than for a rich man to enter the kingdom of heaven.”) Prosperity is necessarily evil, but we are not to be motivated by a desire to obtain and maintain it.

We are called to make policy decisions based on uncertain science. Very little uncertainty about the fact that climate change is happening, but there is uncertainty about its severity and likely consequences.

If we are not prioritizing preservation of wealth, the burden of proof shifts away from those who would advocate measures that might diminish our prosperity, and onto those who advocate continuing conduct that creates a risk of harm to creation and other people.

- The primary relevant issue is the impact of our actions on our neighbors. Our neighbors are those in developing nations who

would be most harmed by climate change if it occurred, and our intergenerational neighbors who will inherit any catastrophe we create. Thus, it is unacceptable to conclude that scientific uncertainty justifies a continuation of our conduct. We have to ask whether it is loving to our neighbors to put them at risk of catastrophic harm if we know that is even a possible outcome of our conduct (here, of course, it is more than a possible outcome, it is a likely outcome).



ENCYCLICAL LETTER
LAUDATO SI'
OF THE HOLY FATHER
FRANCIS
ON CARE FOR OUR COMMON HOME

1. “LAUDATO SI’, mi’ Signore” – “Praise be to you, my Lord”. In the words of this beautiful canticle, Saint Francis of Assisi reminds us that our common home is like a sister with whom we share our life and a beautiful mother who opens her arms to embrace us. “Praise be to you, my Lord, through our Sister, Mother Earth, who sustains and governs us, and who produces various fruit with coloured flowers and herbs”.¹

2. This sister now cries out to us because of the harm we have inflicted on her by our irresponsible use and abuse of the goods with which God has endowed her. We have come to see ourselves as her lords and masters, entitled to plunder her at will. The violence present in our hearts, wounded by sin, is also reflected in the symptoms of sickness evident in the soil, in the water, in the air and in all forms of life. This is why the earth herself, burdened and laid waste, is among the most abandoned and maltreated of our poor; she “groans in travail” (*Rom* 8:22). We have forgotten that we ourselves are dust of the earth (cf. *Gen* 2:7); our very bodies are made up

¹ *Canticle of the Creatures*, in *Francis of Assisi: Early Documents*, vol. 1, New York-London-Manila, 1999, 113-114.

of her elements, we breathe her air and we receive life and refreshment from her waters.

Nothing in this world is indifferent to us

3. More than fifty years ago, with the world teetering on the brink of nuclear crisis, Pope Saint John XXIII wrote an Encyclical which not only rejected war but offered a proposal for peace. He addressed his message *Pacem in Terris* to the entire “Catholic world” and indeed “to all men and women of good will”. Now, faced as we are with global environmental deterioration, I wish to address every person living on this planet. In my Apostolic Exhortation *Evangelii Gaudium*, I wrote to all the members of the Church with the aim of encouraging ongoing missionary renewal. In this Encyclical, I would like to enter into dialogue with all people about our common home.

4. In 1971, eight years after *Pacem in Terris*, Blessed Pope Paul VI referred to the ecological concern as “a tragic consequence” of unchecked human activity: “Due to an ill-considered exploitation of nature, humanity runs the risk of destroying it and becoming in turn a victim of this degradation”.² He spoke in similar terms to the Food and Agriculture Organization of the United Nations about the potential for an “ecological catastrophe under the effective explosion of industrial civilization”, and stressed “the urgent need for a radical change

² Apostolic Letter *Octogesima Adveniens* (14 May 1971), 21: *AAS* 63 (1971), 416-417.

in the conduct of humanity”, inasmuch as “the most extraordinary scientific advances, the most amazing technical abilities, the most astonishing economic growth, unless they are accompanied by authentic social and moral progress, will definitively turn against man”.³

5. Saint John Paul II became increasingly concerned about this issue. In his first Encyclical he warned that human beings frequently seem “to see no other meaning in their natural environment than what serves for immediate use and consumption”.⁴ Subsequently, he would call for a global ecological *conversion*.⁵ At the same time, he noted that little effort had been made to “safeguard the moral conditions for an authentic *human ecology*”.⁶ The destruction of the human environment is extremely serious, not only because God has entrusted the world to us men and women, but because human life is itself a gift which must be defended from various forms of debasement. Every effort to protect and improve our world entails profound changes in “lifestyles, models of production and consumption, and the established structures of power which today govern

³ *Address to FAO on the 25th Anniversary of its Institution* (16 November 1970), 4: *AAS* 62 (1970), 833.

⁴ Encyclical Letter *Redemptor Hominis* (4 March 1979), 15: *AAS* 71 (1979), 287.

⁵ Cf. *Catechesis* (17 January 2001), 4: *Insegnamenti* 41/1 (2001), 179.

⁶ Encyclical Letter *Centesimus Annus* (1 May 1991), 38: *AAS* 83 (1991), 841.

societies”.⁷ Authentic human development has a moral character. It presumes full respect for the human person, but it must also be concerned for the world around us and “take into account the nature of each being and of its mutual connection in an ordered system”.⁸ Accordingly, our human ability to transform reality must proceed in line with God’s original gift of all that is.⁹

6. My predecessor Benedict XVI likewise proposed “eliminating the structural causes of the dysfunctions of the world economy and correcting models of growth which have proved incapable of ensuring respect for the environment”.¹⁰ He observed that the world cannot be analyzed by isolating only one of its aspects, since “the book of nature is one and indivisible”, and includes the environment, life, sexuality, the family, social relations, and so forth. It follows that “the deterioration of nature is closely connected to the culture which shapes human coexistence”.¹¹ Pope Benedict asked us to recognize that the natural environment has been gravely damaged by our irresponsible behaviour. The social environment has also suffered damage. Both are ulti-

⁷ *Ibid.*, 58: *AAS* 83 (1991), p. 863.

⁸ JOHN PAUL II, Encyclical Letter *Sollicitudo Rei Socialis* (30 December 1987), 34: *AAS* 80 (1988), 559.

⁹ Cf. ID., Encyclical Letter *Centesimus Annus* (1 May 1991), 37: *AAS* 83 (1991), 840.

¹⁰ *Address to the Diplomatic Corps Accredited to the Holy See* (8 January 2007): *AAS* 99 (2007), 73.

¹¹ Encyclical Letter *Caritas in Veritate* (29 June 2009), 51: *AAS* 101 (2009), 687.

mately due to the same evil: the notion that there are no indisputable truths to guide our lives, and hence human freedom is limitless. We have forgotten that “man is not only a freedom which he creates for himself. Man does not create himself. He is spirit and will, but also nature”.¹² With paternal concern, Benedict urged us to realize that creation is harmed “where we ourselves have the final word, where everything is simply our property and we use it for ourselves alone. The misuse of creation begins when we no longer recognize any higher instance than ourselves, when we see nothing else but ourselves”.¹³

United by the same concern

7. These statements of the Popes echo the reflections of numerous scientists, philosophers, theologians and civic groups, all of which have enriched the Church’s thinking on these questions. Outside the Catholic Church, other Churches and Christian communities – and other religions as well – have expressed deep concern and offered valuable reflections on issues which all of us find disturbing. To give just one striking example, I would mention the statements made by the beloved Ecumenical Patriarch Bartholomew, with whom we share the hope of full ecclesial communion.

¹² *Address to the Bundestag*, Berlin (22 September 2011): *AAS* 103 (2011), 664.

¹³ *Address to the Clergy of the Diocese of Bolzano-Bressanone* (6 August 2008): *AAS* 100 (2008), 634.

8. Patriarch Bartholomew has spoken in particular of the need for each of us to repent of the ways we have harmed the planet, for “inasmuch as we all generate small ecological damage”, we are called to acknowledge “our contribution, smaller or greater, to the disfigurement and destruction of creation”.¹⁴ He has repeatedly stated this firmly and persuasively, challenging us to acknowledge our sins against creation: “For human beings... to destroy the biological diversity of God’s creation; for human beings to degrade the integrity of the earth by causing changes in its climate, by stripping the earth of its natural forests or destroying its wetlands; for human beings to contaminate the earth’s waters, its land, its air, and its life – these are sins”.¹⁵ For “to commit a crime against the natural world is a sin against ourselves and a sin against God”.¹⁶

9. At the same time, Bartholomew has drawn attention to the ethical and spiritual roots of environmental problems, which require that we look for solutions not only in technology but in a change of humanity; otherwise we would be dealing merely with symptoms. He asks us to replace consumption with sacrifice, greed with generosity, wastefulness with a spirit of sharing,

¹⁴ *Message for the Day of Prayer for the Protection of Creation* (1 September 2012).

¹⁵ *Address in Santa Barbara, California* (8 November 1997); cf. JOHN CHRYSAVGIS, *On Earth as in Heaven: Ecological Vision and Initiatives of Ecumenical Patriarch Bartholomew*, Bronx, New York, 2012.

¹⁶ *Ibid.*

an asceticism which “entails learning to give, and not simply to give up. It is a way of loving, of moving gradually away from what I want to what God’s world needs. It is liberation from fear, greed and compulsion”.¹⁷ As Christians, we are also called “to accept the world as a sacrament of communion, as a way of sharing with God and our neighbours on a global scale. It is our humble conviction that the divine and the human meet in the slightest detail in the seamless garment of God’s creation, in the last speck of dust of our planet”.¹⁸

Saint Francis of Assisi

10. I do not want to write this Encyclical without turning to that attractive and compelling figure, whose name I took as my guide and inspiration when I was elected Bishop of Rome. I believe that Saint Francis is the example par excellence of care for the vulnerable and of an integral ecology lived out joyfully and authentically. He is the patron saint of all who study and work in the area of ecology, and he is also much loved by non-Christians. He was particularly concerned for God’s creation and for the poor and outcast. He loved, and was deeply loved for his joy, his generous self-giving, his openheartedness. He was a mystic and a pilgrim who lived in

¹⁷ *Lecture at the Monastery of Utstein, Norway* (23 June 2003).

¹⁸ “Global Responsibility and Ecological Sustainability”, Closing Remarks, Halki Summit I, Istanbul (20 June 2012).

simplicity and in wonderful harmony with God, with others, with nature and with himself. He shows us just how inseparable the bond is between concern for nature, justice for the poor, commitment to society, and interior peace.

11. Francis helps us to see that an integral ecology calls for openness to categories which transcend the language of mathematics and biology, and take us to the heart of what it is to be human. Just as happens when we fall in love with someone, whenever he would gaze at the sun, the moon or the smallest of animals, he burst into song, drawing all other creatures into his praise. He communed with all creation, even preaching to the flowers, inviting them “to praise the Lord, just as if they were endowed with reason”.¹⁹ His response to the world around him was so much more than intellectual appreciation or economic calculus, for to him each and every creature was a sister united to him by bonds of affection. That is why he felt called to care for all that exists. His disciple Saint Bonaventure tells us that, “from a reflection on the primary source of all things, filled with even more abundant piety, he would call creatures, no matter how small, by the name of ‘brother’ or ‘sister’”.²⁰ Such a conviction

¹⁹ THOMAS OF CELANO, *The Life of Saint Francis*, I, 29, 81: in *Francis of Assisi: Early Documents*, vol. 1, New York-London-Manila, 1999, 251.

²⁰ *The Major Legend of Saint Francis*, VIII, 6, in *Francis of Assisi: Early Documents*, vol. 2, New York-London-Manila, 2000, 590.

cannot be written off as naive romanticism, for it affects the choices which determine our behaviour. If we approach nature and the environment without this openness to awe and wonder, if we no longer speak the language of fraternity and beauty in our relationship with the world, our attitude will be that of masters, consumers, ruthless exploiters, unable to set limits on their immediate needs. By contrast, if we feel intimately united with all that exists, then sobriety and care will well up spontaneously. The poverty and austerity of Saint Francis were no mere veneer of asceticism, but something much more radical: a refusal to turn reality into an object simply to be used and controlled.

12. What is more, Saint Francis, faithful to Scripture, invites us to see nature as a magnificent book in which God speaks to us and grants us a glimpse of his infinite beauty and goodness. “Through the greatness and the beauty of creatures one comes to know by analogy their maker” (*Wis* 13:5); indeed, “his eternal power and divinity have been made known through his works since the creation of the world” (*Rom* 1:20). For this reason, Francis asked that part of the friary garden always be left untouched, so that wild flowers and herbs could grow there, and those who saw them could raise their minds to God, the Creator of such beauty.²¹ Rather than a prob-

²¹ Cf. THOMAS OF CELANO, *The Remembrance of the Desire of a Soul*, II, 124, 165, in *Francis of Assisi: Early Documents*, vol. 2, New York-London-Manila, 2000, 354.

lem to be solved, the world is a joyful mystery to be contemplated with gladness and praise.

My appeal

13. The urgent challenge to protect our common home includes a concern to bring the whole human family together to seek a sustainable and integral development, for we know that things can change. The Creator does not abandon us; he never forsakes his loving plan or repents of having created us. Humanity still has the ability to work together in building our common home. Here I want to recognize, encourage and thank all those striving in countless ways to guarantee the protection of the home which we share. Particular appreciation is owed to those who tirelessly seek to resolve the tragic effects of environmental degradation on the lives of the world's poorest. Young people demand change. They wonder how anyone can claim to be building a better future without thinking of the environmental crisis and the sufferings of the excluded.

14. I urgently appeal, then, for a new dialogue about how we are shaping the future of our planet. We need a conversation which includes everyone, since the environmental challenge we are undergoing, and its human roots, concern and affect us all. The worldwide ecological movement has already made considerable progress and led to the establishment of numerous organizations committed to raising awareness of these challenges. Regrettably, many efforts to

seek concrete solutions to the environmental crisis have proved ineffective, not only because of powerful opposition but also because of a more general lack of interest. Obstructionist attitudes, even on the part of believers, can range from denial of the problem to indifference, nonchalant resignation or blind confidence in technical solutions. We require a new and universal solidarity. As the bishops of Southern Africa have stated: “Everyone’s talents and involvement are needed to redress the damage caused by human abuse of God’s creation”.²² All of us can cooperate as instruments of God for the care of creation, each according to his or her own culture, experience, involvements and talents.

15. It is my hope that this Encyclical Letter, which is now added to the body of the Church’s social teaching, can help us to acknowledge the appeal, immensity and urgency of the challenge we face. I will begin by briefly reviewing several aspects of the present ecological crisis, with the aim of drawing on the results of the best scientific research available today, letting them touch us deeply and provide a concrete foundation for the ethical and spiritual itinerary that follows. I will then consider some principles drawn from the Judaeo-Christian tradition which can render our commitment to the environment more coherent. I will then attempt to get to the roots of the pres-

²² SOUTHERN AFRICAN CATHOLIC BISHOPS’ CONFERENCE, *Pastoral Statement on the Environmental Crisis* (5 September 1999).

ent situation, so as to consider not only its symptoms but also its deepest causes. This will help to provide an approach to ecology which respects our unique place as human beings in this world and our relationship to our surroundings. In light of this reflection, I will advance some broader proposals for dialogue and action which would involve each of us as individuals, and also affect international policy. Finally, convinced as I am that change is impossible without motivation and a process of education, I will offer some inspired guidelines for human development to be found in the treasure of Christian spiritual experience.

16. Although each chapter will have its own subject and specific approach, it will also take up and re-examine important questions previously dealt with. This is particularly the case with a number of themes which will reappear as the Encyclical unfolds. As examples, I will point to the intimate relationship between the poor and the fragility of the planet, the conviction that everything in the world is connected, the critique of new paradigms and forms of power derived from technology, the call to seek other ways of understanding the economy and progress, the value proper to each creature, the human meaning of ecology, the need for forthright and honest debate, the serious responsibility of international and local policy, the throwaway culture and the proposal of a new lifestyle. These questions will not be dealt with once and for all, but reframed and enriched again and again.

CHAPTER ONE

WHAT IS HAPPENING TO OUR COMMON HOME

17. Theological and philosophical reflections on the situation of humanity and the world can sound tiresome and abstract, unless they are grounded in a fresh analysis of our present situation, which is in many ways unprecedented in the history of humanity. So, before considering how faith brings new incentives and requirements with regard to the world of which we are a part, I will briefly turn to what is happening to our common home.

18. The continued acceleration of changes affecting humanity and the planet is coupled today with a more intensified pace of life and work which might be called “rapidification”. Although change is part of the working of complex systems, the speed with which human activity has developed contrasts with the naturally slow pace of biological evolution. Moreover, the goals of this rapid and constant change are not necessarily geared to the common good or to integral and sustainable human development. Change is something desirable, yet it becomes a source of anxiety when it causes harm to the world and to the quality of life of much of humanity.

19. Following a period of irrational confidence in progress and human abilities, some sectors of society are now adopting a more critical approach. We see increasing sensitivity to the environment and the need to protect nature, along with a growing concern, both genuine and distressing, for what is happening to our planet. Let us review, however cursorily, those questions which are troubling us today and which we can no longer sweep under the carpet. Our goal is not to amass information or to satisfy curiosity, but rather to become painfully aware, to dare to turn what is happening to the world into our own personal suffering and thus to discover what each of us can do about it.

I. POLLUTION AND CLIMATE CHANGE

Pollution, waste and the throwaway culture

20. Some forms of pollution are part of people's daily experience. Exposure to atmospheric pollutants produces a broad spectrum of health hazards, especially for the poor, and causes millions of premature deaths. People take sick, for example, from breathing high levels of smoke from fuels used in cooking or heating. There is also pollution that affects everyone, caused by transport, industrial fumes, substances which contribute to the acidification of soil and water, fertilizers, insecticides, fungicides, herbicides and agrottoxins in general. Technology, which, linked to business interests, is presented as the only way

of solving these problems, in fact proves incapable of seeing the mysterious network of relations between things and so sometimes solves one problem only to create others.

21. Account must also be taken of the pollution produced by residue, including dangerous waste present in different areas. Each year hundreds of millions of tons of waste are generated, much of it non-biodegradable, highly toxic and radioactive, from homes and businesses, from construction and demolition sites, from clinical, electronic and industrial sources. The earth, our home, is beginning to look more and more like an immense pile of filth. In many parts of the planet, the elderly lament that once beautiful landscapes are now covered with rubbish. Industrial waste and chemical products utilized in cities and agricultural areas can lead to bioaccumulation in the organisms of the local population, even when levels of toxins in those places are low. Frequently no measures are taken until after people's health has been irreversibly affected.

22. These problems are closely linked to a throwaway culture which affects the excluded just as it quickly reduces things to rubbish. To cite one example, most of the paper we produce is thrown away and not recycled. It is hard for us to accept that the way natural ecosystems work is exemplary: plants synthesize nutrients which feed herbivores; these in turn become food for carnivores, which produce significant quantities

of organic waste which give rise to new generations of plants. But our industrial system, at the end of its cycle of production and consumption, has not developed the capacity to absorb and reuse waste and by-products. We have not yet managed to adopt a circular model of production capable of preserving resources for present and future generations, while limiting as much as possible the use of non-renewable resources, moderating their consumption, maximizing their efficient use, reusing and recycling them. A serious consideration of this issue would be one way of counteracting the throwaway culture which affects the entire planet, but it must be said that only limited progress has been made in this regard.

Climate as a common good

23. The climate is a common good, belonging to all and meant for all. At the global level, it is a complex system linked to many of the essential conditions for human life. A very solid scientific consensus indicates that we are presently witnessing a disturbing warming of the climatic system. In recent decades this warming has been accompanied by a constant rise in the sea level and, it would appear, by an increase of extreme weather events, even if a scientifically determinable cause cannot be assigned to each particular phenomenon. Humanity is called to recognize the need for changes of lifestyle, production and consumption, in order to combat this warming or at

least the human causes which produce or aggravate it. It is true that there are other factors (such as volcanic activity, variations in the earth's orbit and axis, the solar cycle), yet a number of scientific studies indicate that most global warming in recent decades is due to the great concentration of greenhouse gases (carbon dioxide, methane, nitrogen oxides and others) released mainly as a result of human activity. Concentrated in the atmosphere, these gases do not allow the warmth of the sun's rays reflected by the earth to be dispersed in space. The problem is aggravated by a model of development based on the intensive use of fossil fuels, which is at the heart of the worldwide energy system. Another determining factor has been an increase in changed uses of the soil, principally deforestation for agricultural purposes.

24. Warming has effects on the carbon cycle. It creates a vicious circle which aggravates the situation even more, affecting the availability of essential resources like drinking water, energy and agricultural production in warmer regions, and leading to the extinction of part of the planet's biodiversity. The melting in the polar ice caps and in high altitude plains can lead to the dangerous release of methane gas, while the decomposition of frozen organic material can further increase the emission of carbon dioxide. Things are made worse by the loss of tropical forests which would otherwise help to mitigate climate

change. Carbon dioxide pollution increases the acidification of the oceans and compromises the marine food chain. If present trends continue, this century may well witness extraordinary climate change and an unprecedented destruction of ecosystems, with serious consequences for all of us. A rise in the sea level, for example, can create extremely serious situations, if we consider that a quarter of the world's population lives on the coast or nearby, and that the majority of our megacities are situated in coastal areas.

25. Climate change is a global problem with grave implications: environmental, social, economic, political and for the distribution of goods. It represents one of the principal challenges facing humanity in our day. Its worst impact will probably be felt by developing countries in coming decades. Many of the poor live in areas particularly affected by phenomena related to warming, and their means of subsistence are largely dependent on natural reserves and ecosystemic services such as agriculture, fishing and forestry. They have no other financial activities or resources which can enable them to adapt to climate change or to face natural disasters, and their access to social services and protection is very limited. For example, changes in climate, to which animals and plants cannot adapt, lead them to migrate; this in turn affects the livelihood of the poor, who are then forced to leave their homes, with great uncertainty for their fu-

ture and that of their children. There has been a tragic rise in the number of migrants seeking to flee from the growing poverty caused by environmental degradation. They are not recognized by international conventions as refugees; they bear the loss of the lives they have left behind, without enjoying any legal protection whatsoever. Sadly, there is widespread indifference to such suffering, which is even now taking place throughout our world. Our lack of response to these tragedies involving our brothers and sisters points to the loss of that sense of responsibility for our fellow men and women upon which all civil society is founded.

26. Many of those who possess more resources and economic or political power seem mostly to be concerned with masking the problems or concealing their symptoms, simply making efforts to reduce some of the negative impacts of climate change. However, many of these symptoms indicate that such effects will continue to worsen if we continue with current models of production and consumption. There is an urgent need to develop policies so that, in the next few years, the emission of carbon dioxide and other highly polluting gases can be drastically reduced, for example, substituting for fossil fuels and developing sources of renewable energy. Worldwide there is minimal access to clean and renewable energy. There is still a need to develop adequate storage technologies. Some countries have made consid-

erable progress, although it is far from constituting a significant proportion. Investments have also been made in means of production and transportation which consume less energy and require fewer raw materials, as well as in methods of construction and renovating buildings which improve their energy efficiency. But these good practices are still far from widespread.

II. THE ISSUE OF WATER

27. Other indicators of the present situation have to do with the depletion of natural resources. We all know that it is not possible to sustain the present level of consumption in developed countries and wealthier sectors of society, where the habit of wasting and discarding has reached unprecedented levels. The exploitation of the planet has already exceeded acceptable limits and we still have not solved the problem of poverty.

28. Fresh drinking water is an issue of primary importance, since it is indispensable for human life and for supporting terrestrial and aquatic ecosystems. Sources of fresh water are necessary for health care, agriculture and industry. Water supplies used to be relatively constant, but now in many places demand exceeds the sustainable supply, with dramatic consequences in the short and long term. Large cities dependent on significant supplies of water have experienced periods of shortage, and at critical moments these have not always been administered with sufficient

oversight and impartiality. Water poverty especially affects Africa where large sectors of the population have no access to safe drinking water or experience droughts which impede agricultural production. Some countries have areas rich in water while others endure drastic scarcity.

29. One particularly serious problem is the quality of water available to the poor. Every day, unsafe water results in many deaths and the spread of water-related diseases, including those caused by microorganisms and chemical substances. Dysentery and cholera, linked to inadequate hygiene and water supplies, are a significant cause of suffering and of infant mortality. Underground water sources in many places are threatened by the pollution produced in certain mining, farming and industrial activities, especially in countries lacking adequate regulation or controls. It is not only a question of industrial waste. Detergents and chemical products, commonly used in many places of the world, continue to pour into our rivers, lakes and seas.

30. Even as the quality of available water is constantly diminishing, in some places there is a growing tendency, despite its scarcity, to privatize this resource, turning it into a commodity subject to the laws of the market. Yet *access to safe drinkable water is a basic and universal human right, since it is essential to human survival and, as such, is a condition for the exercise of other human rights*. Our world has a grave social debt towards the poor who lack

access to drinking water, because *they are denied the right to a life consistent with their inalienable dignity*. This debt can be paid partly by an increase in funding to provide clean water and sanitary services among the poor. But water continues to be wasted, not only in the developed world but also in developing countries which possess it in abundance. This shows that the problem of water is partly an educational and cultural issue, since there is little awareness of the seriousness of such behaviour within a context of great inequality.

31. Greater scarcity of water will lead to an increase in the cost of food and the various products which depend on its use. Some studies warn that an acute water shortage may occur within a few decades unless urgent action is taken. The environmental repercussions could affect billions of people; it is also conceivable that the control of water by large multinational businesses may become a major source of conflict in this century.²³

III. LOSS OF BIODIVERSITY

32. The earth's resources are also being plundered because of short-sighted approaches to the economy, commerce and production. The loss of forests and woodlands entails the loss of

²³ Cf. *Greeting to the Staff of FAO* (20 November 2014): *AAS* 106 (2014), 985.

species which may constitute extremely important resources in the future, not only for food but also for curing disease and other uses. Different species contain genes which could be key resources in years ahead for meeting human needs and regulating environmental problems.

33. It is not enough, however, to think of different species merely as potential “resources” to be exploited, while overlooking the fact that they have value in themselves. Each year sees the disappearance of thousands of plant and animal species which we will never know, which our children will never see, because they have been lost for ever. The great majority become extinct for reasons related to human activity. Because of us, thousands of species will no longer give glory to God by their very existence, nor convey their message to us. We have no such right.

34. It may well disturb us to learn of the extinction of mammals or birds, since they are more visible. But the good functioning of ecosystems also requires fungi, algae, worms, insects, reptiles and an innumerable variety of microorganisms. Some less numerous species, although generally unseen, nonetheless play a critical role in maintaining the equilibrium of a particular place. Human beings must intervene when a geosystem reaches a critical state. But nowadays, such intervention in nature has become more and more frequent. As a consequence, serious problems arise, leading to further interventions; human activity

becomes ubiquitous, with all the risks which this entails. Often a vicious circle results, as human intervention to resolve a problem further aggravates the situation. For example, many birds and insects which disappear due to synthetic agrotoxins are helpful for agriculture: their disappearance will have to be compensated for by yet other techniques which may well prove harmful. We must be grateful for the praiseworthy efforts being made by scientists and engineers dedicated to finding solutions to man-made problems. But a sober look at our world shows that the degree of human intervention, often in the service of business interests and consumerism, is actually making our earth less rich and beautiful, ever more limited and grey, even as technological advances and consumer goods continue to abound limitlessly. We seem to think that we can substitute an irreplaceable and irretrievable beauty with something which we have created ourselves.

35. In assessing the environmental impact of any project, concern is usually shown for its effects on soil, water and air, yet few careful studies are made of its impact on biodiversity, as if the loss of species or animals and plant groups were of little importance. Highways, new plantations, the fencing-off of certain areas, the damming of water sources, and similar developments, crowd out natural habitats and, at times, break them up in such a way that animal populations can no longer migrate or roam freely. As a re-

sult, some species face extinction. Alternatives exist which at least lessen the impact of these projects, like the creation of biological corridors, but few countries demonstrate such concern and foresight. Frequently, when certain species are exploited commercially, little attention is paid to studying their reproductive patterns in order to prevent their depletion and the consequent imbalance of the ecosystem.

36. Caring for ecosystems demands far-sightedness, since no one looking for quick and easy profit is truly interested in their preservation. But the cost of the damage caused by such selfish lack of concern is much greater than the economic benefits to be obtained. Where certain species are destroyed or seriously harmed, the values involved are incalculable. We can be silent witnesses to terrible injustices if we think that we can obtain significant benefits by making the rest of humanity, present and future, pay the extremely high costs of environmental deterioration.

37. Some countries have made significant progress in establishing sanctuaries on land and in the oceans where any human intervention is prohibited which might modify their features or alter their original structures. In the protection of biodiversity, specialists insist on the need for particular attention to be shown to areas richer both in the number of species and in endemic, rare or less protected species. Certain places need

greater protection because of their immense importance for the global ecosystem, or because they represent important water reserves and thus safeguard other forms of life.

38. Let us mention, for example, those richly biodiverse lungs of our planet which are the Amazon and the Congo basins, or the great aquifers and glaciers. We know how important these are for the entire earth and for the future of humanity. The ecosystems of tropical forests possess an enormously complex biodiversity which is almost impossible to appreciate fully, yet when these forests are burned down or levelled for purposes of cultivation, within the space of a few years countless species are lost and the areas frequently become arid wastelands. A delicate balance has to be maintained when speaking about these places, for we cannot overlook the huge global economic interests which, under the guise of protecting them, can undermine the sovereignty of individual nations. In fact, there are “proposals to internationalize the Amazon, which only serve the economic interests of transnational corporations”.²⁴ We cannot fail to praise the commitment of international agencies and civil society organizations which draw public attention to these issues and offer critical cooperation, employing legitimate means of pressure,

²⁴ FIFTH GENERAL CONFERENCE OF THE LATIN AMERICAN AND CARIBBEAN BISHOPS, *Aparecida Document* (29 June 2007), 86.

to ensure that each government carries out its proper and inalienable responsibility to preserve its country's environment and natural resources, without capitulating to spurious local or international interests.

39. The replacement of virgin forest with plantations of trees, usually monocultures, is rarely adequately analyzed. Yet this can seriously compromise a biodiversity which the new species being introduced does not accommodate. Similarly, wetlands converted into cultivated land lose the enormous biodiversity which they formerly hosted. In some coastal areas the disappearance of ecosystems sustained by mangrove swamps is a source of serious concern.

40. Oceans not only contain the bulk of our planet's water supply, but also most of the immense variety of living creatures, many of them still unknown to us and threatened for various reasons. What is more, marine life in rivers, lakes, seas and oceans, which feeds a great part of the world's population, is affected by uncontrolled fishing, leading to a drastic depletion of certain species. Selective forms of fishing which discard much of what they collect continue unabated. Particularly threatened are marine organisms which we tend to overlook, like some forms of plankton; they represent a significant element in the ocean food chain, and species used for our food ultimately depend on them.

41. In tropical and subtropical seas, we find coral reefs comparable to the great forests on dry land, for they shelter approximately a million species, including fish, crabs, molluscs, sponges and algae. Many of the world's coral reefs are already barren or in a state of constant decline. "Who turned the wonderworld of the seas into underwater cemeteries bereft of colour and life?"²⁵ This phenomenon is due largely to pollution which reaches the sea as the result of deforestation, agricultural monocultures, industrial waste and destructive fishing methods, especially those using cyanide and dynamite. It is aggravated by the rise in temperature of the oceans. All of this helps us to see that every intervention in nature can have consequences which are not immediately evident, and that certain ways of exploiting resources prove costly in terms of degradation which ultimately reaches the ocean bed itself.

42. Greater investment needs to be made in research aimed at understanding more fully the functioning of ecosystems and adequately analyzing the different variables associated with any significant modification of the environment. Because all creatures are connected, each must be cherished with love and respect, for all of us as living creatures are dependent on one another. Each area is responsible for the care of this fam-

²⁵ CATHOLIC BISHOPS' CONFERENCE OF THE PHILIPPINES, Pastoral Letter *What is Happening to our Beautiful Land?* (29 January 1988).

ily. This will require undertaking a careful inventory of the species which it hosts, with a view to developing programmes and strategies of protection with particular care for safeguarding species heading towards extinction.

IV. DECLINE IN THE QUALITY OF HUMAN LIFE AND THE BREAKDOWN OF SOCIETY

43. Human beings too are creatures of this world, enjoying a right to life and happiness, and endowed with unique dignity. So we cannot fail to consider the effects on people's lives of environmental deterioration, current models of development and the throwaway culture.

44. Nowadays, for example, we are conscious of the disproportionate and unruly growth of many cities, which have become unhealthy to live in, not only because of pollution caused by toxic emissions but also as a result of urban chaos, poor transportation, and visual pollution and noise. Many cities are huge, inefficient structures, excessively wasteful of energy and water. Neighbourhoods, even those recently built, are congested, chaotic and lacking in sufficient green space. We were not meant to be inundated by cement, asphalt, glass and metal, and deprived of physical contact with nature.

45. In some places, rural and urban alike, the privatization of certain spaces has restricted people's access to places of particular beauty. In

others, “ecological” neighbourhoods have been created which are closed to outsiders in order to ensure an artificial tranquillity. Frequently, we find beautiful and carefully manicured green spaces in so-called “safer” areas of cities, but not in the more hidden areas where the disposable of society live.

46. The social dimensions of global change include the effects of technological innovations on employment, social exclusion, an inequitable distribution and consumption of energy and other services, social breakdown, increased violence and a rise in new forms of social aggression, drug trafficking, growing drug use by young people, and the loss of identity. These are signs that the growth of the past two centuries has not always led to an integral development and an improvement in the quality of life. Some of these signs are also symptomatic of real social decline, the silent rupture of the bonds of integration and social cohesion.

47. Furthermore, when media and the digital world become omnipresent, their influence can stop people from learning how to live wisely, to think deeply and to love generously. In this context, the great sages of the past run the risk of going unheard amid the noise and distractions of an information overload. Efforts need to be made to help these media become sources of new cultural progress for humanity and not a

threat to our deepest riches. True wisdom, as the fruit of self-examination, dialogue and generous encounter between persons, is not acquired by a mere accumulation of data which eventually leads to overload and confusion, a sort of mental pollution. Real relationships with others, with all the challenges they entail, now tend to be replaced by a type of internet communication which enables us to choose or eliminate relationships at whim, thus giving rise to a new type of contrived emotion which has more to do with devices and displays than with other people and with nature. Today's media do enable us to communicate and to share our knowledge and affections. Yet at times they also shield us from direct contact with the pain, the fears and the joys of others and the complexity of their personal experiences. For this reason, we should be concerned that, alongside the exciting possibilities offered by these media, a deep and melancholic dissatisfaction with interpersonal relations, or a harmful sense of isolation, can also arise.

V. GLOBAL INEQUALITY

48. The human environment and the natural environment deteriorate together; we cannot adequately combat environmental degradation unless we attend to causes related to human and social degradation. In fact, the deterioration of the environment and of society affects the most vulnerable people on the planet: "Both everyday

experience and scientific research show that the gravest effects of all attacks on the environment are suffered by the poorest”.²⁶ For example, the depletion of fishing reserves especially hurts small fishing communities without the means to replace those resources; water pollution particularly affects the poor who cannot buy bottled water; and rises in the sea level mainly affect impoverished coastal populations who have nowhere else to go. The impact of present imbalances is also seen in the premature death of many of the poor, in conflicts sparked by the shortage of resources, and in any number of other problems which are insufficiently represented on global agendas.²⁷

49. It needs to be said that, generally speaking, there is little in the way of clear awareness of problems which especially affect the excluded. Yet they are the majority of the planet’s population, billions of people. These days, they are mentioned in international political and economic discussions, but one often has the impression that their problems are brought up as an afterthought, a question which gets added almost out of duty or in a tangential way, if not treat-

²⁶ BOLIVIAN BISHOPS’ CONFERENCE, Pastoral Letter on the Environment and Human Development in Bolivia *El universo, don de Dios para la vida* (23 March 2012), 17.

²⁷ Cf. GERMAN BISHOPS’ CONFERENCE, Commission for Social Issues, *Der Klimawandel: Brennpunkt globaler, intergenerationaler und ökologischer Gerechtigkeit* (September 2006), 28-30.

ed merely as collateral damage. Indeed, when all is said and done, they frequently remain at the bottom of the pile. This is due partly to the fact that many professionals, opinion makers, communications media and centres of power, being located in affluent urban areas, are far removed from the poor, with little direct contact with their problems. They live and reason from the comfortable position of a high level of development and a quality of life well beyond the reach of the majority of the world's population. This lack of physical contact and encounter, encouraged at times by the disintegration of our cities, can lead to a numbing of conscience and to tendentious analyses which neglect parts of reality. At times this attitude exists side by side with a "green" rhetoric. Today, however, we have to realize that a true ecological approach *always* becomes a social approach; it must integrate questions of justice in debates on the environment, so as to hear *both the cry of the earth and the cry of the poor*.

50. Instead of resolving the problems of the poor and thinking of how the world can be different, some can only propose a reduction in the birth rate. At times, developing countries face forms of international pressure which make economic assistance contingent on certain policies of "reproductive health". Yet "while it is true that an unequal distribution of the population and of available resources creates obstacles to development and a sustainable use of the envi-

ronment, it must nonetheless be recognized that demographic growth is fully compatible with an integral and shared development”.²⁸ To blame population growth instead of extreme and selective consumerism on the part of some, is one way of refusing to face the issues. It is an attempt to legitimize the present model of distribution, where a minority believes that it has the right to consume in a way which can never be universalized, since the planet could not even contain the waste products of such consumption. Besides, we know that approximately a third of all food produced is discarded, and “whenever food is thrown out it is as if it were stolen from the table of the poor”.²⁹ Still, attention needs to be paid to imbalances in population density, on both national and global levels, since a rise in consumption would lead to complex regional situations, as a result of the interplay between problems linked to environmental pollution, transport, waste treatment, loss of resources and quality of life.

51. Inequity affects not only individuals but entire countries; it compels us to consider an ethics of international relations. A true “ecological debt” exists, particularly between the global north and south, connected to commercial im-

²⁸ PONTIFICAL COUNCIL FOR JUSTICE AND PEACE, *Compendium of the Social Doctrine of the Church*, 483.

²⁹ *Catechesis* (5 June 2013): *Insegnamenti* 1/1 (2013), 280.

balances with effects on the environment, and the disproportionate use of natural resources by certain countries over long periods of time. The export of raw materials to satisfy markets in the industrialized north has caused harm locally, as for example in mercury pollution in gold mining or sulphur dioxide pollution in copper mining. There is a pressing need to calculate the use of environmental space throughout the world for depositing gas residues which have been accumulating for two centuries and have created a situation which currently affects all the countries of the world. The warming caused by huge consumption on the part of some rich countries has repercussions on the poorest areas of the world, especially Africa, where a rise in temperature, together with drought, has proved devastating for farming. There is also the damage caused by the export of solid waste and toxic liquids to developing countries, and by the pollution produced by companies which operate in less developed countries in ways they could never do at home, in the countries in which they raise their capital: "We note that often the businesses which operate this way are multinationals. They do here what they would never do in developed countries or the so-called first world. Generally, after ceasing their activity and withdrawing, they leave behind great human and environmental liabilities such as unemployment, abandoned towns, the depletion of natural reserves, deforestation, the impoverishment of agriculture and local

stock breeding, open pits, riven hills, polluted rivers and a handful of social works which are no longer sustainable”.³⁰

52. The foreign debt of poor countries has become a way of controlling them, yet this is not the case where ecological debt is concerned. In different ways, developing countries, where the most important reserves of the biosphere are found, continue to fuel the development of richer countries at the cost of their own present and future. The land of the southern poor is rich and mostly unpolluted, yet access to ownership of goods and resources for meeting vital needs is inhibited by a system of commercial relations and ownership which is structurally perverse. The developed countries ought to help pay this debt by significantly limiting their consumption of non-renewable energy and by assisting poorer countries to support policies and programmes of sustainable development. The poorest areas and countries are less capable of adopting new models for reducing environmental impact because they lack the wherewithal to develop the necessary processes and to cover their costs. We must continue to be aware that, regarding climate change, there are *differentiated responsibilities*. As the United States bishops have said, greater attention must be given to “the needs of the

³⁰ BISHOPS OF THE PATAGONIA-COMAHUE REGION (ARGENTINA), *Christmas Message* (December 2009), 2.

poor, the weak and the vulnerable, in a debate often dominated by more powerful interests”.³¹ We need to strengthen the conviction that we are one single human family. There are no frontiers or barriers, political or social, behind which we can hide, still less is there room for the globalization of indifference.

VI. WEAK RESPONSES

53. These situations have caused sister earth, along with all the abandoned of our world, to cry out, pleading that we take another course. Never have we so hurt and mistreated our common home as we have in the last two hundred years. Yet we are called to be instruments of God our Father, so that our planet might be what he desired when he created it and correspond with his plan for peace, beauty and fullness. The problem is that we still lack the culture needed to confront this crisis. We lack leadership capable of striking out on new paths and meeting the needs of the present with concern for all and without prejudice towards coming generations. The establishment of a legal framework which can set clear boundaries and ensure the protection of ecosystems has become indispensable, otherwise the new power structures based on the techno-economic paradigm may overwhelm not only our politics but also freedom and justice.

³¹ UNITED STATES CONFERENCE OF CATHOLIC BISHOPS, *Global Climate Change: A Plea for Dialogue, Prudence and the Common Good* (15 June 2001).

54. It is remarkable how weak international political responses have been. The failure of global summits on the environment make it plain that our politics are subject to technology and finance. There are too many special interests, and economic interests easily end up trumping the common good and manipulating information so that their own plans will not be affected. The *Aparecida Document* urges that “the interests of economic groups which irrationally demolish sources of life should not prevail in dealing with natural resources”.³² The alliance between the economy and technology ends up sidelining anything unrelated to its immediate interests. Consequently the most one can expect is superficial rhetoric, sporadic acts of philanthropy and perfunctory expressions of concern for the environment, whereas any genuine attempt by groups within society to introduce change is viewed as a nuisance based on romantic illusions or an obstacle to be circumvented.

55. Some countries are gradually making significant progress, developing more effective controls and working to combat corruption. People may well have a growing ecological sensitivity but it has not succeeded in changing their harmful habits of consumption which, rather than decreasing, appear to be growing all the more. A simple example is the increasing use and power

³² FIFTH GENERAL CONFERENCE OF THE LATIN AMERICAN AND CARIBBEAN BISHOPS, *Aparecida Document* (29 June 2007), 471.

of air-conditioning. The markets, which immediately benefit from sales, stimulate ever greater demand. An outsider looking at our world would be amazed at such behaviour, which at times appears self-destructive.

56. In the meantime, economic powers continue to justify the current global system where priority tends to be given to speculation and the pursuit of financial gain, which fail to take the context into account, let alone the effects on human dignity and the natural environment. Here we see how environmental deterioration and human and ethical degradation are closely linked. Many people will deny doing anything wrong because distractions constantly dull our consciousness of just how limited and finite our world really is. As a result, “whatever is fragile, like the environment, is defenceless before the interests of a deified market, which become the only rule”.³³

57. It is foreseeable that, once certain resources have been depleted, the scene will be set for new wars, albeit under the guise of noble claims. War always does grave harm to the environment and to the cultural riches of peoples, risks which are magnified when one considers nuclear arms and biological weapons. “Despite the international agreements which prohibit chemical, bacterio-

³³ Apostolic Exhortation *Evangelii Gaudium* (24 November 2013), 56: *AAS* 105 (2013), 1043.

logical and biological warfare, the fact is that laboratory research continues to develop new offensive weapons capable of altering the balance of nature”.³⁴ Politics must pay greater attention to foreseeing new conflicts and addressing the causes which can lead to them. But powerful financial interests prove most resistant to this effort, and political planning tends to lack breadth of vision. What would induce anyone, at this stage, to hold on to power only to be remembered for their inability to take action when it was urgent and necessary to do so?

58. In some countries, there are positive examples of environmental improvement: rivers, polluted for decades, have been cleaned up; native woodlands have been restored; landscapes have been beautified thanks to environmental renewal projects; beautiful buildings have been erected; advances have been made in the production of non-polluting energy and in the improvement of public transportation. These achievements do not solve global problems, but they do show that men and women are still capable of intervening positively. For all our limitations, gestures of generosity, solidarity and care cannot but well up within us, since we were made for love.

59. At the same time we can note the rise of a false or superficial ecology which bolsters com-

³⁴ JOHN PAUL II, *Message for the 1990 World Day of Peace*, 12: AAS 82 (1990), 154.

placency and a cheerful recklessness. As often occurs in periods of deep crisis which require bold decisions, we are tempted to think that what is happening is not entirely clear. Superficially, apart from a few obvious signs of pollution and deterioration, things do not look that serious, and the planet could continue as it is for some time. Such evasiveness serves as a licence to carrying on with our present lifestyles and models of production and consumption. This is the way human beings contrive to feed their self-destructive vices: trying not to see them, trying not to acknowledge them, delaying the important decisions and pretending that nothing will happen.

VII. A VARIETY OF OPINIONS

60. Finally, we need to acknowledge that different approaches and lines of thought have emerged regarding this situation and its possible solutions. At one extreme, we find those who doggedly uphold the myth of progress and tell us that ecological problems will solve themselves simply with the application of new technology and without any need for ethical considerations or deep change. At the other extreme are those who view men and women and all their interventions as no more than a threat, jeopardizing the global ecosystem, and consequently the presence of human beings on the planet should be reduced and all forms of intervention prohibited. Viable future scenarios will have to be generated between these extremes, since there is no

one path to a solution. This makes a variety of proposals possible, all capable of entering into dialogue with a view to developing comprehensive solutions.

61. On many concrete questions, the Church has no reason to offer a definitive opinion; she knows that honest debate must be encouraged among experts, while respecting divergent views. But we need only take a frank look at the facts to see that our common home is falling into serious disrepair. Hope would have us recognize that there is always a way out, that we can always redirect our steps, that we can always do something to solve our problems. Still, we can see signs that things are now reaching a breaking point, due to the rapid pace of change and degradation; these are evident in large-scale natural disasters as well as social and even financial crises, for the world's problems cannot be analyzed or explained in isolation. There are regions now at high risk and, aside from all doomsday predictions, the present world system is certainly unsustainable from a number of points of view, for we have stopped thinking about the goals of human activity. "If we scan the regions of our planet, we immediately see that humanity has disappointed God's expectations".³⁵

³⁵ ID., *Catechesis* (17 January 2001), 3: *Insegnamenti* 24/1 (2001), 178.

CHAPTER TWO

THE GOSPEL OF CREATION

62. Why should this document, addressed to all people of good will, include a chapter dealing with the convictions of believers? I am well aware that in the areas of politics and philosophy there are those who firmly reject the idea of a Creator, or consider it irrelevant, and consequently dismiss as irrational the rich contribution which religions can make towards an integral ecology and the full development of humanity. Others view religions simply as a subculture to be tolerated. Nonetheless, science and religion, with their distinctive approaches to understanding reality, can enter into an intense dialogue fruitful for both.

I. THE LIGHT OFFERED BY FAITH

63. Given the complexity of the ecological crisis and its multiple causes, we need to realize that the solutions will not emerge from just one way of interpreting and transforming reality. Respect must also be shown for the various cultural riches of different peoples, their art and poetry, their interior life and spirituality. If we are truly concerned to develop an ecology capable of remedying the damage we have done, no branch of the sciences and no form of wisdom

can be left out, and that includes religion and the language particular to it. The Catholic Church is open to dialogue with philosophical thought; this has enabled her to produce various syntheses between faith and reason. The development of the Church's social teaching represents such a synthesis with regard to social issues; this teaching is called to be enriched by taking up new challenges.

64. Furthermore, although this Encyclical welcomes dialogue with everyone so that together we can seek paths of liberation, I would like from the outset to show how faith convictions can offer Christians, and some other believers as well, ample motivation to care for nature and for the most vulnerable of their brothers and sisters. If the simple fact of being human moves people to care for the environment of which they are a part, Christians in their turn “realize that their responsibility within creation, and their duty towards nature and the Creator, are an essential part of their faith”.³⁶ It is good for humanity and the world at large when we believers better recognize the ecological commitments which stem from our convictions.

II. THE WISDOM OF THE BIBLICAL ACCOUNTS

65. Without repeating the entire theology of creation, we can ask what the great biblical nar-

³⁶ JOHN PAUL II, *Message for the 1990 World Day of Peace*, 15: *AAS* 82 (1990), 156.

ratives say about the relationship of human beings with the world. In the first creation account in the Book of Genesis, God's plan includes creating humanity. After the creation of man and woman, "God saw everything that he had made, and behold it was *very good*" (*Gen* 1:31). The Bible teaches that every man and woman is created out of love and made in God's image and likeness (cf. *Gen* 1:26). This shows us the immense dignity of each person, "who is not just something, but someone. He is capable of self-knowledge, of self-possession and of freely giving himself and entering into communion with other persons".³⁷ Saint John Paul II stated that the special love of the Creator for each human being "confers upon him or her an infinite dignity".³⁸ Those who are committed to defending human dignity can find in the Christian faith the deepest reasons for this commitment. How wonderful is the certainty that each human life is not adrift in the midst of hopeless chaos, in a world ruled by pure chance or endlessly recurring cycles! The Creator can say to each one of us: "Before I formed you in the womb, I knew you" (*Jer* 1:5). We were conceived in the heart of God, and for this reason "each of us is the result of a thought of God. Each of us is willed, each of us is loved, each of us is necessary".³⁹

³⁷ *Catechism of the Catholic Church*, 357.

³⁸ *Angelus* in Osnabrück (Germany) with the disabled, 16 November 1980: *Insegnamenti* 3/2 (1980), 1232.

³⁹ BENEDICT XVI, *Homily for the Solemn Inauguration of the Petrine Ministry* (24 April 2005): *AAS* 97 (2005), 711.

66. The creation accounts in the book of Genesis contain, in their own symbolic and narrative language, profound teachings about human existence and its historical reality. They suggest that human life is grounded in three fundamental and closely intertwined relationships: with God, with our neighbour and with the earth itself. According to the Bible, these three vital relationships have been broken, both outwardly and within us. This rupture is sin. The harmony between the Creator, humanity and creation as a whole was disrupted by our presuming to take the place of God and refusing to acknowledge our creaturely limitations. This in turn distorted our mandate to “have dominion” over the earth (cf. *Gen* 1:28), to “till it and keep it” (*Gen* 2:15). As a result, the originally harmonious relationship between human beings and nature became conflictual (cf. *Gen* 3:17-19). It is significant that the harmony which Saint Francis of Assisi experienced with all creatures was seen as a healing of that rupture. Saint Bonaventure held that, through universal reconciliation with every creature, Saint Francis in some way returned to the state of original innocence.⁴⁰ This is a far cry from our situation today, where sin is manifest in all its destructive power in wars, the various forms of violence and abuse, the abandonment of the most vulnerable, and attacks on nature.

⁴⁰ Cf. BONAVENTURE, *The Major Legend of Saint Francis*, VIII, 1, in *Francis of Assisi: Early Documents*, vol. 2, New York-London-Manila, 2000, 586.

67. We are not God. The earth was here before us and it has been given to us. This allows us to respond to the charge that Judaeo-Christian thinking, on the basis of the Genesis account which grants man “dominion” over the earth (cf. *Gen* 1:28), has encouraged the unbridled exploitation of nature by painting him as domineering and destructive by nature. This is not a correct interpretation of the Bible as understood by the Church. Although it is true that we Christians have at times incorrectly interpreted the Scriptures, nowadays we must forcefully reject the notion that our being created in God’s image and given dominion over the earth justifies absolute domination over other creatures. The biblical texts are to be read in their context, with an appropriate hermeneutic, recognizing that they tell us to “till and keep” the garden of the world (cf. *Gen* 2:15). “Tilling” refers to cultivating, ploughing or working, while “keeping” means caring, protecting, overseeing and preserving. This implies a relationship of mutual responsibility between human beings and nature. Each community can take from the bounty of the earth whatever it needs for subsistence, but it also has the duty to protect the earth and to ensure its fruitfulness for coming generations. “The earth is the Lord’s” (*Ps* 24:1); to him belongs “the earth with all that is within it” (*Dt* 10:14). Thus God rejects every claim to absolute ownership: “The land shall not be sold in perpetuity, for the land is mine; for you are strangers and sojourners with me” (*Lev* 25:23).

68. This responsibility for God's earth means that human beings, endowed with intelligence, must respect the laws of nature and the delicate equilibria existing between the creatures of this world, for "he commanded and they were created; and he established them for ever and ever; he fixed their bounds and he set a law which cannot pass away" (*Ps* 148:5b-6). The laws found in the Bible dwell on relationships, not only among individuals but also with other living beings. "You shall not see your brother's donkey or his ox fallen down by the way and withhold your help... If you chance to come upon a bird's nest in any tree or on the ground, with young ones or eggs and the mother sitting upon the young or upon the eggs; you shall not take the mother with the young" (*Dt* 22:4, 6). Along these same lines, rest on the seventh day is meant not only for human beings, but also so "that your ox and your donkey may have rest" (*Ex* 23:12). Clearly, the Bible has no place for a tyrannical anthropocentrism unconcerned for other creatures.

69. Together with our obligation to use the earth's goods responsibly, we are called to recognize that other living beings have a value of their own in God's eyes: "by their mere existence they bless him and give him glory",⁴¹ and indeed, "the Lord rejoices in all his works" (*Ps* 104:31). By virtue of our unique dignity and our gift of intelli-

⁴¹ *Catechism of the Catholic Church*, 2416.

gence, we are called to respect creation and its inherent laws, for “the Lord by wisdom founded the earth” (*Prov* 3:19). In our time, the Church does not simply state that other creatures are completely subordinated to the good of human beings, as if they have no worth in themselves and can be treated as we wish. The German bishops have taught that, where other creatures are concerned, “we can speak of the priority of *being* over that of *being useful*”.⁴² The Catechism clearly and forcefully criticizes a distorted anthropocentrism: “Each creature possesses its own particular goodness and perfection... Each of the various creatures, willed in its own being, reflects in its own way a ray of God’s infinite wisdom and goodness. Man must therefore respect the particular goodness of every creature, to avoid any disordered use of things”.⁴³

70. In the story of Cain and Abel, we see how envy led Cain to commit the ultimate injustice against his brother, which in turn ruptured the relationship between Cain and God, and between Cain and the earth from which he was banished. This is seen clearly in the dramatic exchange between God and Cain. God asks: “Where is Abel your brother?” Cain answers that he does not know, and God persists: “What have you done?”

⁴² GERMAN BISHOPS’ CONFERENCE, *Zukunft der Schöpfung – Zukunft der Menschheit. Einklärung der Deutschen Bischofskonferenz zu Fragen der Umwelt und der Energieversorgung*, (1980), II, 2.

⁴³ *Catechism of the Catholic Church*, 339.

The voice of your brother's blood is crying to me from the ground. And now you are cursed from the ground" (*Gen* 4:9-11). Disregard for the duty to cultivate and maintain a proper relationship with my neighbour, for whose care and custody I am responsible, ruins my relationship with my own self, with others, with God and with the earth. When all these relationships are neglected, when justice no longer dwells in the land, the Bible tells us that life itself is endangered. We see this in the story of Noah, where God threatens to do away with humanity because of its constant failure to fulfil the requirements of justice and peace: "I have determined to make an end of all flesh; for the earth is filled with violence through them" (*Gen* 6:13). These ancient stories, full of symbolism, bear witness to a conviction which we today share, that everything is interconnected, and that genuine care for our own lives and our relationships with nature is inseparable from fraternity, justice and faithfulness to others.

71. Although "the wickedness of man was great in the earth" (*Gen* 6:5) and the Lord "was sorry that he had made man on the earth" (*Gen* 6:6), nonetheless, through Noah, who remained innocent and just, God decided to open a path of salvation. In this way he gave humanity the chance of a new beginning. All it takes is one good person to restore hope! The biblical tradition clearly shows that this renewal entails recovering and respecting the rhythms inscribed in nature by the

hand of the Creator. We see this, for example, in the law of the Sabbath. On the seventh day, God rested from all his work. He commanded Israel to set aside each seventh day as a day of rest, a *Sabbath*, (cf. *Gen* 2:2-3; *Ex* 16:23; 20:10). Similarly, every seven years, a sabbatical year was set aside for Israel, a complete rest for the land (cf. *Lev* 25:1-4), when sowing was forbidden and one reaped only what was necessary to live on and to feed one's household (cf. *Lev* 25:4-6). Finally, after seven weeks of years, which is to say forty-nine years, the Jubilee was celebrated as a year of general forgiveness and "liberty throughout the land for all its inhabitants" (cf. *Lev* 25:10). This law came about as an attempt to ensure balance and fairness in their relationships with others and with the land on which they lived and worked. At the same time, it was an acknowledgment that the gift of the earth with its fruits belongs to everyone. Those who tilled and kept the land were obliged to share its fruits, especially with the poor, with widows, orphans and foreigners in their midst: "When you reap the harvest of your land, you shall not reap your field to its very border, neither shall you gather the gleanings after the harvest. And you shall not strip your vineyard bare, neither shall you gather the fallen grapes of your vineyard; you shall leave them for the poor and for the sojourner" (*Lev* 19:9-10).

72. The Psalms frequently exhort us to praise God the Creator, "who spread out the earth on

the waters, for his steadfast love endures for ever” (*Ps* 136:6). They also invite other creatures to join us in this praise: “Praise him, sun and moon, praise him, all you shining stars! Praise him, you highest heavens, and you waters above the heavens! Let them praise the name of the Lord, for he commanded and they were created” (*Ps* 148:3-5). We do not only exist by God’s mighty power; we also live with him and beside him. This is why we adore him.

73. The writings of the prophets invite us to find renewed strength in times of trial by contemplating the all-powerful God who created the universe. Yet God’s infinite power does not lead us to flee his fatherly tenderness, because in him affection and strength are joined. Indeed, all sound spirituality entails both welcoming divine love and adoration, confident in the Lord because of his infinite power. In the Bible, the God who liberates and saves is the same God who created the universe, and these two divine ways of acting are intimately and inseparably connected: “Ah Lord God! It is you who made the heavens and the earth by your great power and by your outstretched arm! Nothing is too hard for you... You brought your people Israel out of the land of Egypt with signs and wonders” (*Jer* 32:17, 21). “The Lord is the everlasting God, the Creator of the ends of the earth. He does not faint or grow weary; his understanding is unsearchable. He gives power to the faint, and strengthens the powerless” (*Is* 40:28b-29).

74. The experience of the Babylonian captivity provoked a spiritual crisis which led to deeper faith in God. Now his creative omnipotence was given pride of place in order to exhort the people to regain their hope in the midst of their wretched predicament. Centuries later, in another age of trial and persecution, when the Roman Empire was seeking to impose absolute dominion, the faithful would once again find consolation and hope in a growing trust in the all-powerful God: “Great and wonderful are your deeds, O Lord God the Almighty! Just and true are your ways!” (*Rev* 15:3). The God who created the universe out of nothing can also intervene in this world and overcome every form of evil. Injustice is not invincible.

75. A spirituality which forgets God as all-powerful and Creator is not acceptable. That is how we end up worshipping earthly powers, or ourselves usurping the place of God, even to the point of claiming an unlimited right to trample his creation underfoot. The best way to restore men and women to their rightful place, putting an end to their claim to absolute dominion over the earth, is to speak once more of the figure of a Father who creates and who alone owns the world. Otherwise, human beings will always try to impose their own laws and interests on reality.

III. THE MYSTERY OF THE UNIVERSE

76. In the Judaeo-Christian tradition, the word “creation” has a broader meaning than “nature”,

for it has to do with God's loving plan in which every creature has its own value and significance. Nature is usually seen as a system which can be studied, understood and controlled, whereas creation can only be understood as a gift from the outstretched hand of the Father of all, and as a reality illuminated by the love which calls us together into universal communion.

77. "By the word of the Lord the heavens were made" (*Ps* 33:6). This tells us that the world came about as the result of a decision, not from chaos or chance, and this exalts it all the more. The creating word expresses a free choice. The universe did not emerge as the result of arbitrary omnipotence, a show of force or a desire for self-assertion. Creation is of the order of love. God's love is the fundamental moving force in all created things: "For you love all things that exist, and detest none of the things that you have made; for you would not have made anything if you had hated it" (*Wis* 11:24). Every creature is thus the object of the Father's tenderness, who gives it its place in the world. Even the fleeting life of the least of beings is the object of his love, and in its few seconds of existence, God enfolds it with his affection. Saint Basil the Great described the Creator as "goodness without measure",⁴⁴ while Dante Alighieri spoke of "the love which moves

⁴⁴ *Hom. in Hexaemeron*, I, 2, 10: PG 29, 9.

the sun and the stars”.⁴⁵ Consequently, we can ascend from created things “to the greatness of God and to his loving mercy”.⁴⁶

78. At the same time, Judaeo-Christian thought demythologized nature. While continuing to admire its grandeur and immensity, it no longer saw nature as divine. In doing so, it emphasizes all the more our human responsibility for nature. This rediscovery of nature can never be at the cost of the freedom and responsibility of human beings who, as part of the world, have the duty to cultivate their abilities in order to protect it and develop its potential. If we acknowledge the value and the fragility of nature and, at the same time, our God-given abilities, we can finally leave behind the modern myth of unlimited material progress. A fragile world, entrusted by God to human care, challenges us to devise intelligent ways of directing, developing and limiting our power.

79. In this universe, shaped by open and intercommunicating systems, we can discern countless forms of relationship and participation. This leads us to think of the whole as open to God’s transcendence, within which it develops. Faith allows us to interpret the meaning and the mysterious beauty of what is unfolding. We are free

⁴⁵ *The Divine Comedy, Paradiso*, Canto XXXIII, 145.

⁴⁶ BENEDICT XVI, *Catechesis* (9 November 2005), 3: *Insegnamenti* 1 (2005), 768.

to apply our intelligence towards things evolving positively, or towards adding new ills, new causes of suffering and real setbacks. This is what makes for the excitement and drama of human history, in which freedom, growth, salvation and love can blossom, or lead towards decadence and mutual destruction. The work of the Church seeks not only to remind everyone of the duty to care for nature, but at the same time “she must above all protect mankind from self-destruction”.⁴⁷

80. Yet God, who wishes to work with us and who counts on our cooperation, can also bring good out of the evil we have done. “The Holy Spirit can be said to possess an infinite creativity, proper to the divine mind, which knows how to loosen the knots of human affairs, including the most complex and inscrutable”.⁴⁸ Creating a world in need of development, God in some way sought to limit himself in such a way that many of the things we think of as evils, dangers or sources of suffering, are in reality part of the pains of childbirth which he uses to draw us into the act of cooperation with the Creator.⁴⁹

⁴⁷ ID., Encyclical Letter *Caritas in Veritate* (29 June 2009), 51: *AAS* 101 (2009), 687.

⁴⁸ JOHN PAUL II, *Catechesis* (24 April 1991), 6: *Insegnamenti* 14 (1991), 856.

⁴⁹ The Catechism explains that God wished to create a world which is “journeying towards its ultimate perfection”, and that this implies the presence of imperfection and physical evil; cf. *Catechism of the Catholic Church*, 310.

God is intimately present to each being, without impinging on the autonomy of his creature, and this gives rise to the rightful autonomy of earthly affairs.⁵⁰ His divine presence, which ensures the subsistence and growth of each being, “continues the work of creation”.⁵¹ The Spirit of God has filled the universe with possibilities and therefore, from the very heart of things, something new can always emerge: “Nature is nothing other than a certain kind of art, namely God’s art, impressed upon things, whereby those things are moved to a determinate end. It is as if a shipbuilder were able to give timbers the wherewithal to move themselves to take the form of a ship”.⁵²

81. Human beings, even if we postulate a process of evolution, also possess a uniqueness which cannot be fully explained by the evolution of other open systems. Each of us has his or her own personal identity and is capable of entering into dialogue with others and with God himself. Our capacity to reason, to develop arguments, to be inventive, to interpret reality and to create art, along with other not yet discovered capacities, are signs of a uniqueness which transcends the

⁵⁰ Cf. SECOND VATICAN ECUMENICAL COUNCIL, Pastoral Constitution on the Church in the Modern World *Gaudium et Spes*, 36.

⁵¹ THOMAS AQUINAS, *Summa Theologiae*, I, q. 104, art. 1 ad 4.

⁵² ID., *In octo libros Physicorum Aristotelis expositio*, Lib. II, lectio 14.

spheres of physics and biology. The sheer novelty involved in the emergence of a personal being within a material universe presupposes a direct action of God and a particular call to life and to relationship on the part of a “Thou” who addresses himself to another “thou”. The biblical accounts of creation invite us to see each human being as a subject who can never be reduced to the status of an object.

82. Yet it would also be mistaken to view other living beings as mere objects subjected to arbitrary human domination. When nature is viewed solely as a source of profit and gain, this has serious consequences for society. This vision of “might is right” has engendered immense inequality, injustice and acts of violence against the majority of humanity, since resources end up in the hands of the first comer or the most powerful: the winner takes all. Completely at odds with this model are the ideals of harmony, justice, fraternity and peace as proposed by Jesus. As he said of the powers of his own age: “You know that the rulers of the Gentiles lord it over them, and their great men exercise authority over them. It shall not be so among you; but whoever would be great among you must be your servant” (*Mt 20:25-26*).

83. The ultimate destiny of the universe is in the fullness of God, which has already been attained by the risen Christ, the measure of the

maturity of all things.⁵³ Here we can add yet another argument for rejecting every tyrannical and irresponsible domination of human beings over other creatures. The ultimate purpose of other creatures is not to be found in us. Rather, all creatures are moving forward with us and through us towards a common point of arrival, which is God, in that transcendent fullness where the risen Christ embraces and illumines all things. Human beings, endowed with intelligence and love, and drawn by the fullness of Christ, are called to lead all creatures back to their Creator.

IV. THE MESSAGE OF EACH CREATURE IN THE HARMONY OF CREATION

84. Our insistence that each human being is an image of God should not make us overlook the fact that each creature has its own purpose. None is superfluous. The entire material universe speaks of God's love, his boundless affection for us. Soil, water, mountains: everything is, as it were, a caress of God. The history of our friendship with God is always linked to particular places which take on an intensely personal meaning; we all remember places, and revisiting those

⁵³ Against this horizon we can set the contribution of Fr Teilhard de Chardin; cf. PAUL VI, *Address in a Chemical and Pharmaceutical Plant* (24 February 1966): *Insegnamenti* 4 (1966), 992-993; JOHN PAUL II, *Letter to the Reverend George Coyne* (1 June 1988): *Insegnamenti* 11/2 (1988), 1715; BENEDICT XVI, *Homily for the Celebration of Vespers in Aosta* (24 July 2009): *Insegnamenti* 5/2 (2009), 60.

memories does us much good. Anyone who has grown up in the hills or used to sit by the spring to drink, or played outdoors in the neighbourhood square; going back to these places is a chance to recover something of their true selves.

85. God has written a precious book, “whose letters are the multitude of created things present in the universe”.⁵⁴ The Canadian bishops rightly pointed out that no creature is excluded from this manifestation of God: “From panoramic vistas to the tiniest living form, nature is a constant source of wonder and awe. It is also a continuing revelation of the divine”.⁵⁵ The bishops of Japan, for their part, made a thought-provoking observation: “To sense each creature singing the hymn of its existence is to live joyfully in God’s love and hope”.⁵⁶ This contemplation of creation allows us to discover in each thing a teaching which God wishes to hand on to us, since “for the believer, to contemplate creation is to hear a message, to listen to a paradoxical and silent voice”.⁵⁷ We can say that “alongside revelation properly so-called, contained in sa-

⁵⁴ JOHN PAUL II, *Catechesis* (30 January 2002), 6: *Insegnamenti* 25/1 (2002), 140.

⁵⁵ CANADIAN CONFERENCE OF CATHOLIC BISHOPS, SOCIAL AFFAIRS COMMISSION, Pastoral Letter *You Love All that Exists... All Things are Yours, God, Lover of Life* (4 October 2003), 1.

⁵⁶ CATHOLIC BISHOPS’ CONFERENCE OF JAPAN, *Reverence for Life. A Message for the Twenty-First Century* (1 January 2000), 89.

⁵⁷ JOHN PAUL II, *Catechesis* (26 January 2000), 5: *Insegnamenti* 23/1 (2000), 123.

cred Scripture, there is a divine manifestation in the blaze of the sun and the fall of night”.⁵⁸ Paying attention to this manifestation, we learn to see ourselves in relation to all other creatures: “I express myself in expressing the world; in my effort to decipher the sacredness of the world, I explore my own”.⁵⁹

86. The universe as a whole, in all its manifold relationships, shows forth the inexhaustible riches of God. Saint Thomas Aquinas wisely noted that multiplicity and variety “come from the intention of the first agent” who willed that “what was wanting to one in the representation of the divine goodness might be supplied by another”,⁶⁰ inasmuch as God’s goodness “could not be represented fittingly by any one creature”.⁶¹ Hence we need to grasp the variety of things in their multiple relationships.⁶² We understand better the importance and meaning of each creature if we contemplate it within the entirety of God’s plan. As the Catechism teaches: “God wills the interdependence of creatures. The sun and the moon, the cedar and the little flower, the eagle and the sparrow: the spectacle of their countless diversities and inequalities tells us that no crea-

⁵⁸ ID., *Catechesis* (2 August 2000), 3: *Insegnamenti* 23/2 (2000), 112.

⁵⁹ PAUL RICOEUR, *Philosophie de la Volonté, t. II: Finitude et Culpabilité*, Paris, 2009, 216.

⁶⁰ *Summa Theologiae*, I, q. 47, art. 1.

⁶¹ *Ibid.*

⁶² Cf. *Ibid.*, art. 2, ad 1; art. 3.

ture is self-sufficient. Creatures exist only in dependence on each other, to complete each other, in the service of each other”.⁶³

87. When we can see God reflected in all that exists, our hearts are moved to praise the Lord for all his creatures and to worship him in union with them. This sentiment finds magnificent expression in the hymn of Saint Francis of Assisi:

Praised be you, my Lord, with all your creatures,
especially Sir Brother Sun,
who is the day
and through whom you give us light.
And he is beautiful and radiant
with great splendour;
and bears a likeness of you, Most High.
Praised be you, my Lord,
through Sister Moon and the stars,
in heaven you formed them clear
and precious and beautiful.
Praised be you, my Lord,
through Brother Wind,
and through the air, cloudy and serene,
and every kind of weather
through whom you give sustenance
to your creatures.
Praised be you, my Lord, through Sister Water,
who is very useful and humble
and precious and chaste.
Praised be you, my Lord, through Brother Fire,
through whom you light the night,

⁶³ *Catechism of the Catholic Church*, 340.

and he is beautiful and playful
and robust and strong”.⁶⁴

88. The bishops of Brazil have pointed out that nature as a whole not only manifests God but is also a locus of his presence. The Spirit of life dwells in every living creature and calls us to enter into relationship with him.⁶⁵ Discovering this presence leads us to cultivate the “ecological virtues”.⁶⁶ This is not to forget that there is an infinite distance between God and the things of this world, which do not possess his fullness. Otherwise, we would not be doing the creatures themselves any good either, for we would be failing to acknowledge their right and proper place. We would end up unduly demanding of them something which they, in their smallness, cannot give us.

V. A UNIVERSAL COMMUNION

89. The created things of this world are not free of ownership: “For they are yours, O Lord, who love the living” (*Wis* 11:26). This is the basis of our conviction that, as part of the universe, called into being by one Father, all of us are linked by unseen bonds and together form a kind

⁶⁴ *Canticle of the Creatures*, in *Francis of Assisi: Early Documents*, New York-London-Manila, 1999, 113-114.

⁶⁵ Cf. NATIONAL CONFERENCE OF THE BISHOPS OF BRAZIL, *A Igreja e a Questão Ecológica*, 1992, 53-54.

⁶⁶ *Ibid.*, 61.

of universal family, a sublime communion which fills us with a sacred, affectionate and humble respect. Here I would reiterate that “God has joined us so closely to the world around us that we can feel the desertification of the soil almost as a physical ailment, and the extinction of a species as a painful disfigurement”.⁶⁷

90. This is not to put all living beings on the same level nor to deprive human beings of their unique worth and the tremendous responsibility it entails. Nor does it imply a divinization of the earth which would prevent us from working on it and protecting it in its fragility. Such notions would end up creating new imbalances which would deflect us from the reality which challenges us.⁶⁸ At times we see an obsession with denying any pre-eminence to the human person; more zeal is shown in protecting other species than in defending the dignity which all human beings share in equal measure. Certainly, we should be concerned lest other living beings be treated irresponsibly. But we should be particularly indignant at the enormous inequalities in our midst, whereby we continue to tolerate some considering themselves more worthy than others. We fail to see that some are mired in desperate and degrading poverty, with no way out,

⁶⁷ Apostolic Exhortation *Evangelii Gaudium* (24 November 2013), 215: *AAS* 105 (2013), 1109.

⁶⁸ Cf. BENEDICT XVI, Encyclical Letter *Caritas in Veritate* (29 June 2009), 14: *AAS* 101 (2009), 650.

while others have not the faintest idea of what to do with their possessions, vainly showing off their supposed superiority and leaving behind them so much waste which, if it were the case everywhere, would destroy the planet. In practice, we continue to tolerate that some consider themselves more human than others, as if they had been born with greater rights.

91. A sense of deep communion with the rest of nature cannot be real if our hearts lack tenderness, compassion and concern for our fellow human beings. It is clearly inconsistent to combat trafficking in endangered species while remaining completely indifferent to human trafficking, unconcerned about the poor, or undertaking to destroy another human being deemed unwanted. This compromises the very meaning of our struggle for the sake of the environment. It is no coincidence that, in the canticle in which Saint Francis praises God for his creatures, he goes on to say: “Praised be you my Lord, through those who give pardon for your love”. Everything is connected. Concern for the environment thus needs to be joined to a sincere love for our fellow human beings and an unwavering commitment to resolving the problems of society.

92. Moreover, when our hearts are authentically open to universal communion, this sense of fraternity excludes nothing and no one. It follows that our indifference or cruelty towards fellow

creatures of this world sooner or later affects the treatment we mete out to other human beings. We have only one heart, and the same wretchedness which leads us to mistreat an animal will not be long in showing itself in our relationships with other people. Every act of cruelty towards any creature is “contrary to human dignity”.⁶⁹ We can hardly consider ourselves to be fully loving if we disregard any aspect of reality: “Peace, justice and the preservation of creation are three absolutely interconnected themes, which cannot be separated and treated individually without once again falling into reductionism”.⁷⁰ Everything is related, and we human beings are united as brothers and sisters on a wonderful pilgrimage, woven together by the love God has for each of his creatures and which also unites us in fond affection with brother sun, sister moon, brother river and mother earth.

VI. THE COMMON DESTINATION OF GOODS

93. Whether believers or not, we are agreed today that the earth is essentially a shared inheritance, whose fruits are meant to benefit everyone. For believers, this becomes a question of fidelity to the Creator, since God created the world for everyone. Hence every ecological approach needs to incorporate a social perspective

⁶⁹ *Catechism of the Catholic Church*, 2418.

⁷⁰ CONFERENCE OF DOMINICAN BISHOPS, Pastoral Letter *Sobre la relación del hombre con la naturaleza* (21 January 1987).

which takes into account the fundamental rights of the poor and the underprivileged. The principle of the subordination of private property to the universal destination of goods, and thus the right of everyone to their use, is a golden rule of social conduct and “the first principle of the whole ethical and social order”.⁷¹ The Christian tradition has never recognized the right to private property as absolute or inviolable, and has stressed the social purpose of all forms of private property. Saint John Paul II forcefully reaffirmed this teaching, stating that “God gave the earth to the whole human race for the sustenance of all its members, *without excluding or favouring anyone*”.⁷² These are strong words. He noted that “a type of development which did not respect and promote human rights – personal and social, economic and political, including the rights of nations and of peoples – would not be really worthy of man”.⁷³ He clearly explained that “the Church does indeed defend the legitimate right to private property, but she also teaches no less clearly that there is always a social mortgage on all private property, in order that goods may serve the general purpose that God gave them”.⁷⁴

⁷¹ JOHN PAUL II, Encyclical Letter *Laborem Exercens* (14 September 1981), 19: *AAS* 73 (1981), 626.

⁷² Encyclical Letter *Centesimus Annus* (1 May 1991), 31: *AAS* 83 (1991), 831.

⁷³ Encyclical Letter *Sollicitudo Rei Socialis* (30 December 1987), 33: *AAS* 80 (1988), 557.

⁷⁴ *Address to Indigenous and Rural People*, Cuilapán, Mexico (29 January 1979), 6: *AAS* 71 (1979), 209.

Consequently, he maintained, “it is not in accord with God’s plan that this gift be used in such a way that its benefits favour only a few”.⁷⁵ This calls into serious question the unjust habits of a part of humanity.⁷⁶

94. The rich and the poor have equal dignity, for “the Lord is the maker of them all” (*Prov* 22:2). “He himself made both small and great” (*Wis* 6:7), and “he makes his sun rise on the evil and on the good” (*Mt* 5:45). This has practical consequences, such as those pointed out by the bishops of Paraguay: “Every *campesino* has a natural right to possess a reasonable allotment of land where he can establish his home, work for subsistence of his family and a secure life. This right must be guaranteed so that its exercise is not illusory but real. That means that apart from the ownership of property, rural people must have access to means of technical education, credit, insurance, and markets”.⁷⁷

95. The natural environment is a collective good, the patrimony of all humanity and the responsibility of everyone. If we make something our own, it is only to administer it for the good

⁷⁵ *Homily at Mass for Farmers*, Recife, Brazil (7 July 1980): *AAS* 72 (1980): *AAS* 72 (1980), 926.

⁷⁶ Cf. *Message for the 1990 World Day of Peace*, 8: *AAS* 82 (1990), 152.

⁷⁷ PARAGUAYAN BISHOPS’ CONFERENCE, Pastoral Letter *El campesino paraguayo y la tierra* (12 June 1983), 2, 4, d.

of all. If we do not, we burden our consciences with the weight of having denied the existence of others. That is why the New Zealand bishops asked what the commandment “Thou shalt not kill” means when “twenty percent of the world’s population consumes resources at a rate that robs the poor nations and future generations of what they need to survive”.⁷⁸

VII. THE GAZE OF JESUS

96. Jesus took up the biblical faith in God the Creator, emphasizing a fundamental truth: God is Father (cf. *Mt* 11:25). In talking with his disciples, Jesus would invite them to recognize the paternal relationship God has with all his creatures. With moving tenderness he would remind them that each one of them is important in God’s eyes: “Are not five sparrows sold for two pennies? And not one of them is forgotten before God” (*Lk* 12:6). “Look at the birds of the air: they neither sow nor reap nor gather into barns, and yet your heavenly Father feeds them” (*Mt* 6:26).

97. The Lord was able to invite others to be attentive to the beauty that there is in the world because he himself was in constant touch with nature, lending it an attention full of fondness and wonder. As he made his way throughout the

⁷⁸ NEW ZEALAND CATHOLIC BISHOPS CONFERENCE, *Statement on Environmental Issues* (1 September 2006).

land, he often stopped to contemplate the beauty sown by his Father, and invited his disciples to perceive a divine message in things: “Lift up your eyes, and see how the fields are already white for harvest” (*Jn* 4:35). “The kingdom of God is like a grain of mustard seed which a man took and sowed in his field; it is the smallest of all seeds, but once it has grown, it is the greatest of plants” (*Mt* 13:31-32).

98. Jesus lived in full harmony with creation, and others were amazed: “What sort of man is this, that even the winds and the sea obey him?” (*Mt* 8:27). His appearance was not that of an ascetic set apart from the world, nor of an enemy to the pleasant things of life. Of himself he said: “The Son of Man came eating and drinking and they say, ‘Look, a glutton and a drunkard!’” (*Mt* 11:19). He was far removed from philosophies which despised the body, matter and the things of the world. Such unhealthy dualisms, nonetheless, left a mark on certain Christian thinkers in the course of history and disfigured the Gospel. Jesus worked with his hands, in daily contact with the matter created by God, to which he gave form by his craftsmanship. It is striking that most of his life was dedicated to this task in a simple life which awakened no admiration at all: “Is not this the carpenter, the son of Mary?” (*Mk* 6:3). In this way he sanctified human labour and endowed it with a special significance for our development. As Saint John Paul II taught, “by enduring the toil

of work in union with Christ crucified for us, man in a way collaborates with the Son of God for the redemption of humanity”.⁷⁹

99. In the Christian understanding of the world, the destiny of all creation is bound up with the mystery of Christ, present from the beginning: “All things have been created through him and for him” (*Col* 1:16).⁸⁰ The prologue of the Gospel of John (1:1-18) reveals Christ’s creative work as the Divine Word (*Logos*). But then, unexpectedly, the prologue goes on to say that this same Word “became flesh” (*Jn* 1:14). One Person of the Trinity entered into the created cosmos, throwing in his lot with it, even to the cross. From the beginning of the world, but particularly through the incarnation, the mystery of Christ is at work in a hidden manner in the natural world as a whole, without thereby impinging on its autonomy.

100. The New Testament does not only tell us of the earthly Jesus and his tangible and loving relationship with the world. It also shows him risen and glorious, present throughout creation by his universal Lordship: “For in him all the fullness of God was pleased to dwell, and through him to reconcile to himself all things, whether on earth or in heaven, making peace by the blood of

⁷⁹ Encyclical Letter *Laborem Exercens* (14 September 1981), 27: *AAS* 73 (1981), 645.

⁸⁰ Hence Saint Justin could speak of “seeds of the Word” in the world; cf. *II Apologia* 8, 1-2; 13, 3-6: PG 6, 457-458, 467.

his cross” (*Col* 1:19-20). This leads us to direct our gaze to the end of time, when the Son will deliver all things to the Father, so that “God may be everything to every one” (*1 Cor* 15:28). Thus, the creatures of this world no longer appear to us under merely natural guise because the risen One is mysteriously holding them to himself and directing them towards fullness as their end. The very flowers of the field and the birds which his human eyes contemplated and admired are now imbued with his radiant presence.

CHAPTER THREE

THE HUMAN ROOTS OF THE ECOLOGICAL CRISIS

101. It would hardly be helpful to describe symptoms without acknowledging the human origins of the ecological crisis. A certain way of understanding human life and activity has gone awry, to the serious detriment of the world around us. Should we not pause and consider this? At this stage, I propose that we focus on the dominant technocratic paradigm and the place of human beings and of human action in the world.

I. TECHNOLOGY: CREATIVITY AND POWER

102. Humanity has entered a new era in which our technical prowess has brought us to a crossroads. We are the beneficiaries of two centuries of enormous waves of change: steam engines, railways, the telegraph, electricity, automobiles, aeroplanes, chemical industries, modern medicine, information technology and, more recently, the digital revolution, robotics, biotechnologies and nanotechnologies. It is right to rejoice in these advances and to be excited by the immense possibilities which they continue to open up before us, for “science and technology are wonder-

ful products of a God-given human creativity”.⁸¹ The modification of nature for useful purposes has distinguished the human family from the beginning; technology itself “expresses the inner tension that impels man gradually to overcome material limitations”.⁸² Technology has remedied countless evils which used to harm and limit human beings. How can we not feel gratitude and appreciation for this progress, especially in the fields of medicine, engineering and communications? How could we not acknowledge the work of many scientists and engineers who have provided alternatives to make development sustainable?

103. Technoscience, when well directed, can produce important means of improving the quality of human life, from useful domestic appliances to great transportation systems, bridges, buildings and public spaces. It can also produce art and enable men and women immersed in the material world to “leap” into the world of beauty. Who can deny the beauty of an aircraft or a skyscraper? Valuable works of art and music now make use of new technologies. So, in the beauty intended by the one who uses new technical instruments and in the contemplation of

⁸¹ JOHN PAUL II, *Address to Scientists and Representatives of the United Nations University, Hiroshima* (25 February 1981), 3: *AAS* 73 (1981), 422.

⁸² BENEDICT XVI, Encyclical Letter *Caritas in Veritate* (29 June 2009), 69: *AAS* 101 (2009), 702.

such beauty, a quantum leap occurs, resulting in a fulfilment which is uniquely human.

104. Yet it must also be recognized that nuclear energy, biotechnology, information technology, knowledge of our DNA, and many other abilities which we have acquired, have given us tremendous power. More precisely, they have given those with the knowledge, and especially the economic resources to use them, an impressive dominance over the whole of humanity and the entire world. Never has humanity had such power over itself, yet nothing ensures that it will be used wisely, particularly when we consider how it is currently being used. We need but think of the nuclear bombs dropped in the middle of the twentieth century, or the array of technology which Nazism, Communism and other totalitarian regimes have employed to kill millions of people, to say nothing of the increasingly deadly arsenal of weapons available for modern warfare. In whose hands does all this power lie, or will it eventually end up? It is extremely risky for a small part of humanity to have it.

105. There is a tendency to believe that every increase in power means “an increase of ‘progress’ itself”, an advance in “security, usefulness, welfare and vigour; ...an assimilation of new values into the stream of culture”,⁸³ as if reality,

⁸³ ROMANO GUARDINI, *Das Ende der Neuzeit*, 9th ed., Würzburg, 1965, 87 (English: *The End of the Modern World*, Wilmington, 1998, 82).

goodness and truth automatically flow from technological and economic power as such. The fact is that “contemporary man has not been trained to use power well”,⁸⁴ because our immense technological development has not been accompanied by a development in human responsibility, values and conscience. Each age tends to have only a meagre awareness of its own limitations. It is possible that we do not grasp the gravity of the challenges now before us. “The risk is growing day by day that man will not use his power as he should”; in effect, “power is never considered in terms of the responsibility of choice which is inherent in freedom” since its “only norms are taken from alleged necessity, from either utility or security”.⁸⁵ But human beings are not completely autonomous. Our freedom fades when it is handed over to the blind forces of the unconscious, of immediate needs, of self-interest, and of violence. In this sense, we stand naked and exposed in the face of our ever-increasing power, lacking the wherewithal to control it. We have certain superficial mechanisms, but we cannot claim to have a sound ethics, a culture and spirituality genuinely capable of setting limits and teaching clear-minded self-restraint.

II. THE GLOBALIZATION OF THE TECHNOCRATIC PARADIGM

106. The basic problem goes even deeper: it is the way that humanity has taken up technology

⁸⁴ *Ibid.*

⁸⁵ *Ibid.*, 87-88 (*The End of the Modern World*, 83).

and its development *according to an undifferentiated and one-dimensional paradigm*. This paradigm exalts the concept of a subject who, using logical and rational procedures, progressively approaches and gains control over an external object. This subject makes every effort to establish the scientific and experimental method, which in itself is already a technique of possession, mastery and transformation. It is as if the subject were to find itself in the presence of something formless, completely open to manipulation. Men and women have constantly intervened in nature, but for a long time this meant being in tune with and respecting the possibilities offered by the things themselves. It was a matter of receiving what nature itself allowed, as if from its own hand. Now, by contrast, we are the ones to lay our hands on things, attempting to extract everything possible from them while frequently ignoring or forgetting the reality in front of us. Human beings and material objects no longer extend a friendly hand to one another; the relationship has become confrontational. This has made it easy to accept the idea of infinite or unlimited growth, which proves so attractive to economists, financiers and experts in technology. It is based on the lie that there is an infinite supply of the earth's goods, and this leads to the planet being squeezed dry beyond every limit. It is the false notion that "an infinite quantity of energy and resources are available, that it is possible to renew them quickly, and that the negative effects of the ex-

ploitation of the natural order can be easily absorbed”.⁸⁶

107. It can be said that many problems of today’s world stem from the tendency, at times unconscious, to make the method and aims of science and technology an epistemological paradigm which shapes the lives of individuals and the workings of society. The effects of imposing this model on reality as a whole, human and social, are seen in the deterioration of the environment, but this is just one sign of a reductionism which affects every aspect of human and social life. We have to accept that technological products are not neutral, for they create a framework which ends up conditioning lifestyles and shaping social possibilities along the lines dictated by the interests of certain powerful groups. Decisions which may seem purely instrumental are in reality decisions about the kind of society we want to build.

108. The idea of promoting a different cultural paradigm and employing technology as a mere instrument is nowadays inconceivable. The technological paradigm has become so dominant that it would be difficult to do without its resources and even more difficult to utilize them without being dominated by their internal logic. It has become countercultural to choose a lifestyle whose

⁸⁶ PONTIFICAL COUNCIL FOR JUSTICE AND PEACE, *Compendium of the Social Doctrine of the Church*, 462.

goals are even partly independent of technology, of its costs and its power to globalize and make us all the same. Technology tends to absorb everything into its ironclad logic, and those who are surrounded with technology “know full well that it moves forward in the final analysis neither for profit nor for the well-being of the human race”, that “in the most radical sense of the term power is its motive – a lordship over all”.⁸⁷ As a result, “man seizes hold of the naked elements of both nature and human nature”.⁸⁸ Our capacity for making decisions, a more genuine freedom and the space for each one’s alternative creativity are diminished.

109. The technocratic paradigm also tends to dominate economic and political life. The economy accepts every advance in technology with a view to profit, without concern for its potentially negative impact on human beings. Finance overwhelms the real economy. The lessons of the global financial crisis have not been assimilated, and we are learning all too slowly the lessons of environmental deterioration. Some circles maintain that current economics and technology will solve all environmental problems, and argue, in popular and non-technical terms, that the problems of global hunger and poverty will be resolved simply by market growth. They are

⁸⁷ ROMANO GUARDINI, *Das Ende der Neuzeit*, 63-64 (*The End of the Modern World*, 56).

⁸⁸ *Ibid.*, 64 (*The End of the Modern World*, 56).

less concerned with certain economic theories which today scarcely anybody dares defend, than with their actual operation in the functioning of the economy. They may not affirm such theories with words, but nonetheless support them with their deeds by showing no interest in more balanced levels of production, a better distribution of wealth, concern for the environment and the rights of future generations. Their behaviour shows that for them maximizing profits is enough. Yet by itself the market cannot guarantee integral human development and social inclusion.⁸⁹ At the same time, we have “a sort of ‘superdevelopment’ of a wasteful and consumerist kind which forms an unacceptable contrast with the ongoing situations of dehumanizing deprivation”,⁹⁰ while we are all too slow in developing economic institutions and social initiatives which can give the poor regular access to basic resources. We fail to see the deepest roots of our present failures, which have to do with the direction, goals, meaning and social implications of technological and economic growth.

110. The specialization which belongs to technology makes it difficult to see the larger picture. The fragmentation of knowledge proves helpful for concrete applications, and yet it often leads

⁸⁹ Cf. BENEDICT XVI, Encyclical Letter *Caritas in Veritate* (29 June 2009), 35: *AAS* 101 (2009), 671.

⁹⁰ *Ibid.*, 22: p. 657.

to a loss of appreciation for the whole, for the relationships between things, and for the broader horizon, which then becomes irrelevant. This very fact makes it hard to find adequate ways of solving the more complex problems of today's world, particularly those regarding the environment and the poor; these problems cannot be dealt with from a single perspective or from a single set of interests. A science which would offer solutions to the great issues would necessarily have to take into account the data generated by other fields of knowledge, including philosophy and social ethics; but this is a difficult habit to acquire today. Nor are there genuine ethical horizons to which one can appeal. Life gradually becomes a surrender to situations conditioned by technology, itself viewed as the principal key to the meaning of existence. In the concrete situation confronting us, there are a number of symptoms which point to what is wrong, such as environmental degradation, anxiety, a loss of the purpose of life and of community living. Once more we see that "realities are more important than ideas".⁹¹

111. Ecological culture cannot be reduced to a series of urgent and partial responses to the immediate problems of pollution, environmental decay and the depletion of natural resources.

⁹¹ Apostolic Exhortation *Evangelii Gaudium* (24 November 2013), 231: *AAS* 105 (2013), 1114.

There needs to be a distinctive way of looking at things, a way of thinking, policies, an educational programme, a lifestyle and a spirituality which together generate resistance to the assault of the technocratic paradigm. Otherwise, even the best ecological initiatives can find themselves caught up in the same globalized logic. To seek only a technical remedy to each environmental problem which comes up is to separate what is in reality interconnected and to mask the true and deepest problems of the global system.

112. Yet we can once more broaden our vision. We have the freedom needed to limit and direct technology; we can put it at the service of another type of progress, one which is healthier, more human, more social, more integral. Liberation from the dominant technocratic paradigm does in fact happen sometimes, for example, when cooperatives of small producers adopt less polluting means of production, and opt for a non-consumerist model of life, recreation and community. Or when technology is directed primarily to resolving people's concrete problems, truly helping them live with more dignity and less suffering. Or indeed when the desire to create and contemplate beauty manages to overcome reductionism through a kind of salvation which occurs in beauty and in those who behold it. An authentic humanity, calling for a new synthesis, seems to dwell in the midst of our technological culture, almost unnoticed, like a mist seeping

gently beneath a closed door. Will the promise last, in spite of everything, with all that is authentic rising up in stubborn resistance?

113. There is also the fact that people no longer seem to believe in a happy future; they no longer have blind trust in a better tomorrow based on the present state of the world and our technical abilities. There is a growing awareness that scientific and technological progress cannot be equated with the progress of humanity and history, a growing sense that the way to a better future lies elsewhere. This is not to reject the possibilities which technology continues to offer us. But humanity has changed profoundly, and the accumulation of constant novelties exalts a superficiality which pulls us in one direction. It becomes difficult to pause and recover depth in life. If architecture reflects the spirit of an age, our megastructures and drab apartment blocks express the spirit of globalized technology, where a constant flood of new products coexists with a tedious monotony. Let us refuse to resign ourselves to this, and continue to wonder about the purpose and meaning of everything. Otherwise we would simply legitimate the present situation and need new forms of escapism to help us endure the emptiness.

114. All of this shows the urgent need for us to move forward in a bold cultural revolution. Science and technology are not neutral; from the beginning to the end of a process, various inten-

tions and possibilities are in play and can take on distinct shapes. Nobody is suggesting a return to the Stone Age, but we do need to slow down and look at reality in a different way, to appropriate the positive and sustainable progress which has been made, but also to recover the values and the great goals swept away by our unrestrained delusions of grandeur.

III. THE CRISIS AND EFFECTS OF MODERN ANTHROPOCENTRISM

115. Modern anthropocentrism has paradoxically ended up prizing technical thought over reality, since “the technological mind sees nature as an insensate order, as a cold body of facts, as a mere ‘given’, as an object of utility, as raw material to be hammered into useful shape; it views the cosmos similarly as a mere ‘space’ into which objects can be thrown with complete indifference”.⁹² The intrinsic dignity of the world is thus compromised. When human beings fail to find their true place in this world, they misunderstand themselves and end up acting against themselves: “Not only has God given the earth to man, who must use it with respect for the original good purpose for which it was given, but, man too is God’s gift to man. He must therefore respect the natural and moral structure with which he has been endowed”.⁹³

⁹² ROMANO GUARDINI, *Das Ende der Neuzeit*, 63 (*The End of the Modern World*, 55).

⁹³ JOHN PAUL II, Encyclical Letter *Centesimus Annus* (1 May 1991), 38: *AAS* 83 (1991), 841.

116. Modernity has been marked by an excessive anthropocentrism which today, under another guise, continues to stand in the way of shared understanding and of any effort to strengthen social bonds. The time has come to pay renewed attention to reality and the limits it imposes; this in turn is the condition for a more sound and fruitful development of individuals and society. An inadequate presentation of Christian anthropology gave rise to a wrong understanding of the relationship between human beings and the world. Often, what was handed on was a Promethean vision of mastery over the world, which gave the impression that the protection of nature was something that only the faint-hearted cared about. Instead, our “dominion” over the universe should be understood more properly in the sense of responsible stewardship.⁹⁴

117. Neglecting to monitor the harm done to nature and the environmental impact of our decisions is only the most striking sign of a disregard for the message contained in the structures of nature itself. When we fail to acknowledge as part of reality the worth of a poor person, a human embryo, a person with disabilities – to offer just a few examples – it becomes difficult to hear the cry of nature itself; everything is connected. Once the human being declares independence

⁹⁴ Cf. *Love for Creation. An Asian Response to the Ecological Crisis*, Declaration of the Colloquium sponsored by the Federation of Asian Bishops' Conferences (Tagatay, 31 January-5 February 1993), 3.3.2.

from reality and behaves with absolute dominion, the very foundations of our life begin to crumble, for “instead of carrying out his role as a cooperator with God in the work of creation, man sets himself up in place of God and thus ends up provoking a rebellion on the part of nature”.⁹⁵

118. This situation has led to a constant schizophrenia, wherein a technocracy which sees no intrinsic value in lesser beings coexists with the other extreme, which sees no special value in human beings. But one cannot prescind from humanity. There can be no renewal of our relationship with nature without a renewal of humanity itself. There can be no ecology without an adequate anthropology. When the human person is considered as simply one being among others, the product of chance or physical determinism, then “our overall sense of responsibility wanes”.⁹⁶ A misguided anthropocentrism need not necessarily yield to “biocentrism”, for that would entail adding yet another imbalance, failing to solve present problems and adding new ones. Human beings cannot be expected to feel responsibility for the world unless, at the same time, their unique capacities of knowledge, will, freedom and responsibility are recognized and valued.

⁹⁵ JOHN PAUL II, Encyclical Letter *Centesimus Annus* (1 May 1991), 37: *AAS* 83 (1991), 840.

⁹⁶ BENEDICT XVI, *Message for the 2010 World Day of Peace*, 2: *AAS* 102 (2010), 41.

119. Nor must the critique of a misguided anthropocentrism underestimate the importance of interpersonal relations. If the present ecological crisis is one small sign of the ethical, cultural and spiritual crisis of modernity, we cannot presume to heal our relationship with nature and the environment without healing all fundamental human relationships. Christian thought sees human beings as possessing a particular dignity above other creatures; it thus inculcates esteem for each person and respect for others. Our openness to others, each of whom is a “thou” capable of knowing, loving and entering into dialogue, remains the source of our nobility as human persons. A correct relationship with the created world demands that we not weaken this social dimension of openness to others, much less the transcendent dimension of our openness to the “Thou” of God. Our relationship with the environment can never be isolated from our relationship with others and with God. Otherwise, it would be nothing more than romantic individualism dressed up in ecological garb, locking us into a stifling immanence.

120. Since everything is interrelated, concern for the protection of nature is also incompatible with the justification of abortion. How can we genuinely teach the importance of concern for other vulnerable beings, however troublesome or inconvenient they may be, if we fail to protect a human embryo, even when its presence is un-

comfortable and creates difficulties? “If personal and social sensitivity towards the acceptance of the new life is lost, then other forms of acceptance that are valuable for society also wither away”.⁹⁷

121. We need to develop a new synthesis capable of overcoming the false arguments of recent centuries. Christianity, in fidelity to its own identity and the rich deposit of truth which it has received from Jesus Christ, continues to reflect on these issues in fruitful dialogue with changing historical situations. In doing so, it reveals its eternal newness.⁹⁸

Practical relativism

122. A misguided anthropocentrism leads to a misguided lifestyle. In the Apostolic Exhortation *Evangelii Gaudium*, I noted that the practical relativism typical of our age is “even more dangerous than doctrinal relativism”.⁹⁹ When human beings place themselves at the centre, they give absolute priority to immediate convenience and all else becomes relative. Hence we should not be surprised to find, in conjunction with the omnipresent technocratic paradigm and the cult

⁹⁷ ID., Encyclical Letter *Caritas in Veritate* (29 June 2009), 28: *AAS* 101 (2009), 663.

⁹⁸ Cf. VINCENT OF LERINS, *Commonitorium Primum*, ch. 23: PL 50, 688: “Ut annis scilicet consolidetur, dilatetur tempore, sublimetur aetate”.

⁹⁹ No. 80: *AAS* 105 (2013), 1053.

of unlimited human power, the rise of a relativism which sees everything as irrelevant unless it serves one's own immediate interests. There is a logic in all this whereby different attitudes can feed on one another, leading to environmental degradation and social decay.

123. The culture of relativism is the same disorder which drives one person to take advantage of another, to treat others as mere objects, imposing forced labour on them or enslaving them to pay their debts. The same kind of thinking leads to the sexual exploitation of children and abandonment of the elderly who no longer serve our interests. It is also the mindset of those who say: Let us allow the invisible forces of the market to regulate the economy, and consider their impact on society and nature as collateral damage. In the absence of objective truths or sound principles other than the satisfaction of our own desires and immediate needs, what limits can be placed on human trafficking, organized crime, the drug trade, commerce in blood diamonds and the fur of endangered species? Is it not the same relativistic logic which justifies buying the organs of the poor for resale or use in experimentation, or eliminating children because they are not what their parents wanted? This same "use and throw away" logic generates so much waste, because of the disordered desire to consume more than what is really necessary. We should not think that political efforts or the force of law will be suffi-

cient to prevent actions which affect the environment because, when the culture itself is corrupt and objective truth and universally valid principles are no longer upheld, then laws can only be seen as arbitrary impositions or obstacles to be avoided.

The need to protect employment

124. Any approach to an integral ecology, which by definition does not exclude human beings, needs to take account of the value of labour, as Saint John Paul II wisely noted in his Encyclical *Laborem Exercens*. According to the biblical account of creation, God placed man and woman in the garden he had created (cf. *Gen* 2:15) not only to preserve it (“keep”) but also to make it fruitful (“till”). Labourers and craftsmen thus “maintain the fabric of the world” (*Sir* 38:34). Developing the created world in a prudent way is the best way of caring for it, as this means that we ourselves become the instrument used by God to bring out the potential which he himself inscribed in things: “The Lord created medicines out of the earth, and a sensible man will not despise them” (*Sir* 38:4).

125. If we reflect on the proper relationship between human beings and the world around us, we see the need for a correct understanding of work; if we talk about the relationship between human beings and things, the question arises as to the meaning and purpose of all human activity. This has to do not only with manual or agri-

cultural labour but with any activity involving a modification of existing reality, from producing a social report to the design of a technological development. Underlying every form of work is a concept of the relationship which we can and must have with what is other than ourselves. Together with the awe-filled contemplation of creation which we find in Saint Francis of Assisi, the Christian spiritual tradition has also developed a rich and balanced understanding of the meaning of work, as, for example, in the life of Blessed Charles de Foucauld and his followers.

126. We can also look to the great tradition of monasticism. Originally, it was a kind of flight from the world, an escape from the decadence of the cities. The monks sought the desert, convinced that it was the best place for encountering the presence of God. Later, Saint Benedict of Norcia proposed that his monks live in community, combining prayer and spiritual reading with manual labour (*ora et labora*). Seeing manual labour as spiritually meaningful proved revolutionary. Personal growth and sanctification came to be sought in the interplay of recollection and work. This way of experiencing work makes us more protective and respectful of the environment; it imbues our relationship to the world with a healthy sobriety.

127. We are convinced that “man is the source, the focus and the aim of all economic and social

life”.¹⁰⁰ Nonetheless, once our human capacity for contemplation and reverence is impaired, it becomes easy for the meaning of work to be misunderstood.¹⁰¹ We need to remember that men and women have “the capacity to improve their lot, to further their moral growth and to develop their spiritual endowments”.¹⁰² Work should be the setting for this rich personal growth, where many aspects of life enter into play: creativity, planning for the future, developing our talents, living out our values, relating to others, giving glory to God. It follows that, in the reality of today’s global society, it is essential that “we continue to prioritize the goal of access to steady employment for everyone”,¹⁰³ no matter the limited interests of business and dubious economic reasoning.

128. We were created with a vocation to work. The goal should not be that technological progress increasingly replace human work, for this would be detrimental to humanity. Work is a necessity, part of the meaning of life on this earth, a path to growth, human development and per-

¹⁰⁰ SECOND VATICAN ECUMENICAL COUNCIL, Pastoral Constitution on the Church in the Modern World *Gaudium et Spes*, 63.

¹⁰¹ Cf. JOHN PAUL II, Encyclical Letter *Centesimus Annus* (1 May 1991), 37: *AAS* 83 (1991), 840.

¹⁰² PAUL VI, Encyclical Letter *Populorum Progressio* (26 March 1967), 34: *AAS* 59 (1967), 274.

¹⁰³ BENEDICT XVI, Encyclical Letter *Caritas in Veritate* (29 June 2009), 32: *AAS* 101 (2009), 666.

sonal fulfilment. Helping the poor financially must always be a provisional solution in the face of pressing needs. The broader objective should always be to allow them a dignified life through work. Yet the orientation of the economy has favoured a kind of technological progress in which the costs of production are reduced by laying off workers and replacing them with machines. This is yet another way in which we can end up working against ourselves. The loss of jobs also has a negative impact on the economy “through the progressive erosion of social capital: the network of relationships of trust, dependability, and respect for rules, all of which are indispensable for any form of civil coexistence”.¹⁰⁴ In other words, “human costs always include economic costs, and economic dysfunctions always involve human costs”.¹⁰⁵ To stop investing in people, in order to gain greater short-term financial gain, is bad business for society.

129. In order to continue providing employment, it is imperative to promote an economy which favours productive diversity and business creativity. For example, there is a great variety of small-scale food production systems which feed the greater part of the world’s peoples, using a modest amount of land and producing less waste, be it in small agricultural parcels, in orchards and gardens, hunting and wild harvesting

¹⁰⁴ *Ibid.*

¹⁰⁵ *Ibid.*

or local fishing. Economies of scale, especially in the agricultural sector, end up forcing smallholders to sell their land or to abandon their traditional crops. Their attempts to move to other, more diversified, means of production prove fruitless because of the difficulty of linkage with regional and global markets, or because the infrastructure for sales and transport is geared to larger businesses. Civil authorities have the right and duty to adopt clear and firm measures in support of small producers and differentiated production. To ensure economic freedom from which all can effectively benefit, restraints occasionally have to be imposed on those possessing greater resources and financial power. To claim economic freedom while real conditions bar many people from actual access to it, and while possibilities for employment continue to shrink, is to practise a doublespeak which brings politics into disrepute. Business is a noble vocation, directed to producing wealth and improving our world. It can be a fruitful source of prosperity for the areas in which it operates, especially if it sees the creation of jobs as an essential part of its service to the common good.

New biological technologies

130. In the philosophical and theological vision of the human being and of creation which I have presented, it is clear that the human person, endowed with reason and knowledge, is not an external factor to be excluded. While human

intervention on plants and animals is permissible when it pertains to the necessities of human life, the *Catechism of the Catholic Church* teaches that experimentation on animals is morally acceptable only “if it remains within reasonable limits [and] contributes to caring for or saving human lives”.¹⁰⁶ The *Catechism* firmly states that human power has limits and that “it is contrary to human dignity to cause animals to suffer or die needlessly”.¹⁰⁷ All such use and experimentation “requires a religious respect for the integrity of creation”.¹⁰⁸

131. Here I would recall the balanced position of Saint John Paul II, who stressed the benefits of scientific and technological progress as evidence of “the nobility of the human vocation to participate responsibly in God’s creative action”, while also noting that “we cannot interfere in one area of the ecosystem without paying due attention to the consequences of such interference in other areas”.¹⁰⁹ He made it clear that the Church values the benefits which result “from the study and applications of molecular biology, supplemented by other disciplines such as genetics, and its technological application in agriculture and industry”.¹¹⁰ But he also point-

¹⁰⁶ *Catechism of the Catholic Church*, 2417.

¹⁰⁷ *Ibid.*, 2418.

¹⁰⁸ *Ibid.*, 2415.

¹⁰⁹ *Message for the 1990 World Day of Peace*, 6: AAS 82 (1990), 150.

¹¹⁰ *Address to the Pontifical Academy of Sciences* (3 October 1981), 3: *Insegnamenti* 4/2 (1981), 333.

ed out that this should not lead to “indiscriminate genetic manipulation”¹¹¹ which ignores the negative effects of such interventions. Human creativity cannot be suppressed. If an artist cannot be stopped from using his or her creativity, neither should those who possess particular gifts for the advancement of science and technology be prevented from using their God-given talents for the service of others. We need constantly to rethink the goals, effects, overall context and ethical limits of this human activity, which is a form of power involving considerable risks.

132. This, then, is the correct framework for any reflection concerning human intervention on plants and animals, which at present includes genetic manipulation by biotechnology for the sake of exploiting the potential present in material reality. The respect owed by faith to reason calls for close attention to what the biological sciences, through research uninfluenced by economic interests, can teach us about biological structures, their possibilities and their mutations. Any legitimate intervention will act on nature only in order “to favour its development in its own line, that of creation, as intended by God”.¹¹²

133. It is difficult to make a general judgement about genetic modification (GM), whether veg-

¹¹¹ *Message for the 1990 World Day of Peace*, 7: AAS 82 (1990), 151.

¹¹² JOHN PAUL II, *Address to the 35th General Assembly of the World Medical Association* (29 October 1983), 6: AAS 76 (1984), 394.

etable or animal, medical or agricultural, since these vary greatly among themselves and call for specific considerations. The risks involved are not always due to the techniques used, but rather to their improper or excessive application. Genetic mutations, in fact, have often been, and continue to be, caused by nature itself. Nor are mutations caused by human intervention a modern phenomenon. The domestication of animals, the crossbreeding of species and other older and universally accepted practices can be mentioned as examples. We need but recall that scientific developments in GM cereals began with the observation of natural bacteria which spontaneously modified plant genomes. In nature, however, this process is slow and cannot be compared to the fast pace induced by contemporary technological advances, even when the latter build upon several centuries of scientific progress.

134. Although no conclusive proof exists that GM cereals may be harmful to human beings, and in some regions their use has brought about economic growth which has helped to resolve problems, there remain a number of significant difficulties which should not be underestimated. In many places, following the introduction of these crops, productive land is concentrated in the hands of a few owners due to “the progressive disappearance of small producers, who, as a consequence of the loss of the exploited lands, are

obliged to withdraw from direct production”.¹¹³ The most vulnerable of these become temporary labourers, and many rural workers end up moving to poverty-stricken urban areas. The expansion of these crops has the effect of destroying the complex network of ecosystems, diminishing the diversity of production and affecting regional economies, now and in the future. In various countries, we see an expansion of oligopolies for the production of cereals and other products needed for their cultivation. This dependency would be aggravated were the production of infertile seeds to be considered; the effect would be to force farmers to purchase them from larger producers.

135. Certainly, these issues require constant attention and a concern for their ethical implications. A broad, responsible scientific and social debate needs to take place, one capable of considering all the available information and of calling things by their name. It sometimes happens that complete information is not put on the table; a selection is made on the basis of particular interests, be they politico-economic or ideological. This makes it difficult to reach a balanced and prudent judgement on different questions, one which takes into account all the pertinent variables. Discussions are needed in which all those directly or indirectly affected (farmers, consum-

¹¹³ EPISCOPAL COMMISSION FOR PASTORAL CONCERNS IN ARGENTINA, *Una tierra para todos* (June 2005), 19.

ers, civil authorities, scientists, seed producers, people living near fumigated fields, and others) can make known their problems and concerns, and have access to adequate and reliable information in order to make decisions for the common good, present and future. This is a complex environmental issue; it calls for a comprehensive approach which would require, at the very least, greater efforts to finance various lines of independent, interdisciplinary research capable of shedding new light on the problem.

136. On the other hand, it is troubling that, when some ecological movements defend the integrity of the environment, rightly demanding that certain limits be imposed on scientific research, they sometimes fail to apply those same principles to human life. There is a tendency to justify transgressing all boundaries when experimentation is carried out on living human embryos. We forget that the inalienable worth of a human being transcends his or her degree of development. In the same way, when technology disregards the great ethical principles, it ends up considering any practice whatsoever as licit. As we have seen in this chapter, a technology severed from ethics will not easily be able to limit its own power.

CHAPTER FOUR

INTEGRAL ECOLOGY

137. Since everything is closely interrelated, and today's problems call for a vision capable of taking into account every aspect of the global crisis, I suggest that we now consider some elements of an *integral ecology*, one which clearly respects its human and social dimensions.

I. ENVIRONMENTAL, ECONOMIC AND SOCIAL ECOLOGY

138. Ecology studies the relationship between living organisms and the environment in which they develop. This necessarily entails reflection and debate about the conditions required for the life and survival of society, and the honesty needed to question certain models of development, production and consumption. It cannot be emphasized enough how everything is interconnected. Time and space are not independent of one another, and not even atoms or subatomic particles can be considered in isolation. Just as the different aspects of the planet – physical, chemical and biological – are interrelated, so too living species are part of a network which we will never fully explore and understand. A good part of our genetic code is shared by many living be-

ings. It follows that the fragmentation of knowledge and the isolation of bits of information can actually become a form of ignorance, unless they are integrated into a broader vision of reality.

139. When we speak of the “environment”, what we really mean is a relationship existing between nature and the society which lives in it. Nature cannot be regarded as something separate from ourselves or as a mere setting in which we live. We are part of nature, included in it and thus in constant interaction with it. Recognizing the reasons why a given area is polluted requires a study of the workings of society, its economy, its behaviour patterns, and the ways it grasps reality. Given the scale of change, it is no longer possible to find a specific, discrete answer for each part of the problem. It is essential to seek comprehensive solutions which consider the interactions within natural systems themselves and with social systems. We are faced not with two separate crises, one environmental and the other social, but rather with one complex crisis which is both social and environmental. Strategies for a solution demand an integrated approach to combating poverty, restoring dignity to the excluded, and at the same time protecting nature.

140. Due to the number and variety of factors to be taken into account when determining the environmental impact of a concrete undertaking, it is essential to give researchers their due role, to

facilitate their interaction, and to ensure broad academic freedom. Ongoing research should also give us a better understanding of how different creatures relate to one another in making up the larger units which today we term “ecosystems”. We take these systems into account not only to determine how best to use them, but also because they have an intrinsic value independent of their usefulness. Each organism, as a creature of God, is good and admirable in itself; the same is true of the harmonious ensemble of organisms existing in a defined space and functioning as a system. Although we are often not aware of it, we depend on these larger systems for our own existence. We need only recall how ecosystems interact in dispersing carbon dioxide, purifying water, controlling illnesses and epidemics, forming soil, breaking down waste, and in many other ways which we overlook or simply ignore. Once they become conscious of this, many people realize that we live and act on the basis of a reality which has previously been given to us, which precedes our existence and our abilities. So, when we speak of “sustainable use”, consideration must always be given to each ecosystem’s regenerative ability in its different areas and aspects.

141. Economic growth, for its part, tends to produce predictable reactions and a certain standardization with the aim of simplifying procedures and reducing costs. This suggests the

need for an “economic ecology” capable of appealing to a broader vision of reality. The protection of the environment is in fact “an integral part of the development process and cannot be considered in isolation from it”.¹¹⁴ We urgently need a humanism capable of bringing together the different fields of knowledge, including economics, in the service of a more integral and integrating vision. Today, the analysis of environmental problems cannot be separated from the analysis of human, family, work-related and urban contexts, nor from how individuals relate to themselves, which leads in turn to how they relate to others and to the environment. There is an interrelation between ecosystems and between the various spheres of social interaction, demonstrating yet again that “the whole is greater than the part”.¹¹⁵

142. If everything is related, then the health of a society’s institutions has consequences for the environment and the quality of human life. “Every violation of solidarity and civic friendship harms the environment”.¹¹⁶ In this sense, social ecology is necessarily institutional, and gradually extends to the whole of society, from the primary social group, the family, to the wider local, national and

¹¹⁴ *Rio Declaration on Environment and Development* (14 June 1992), Principle 4.

¹¹⁵ Apostolic Exhortation *Evangelii Gaudium* (24 November 2013), 237: *AAS* 105 (2013), 1116.

¹¹⁶ BENEDICT XVI, Encyclical Letter *Caritas in Veritate* (29 June 2009), 51: *AAS* 101 (2009), 687.

international communities. Within each social stratum, and between them, institutions develop to regulate human relationships. Anything which weakens those institutions has negative consequences, such as injustice, violence and loss of freedom. A number of countries have a relatively low level of institutional effectiveness, which results in greater problems for their people while benefiting those who profit from this situation. Whether in the administration of the state, the various levels of civil society, or relationships between individuals themselves, lack of respect for the law is becoming more common. Laws may be well framed yet remain a dead letter. Can we hope, then, that in such cases, legislation and regulations dealing with the environment will really prove effective? We know, for example, that countries which have clear legislation about the protection of forests continue to keep silent as they watch laws repeatedly being broken. Moreover, what takes place in any one area can have a direct or indirect influence on other areas. Thus, for example, drug use in affluent societies creates a continual and growing demand for products imported from poorer regions, where behaviour is corrupted, lives are destroyed, and the environment continues to deteriorate.

II. CULTURAL ECOLOGY

143. Together with the patrimony of nature, there is also an historic, artistic and cultural pat-

rimony which is likewise under threat. This patrimony is a part of the shared identity of each place and a foundation upon which to build a habitable city. It is not a matter of tearing down and building new cities, supposedly more respectful of the environment yet not always more attractive to live in. Rather, there is a need to incorporate the history, culture and architecture of each place, thus preserving its original identity. Ecology, then, also involves protecting the cultural treasures of humanity in the broadest sense. More specifically, it calls for greater attention to local cultures when studying environmental problems, favouring a dialogue between scientific-technical language and the language of the people. Culture is more than what we have inherited from the past; it is also, and above all, a living, dynamic and participatory present reality, which cannot be excluded as we rethink the relationship between human beings and the environment.

144. A consumerist vision of human beings, encouraged by the mechanisms of today's globalized economy, has a levelling effect on cultures, diminishing the immense variety which is the heritage of all humanity. Attempts to resolve all problems through uniform regulations or technical interventions can lead to overlooking the complexities of local problems which demand the active participation of all members of the community. New processes taking shape cannot always fit into frameworks imported

from outside; they need to be based in the local culture itself. As life and the world are dynamic realities, so our care for the world must also be flexible and dynamic. Merely technical solutions run the risk of addressing symptoms and not the more serious underlying problems. There is a need to respect the rights of peoples and cultures, and to appreciate that the development of a social group presupposes an historical process which takes place within a cultural context and demands the constant and active involvement of local people *from within their proper culture*. Nor can the notion of the quality of life be imposed from without, for quality of life must be understood within the world of symbols and customs proper to each human group.

145. Many intensive forms of environmental exploitation and degradation not only exhaust the resources which provide local communities with their livelihood, but also undo the social structures which, for a long time, shaped cultural identity and their sense of the meaning of life and community. The disappearance of a culture can be just as serious, or even more serious, than the disappearance of a species of plant or animal. The imposition of a dominant lifestyle linked to a single form of production can be just as harmful as the altering of ecosystems.

146. In this sense, it is essential to show special care for indigenous communities and their

cultural traditions. They are not merely one minority among others, but should be the principal dialogue partners, especially when large projects affecting their land are proposed. For them, land is not a commodity but rather a gift from God and from their ancestors who rest there, a sacred space with which they need to interact if they are to maintain their identity and values. When they remain on their land, they themselves care for it best. Nevertheless, in various parts of the world, pressure is being put on them to abandon their homelands to make room for agricultural or mining projects which are undertaken without regard for the degradation of nature and culture.

III. ECOLOGY OF DAILY LIFE

147. Authentic development includes efforts to bring about an integral improvement in the quality of human life, and this entails considering the setting in which people live their lives. These settings influence the way we think, feel and act. In our rooms, our homes, our workplaces and neighbourhoods, we use our environment as a way of expressing our identity. We make every effort to adapt to our environment, but when it is disorderly, chaotic or saturated with noise and ugliness, such overstimulation makes it difficult to find ourselves integrated and happy.

148. An admirable creativity and generosity is shown by persons and groups who respond to

environmental limitations by alleviating the adverse effects of their surroundings and learning to live their lives amid disorder and uncertainty. For example, in some places, where the façades of buildings are derelict, people show great care for the interior of their homes, or find contentment in the kindness and friendliness of others. A wholesome social life can light up a seemingly undesirable environment. At times a commendable human ecology is practised by the poor despite numerous hardships. The feeling of asphyxiation brought on by densely populated residential areas is countered if close and warm relationships develop, if communities are created, if the limitations of the environment are compensated for in the interior of each person who feels held within a network of solidarity and belonging. In this way, any place can turn from being a hell on earth into the setting for a dignified life.

149. The extreme poverty experienced in areas lacking harmony, open spaces or potential for integration, can lead to incidents of brutality and to exploitation by criminal organizations. In the unstable neighbourhoods of mega-cities, the daily experience of overcrowding and social anonymity can create a sense of uprootedness which spawns antisocial behaviour and violence. Nonetheless, I wish to insist that love always proves more powerful. Many people in these conditions are able to weave bonds of belonging and togetherness which convert overcrowding into an

experience of community in which the walls of the ego are torn down and the barriers of selfishness overcome. This experience of a communitarian salvation often generates creative ideas for the improvement of a building or a neighbourhood.¹¹⁷

150. Given the interrelationship between living space and human behaviour, those who design buildings, neighbourhoods, public spaces and cities, ought to draw on the various disciplines which help us to understand people's thought processes, symbolic language and ways of acting. It is not enough to seek the beauty of design. More precious still is the service we offer to another kind of beauty: people's quality of life, their adaptation to the environment, encounter and mutual assistance. Here too, we see how important it is that urban planning always take into consideration the views of those who will live in these areas.

151. There is also a need to protect those common areas, visual landmarks and urban landscapes which increase our sense of belonging, of rootedness, of "feeling at home" within a city which includes us and brings us together.

¹¹⁷ Some authors have emphasized the values frequently found, for example, in the *villas*, *chabolas* or *favelas* of Latin America: cf. JUAN CARLOS SCANNONE, S.J., "La irrupción del pobre y la lógica de la gratuidad", in JUAN CARLOS SCANNONE and MARCELO PERINE (eds.), *Irrupción del pobre y quehacer filosófico. Hacia una nueva racionalidad*, Buenos Aires, 1993, 225-230.

It is important that the different parts of a city be well integrated and that those who live there have a sense of the whole, rather than being confined to one neighbourhood and failing to see the larger city as space which they share with others. Interventions which affect the urban or rural landscape should take into account how various elements combine to form a whole which is perceived by its inhabitants as a coherent and meaningful framework for their lives. Others will then no longer be seen as strangers, but as part of a “we” which all of us are working to create. For this same reason, in both urban and rural settings, it is helpful to set aside some places which can be preserved and protected from constant changes brought by human intervention.

152. Lack of housing is a grave problem in many parts of the world, both in rural areas and in large cities, since state budgets usually cover only a small portion of the demand. Not only the poor, but many other members of society as well, find it difficult to own a home. Having a home has much to do with a sense of personal dignity and the growth of families. This is a major issue for human ecology. In some places, where makeshift shanty towns have sprung up, this will mean developing those neighbourhoods rather than razing or displacing them. When the poor live in unsanitary slums or in dangerous tenements, “in cases where it is necessary to relocate them, in order not to heap suffering upon

suffering, adequate information needs to be given beforehand, with choices of decent housing offered, and the people directly involved must be part of the process”.¹¹⁸ At the same time, creativity should be shown in integrating rundown neighbourhoods into a welcoming city: “How beautiful those cities which overcome paralyzing mistrust, integrate those who are different and make this very integration a new factor of development! How attractive are those cities which, even in their architectural design, are full of spaces which connect, relate and favour the recognition of others!”¹¹⁹

153. The quality of life in cities has much to do with systems of transport, which are often a source of much suffering for those who use them. Many cars, used by one or more people, circulate in cities, causing traffic congestion, raising the level of pollution, and consuming enormous quantities of non-renewable energy. This makes it necessary to build more roads and parking areas which spoil the urban landscape. Many specialists agree on the need to give priority to public transportation. Yet some measures needed will not prove easily acceptable to society unless substantial improvements are made in the systems themselves, which in many cities force

¹¹⁸ PONTIFICAL COUNCIL FOR JUSTICE AND PEACE, *Compendium of the Social Doctrine of the Church*, 482.

¹¹⁹ Apostolic Exhortation *Evangelii Gaudium* (24 November 2013), 210: *AAS* 105 (2013), 1107.

people to put up with undignified conditions due to crowding, inconvenience, infrequent service and lack of safety.

154. Respect for our dignity as human beings often jars with the chaotic realities that people have to endure in city life. Yet this should not make us overlook the abandonment and neglect also experienced by some rural populations which lack access to essential services and where some workers are reduced to conditions of servitude, without rights or even the hope of a more dignified life.

155. Human ecology also implies another profound reality: the relationship between human life and the moral law, which is inscribed in our nature and is necessary for the creation of a more dignified environment. Pope Benedict XVI spoke of an “ecology of man”, based on the fact that “man too has a nature that he must respect and that he cannot manipulate at will”.¹²⁰ It is enough to recognize that our body itself establishes us in a direct relationship with the environment and with other living beings. The acceptance of our bodies as God’s gift is vital for welcoming and accepting the entire world as a gift from the Father and our common home, whereas thinking that we enjoy absolute power over our own bod-

¹²⁰ *Address to the German Bundestag*, Berlin (22 September 2011): *AAS* 103 (2011), 668.

ies turns, often subtly, into thinking that we enjoy absolute power over creation. Learning to accept our body, to care for it and to respect its fullest meaning, is an essential element of any genuine human ecology. Also, valuing one's own body in its femininity or masculinity is necessary if I am going to be able to recognize myself in an encounter with someone who is different. In this way we can joyfully accept the specific gifts of another man or woman, the work of God the Creator, and find mutual enrichment. It is not a healthy attitude which would seek "to cancel out sexual difference because it no longer knows how to confront it".¹²¹

IV. THE PRINCIPLE OF THE COMMON GOOD

156. Human ecology is inseparable from the notion of the common good, a central and unifying principle of social ethics. The common good is "the sum of those conditions of social life which allow social groups and their individual members relatively thorough and ready access to their own fulfilment".¹²²

157. Underlying the principle of the common good is respect for the human person as such, endowed with basic and inalienable rights or-

¹²¹ *Catechesis* (15 April 2015): *L'Osservatore Romano*, 16 April 2015, p. 8.

¹²² SECOND VATICAN ECUMENICAL COUNCIL, Pastoral Constitution on the Church in the Modern World *Gaudium et Spes*, 26.

dered to his or her integral development. It has also to do with the overall welfare of society and the development of a variety of intermediate groups, applying the principle of subsidiarity. Outstanding among those groups is the family, as the basic cell of society. Finally, the common good calls for social peace, the stability and security provided by a certain order which cannot be achieved without particular concern for distributive justice; whenever this is violated, violence always ensues. Society as a whole, and the state in particular, are obliged to defend and promote the common good.

158. In the present condition of global society, where injustices abound and growing numbers of people are deprived of basic human rights and considered expendable, the principle of the common good immediately becomes, logically and inevitably, a summons to solidarity and a preferential option for the poorest of our brothers and sisters. This option entails recognizing the implications of the universal destination of the world's goods, but, as I mentioned in the Apostolic Exhortation *Evangelii Gaudium*,¹²³ it demands before all else an appreciation of the immense dignity of the poor in the light of our deepest convictions as believers. We need only look around us to see that, today, this option is in fact an ethical imperative essential for effectively attaining the common good.

¹²³ Cf. Nos. 186-201: *AAS* 105 (2013), 1098-1105.

V. JUSTICE BETWEEN THE GENERATIONS

159. The notion of the common good also extends to future generations. The global economic crises have made painfully obvious the detrimental effects of disregarding our common destiny, which cannot exclude those who come after us. We can no longer speak of sustainable development apart from intergenerational solidarity. Once we start to think about the kind of world we are leaving to future generations, we look at things differently; we realize that the world is a gift which we have freely received and must share with others. Since the world has been given to us, we can no longer view reality in a purely utilitarian way, in which efficiency and productivity are entirely geared to our individual benefit. Intergenerational solidarity is not optional, but rather a basic question of justice, since the world we have received also belongs to those who will follow us. The Portuguese bishops have called upon us to acknowledge this obligation of justice: “The environment is part of a logic of receptivity. It is on loan to each generation, which must then hand it on to the next”.¹²⁴ An integral ecology is marked by this broader vision.

160. What kind of world do we want to leave to those who come after us, to children who are now growing up? This question not only concerns

¹²⁴ PORTUGUESE BISHOPS’ CONFERENCE, Pastoral Letter *Responsabilidade Solidária pelo Bem Comum* (15 September 2003), 20.

the environment in isolation; the issue cannot be approached piecemeal. When we ask ourselves what kind of world we want to leave behind, we think in the first place of its general direction, its meaning and its values. Unless we struggle with these deeper issues, I do not believe that our concern for ecology will produce significant results. But if those issues are courageously faced, we are led inexorably to ask other pointed questions: What is the purpose of our life in this world? Why are we here? What is the goal of our work and all our efforts? What need does the earth have of us? It is no longer enough, then, simply to state that we should be concerned for future generations. We need to see that what is at stake is our own dignity. Leaving an inhabitable planet to future generations is, first and foremost, up to us. The issue is one which dramatically affects us, for it has to do with the ultimate meaning of our earthly sojourn.

161. Doomsday predictions can no longer be met with irony or disdain. We may well be leaving to coming generations debris, desolation and filth. The pace of consumption, waste and environmental change has so stretched the planet's capacity that our contemporary lifestyle, unsustainable as it is, can only precipitate catastrophes, such as those which even now periodically occur in different areas of the world. The effects of the present imbalance can only be reduced by our decisive action, here and now. We need to reflect

on our accountability before those who will have to endure the dire consequences.

162. Our difficulty in taking up this challenge seriously has much to do with an ethical and cultural decline which has accompanied the deterioration of the environment. Men and women of our postmodern world run the risk of rampant individualism, and many problems of society are connected with today's self-centred culture of instant gratification. We see this in the crisis of family and social ties and the difficulties of recognizing the other. Parents can be prone to impulsive and wasteful consumption, which then affects their children who find it increasingly difficult to acquire a home of their own and build a family. Furthermore, our inability to think seriously about future generations is linked to our inability to broaden the scope of our present interests and to give consideration to those who remain excluded from development. Let us not only keep the poor of the future in mind, but also today's poor, whose life on this earth is brief and who cannot keep on waiting. Hence, "in addition to a fairer sense of intergenerational solidarity there is also an urgent moral need for a renewed sense of intragenerational solidarity".¹²⁵

¹²⁵ BENEDICT XVI, *Message for the 2010 World Day of Peace*, 8: *AAS* 102 (2010), 45.

CHAPTER FIVE

LINES OF APPROACH AND ACTION

163. So far I have attempted to take stock of our present situation, pointing to the cracks in the planet that we inhabit as well as to the profoundly human causes of environmental degradation. Although the contemplation of this reality in itself has already shown the need for a change of direction and other courses of action, now we shall try to outline the major paths of dialogue which can help us escape the spiral of self-destruction which currently engulfs us.

I. DIALOGUE ON THE ENVIRONMENT IN THE INTERNATIONAL COMMUNITY

164. Beginning in the middle of the last century and overcoming many difficulties, there has been a growing conviction that our planet is a homeland and that humanity is one people living in a common home. An interdependent world not only makes us more conscious of the negative effects of certain lifestyles and models of production and consumption which affect us all; more importantly, it motivates us to ensure that solutions are proposed from a global perspective, and not simply to defend the interests of a few

countries. Interdependence obliges us to think of *one world with a common plan*. Yet the same ingenuity which has brought about enormous technological progress has so far proved incapable of finding effective ways of dealing with grave environmental and social problems worldwide. A global consensus is essential for confronting the deeper problems, which cannot be resolved by unilateral actions on the part of individual countries. Such a consensus could lead, for example, to planning a sustainable and diversified agriculture, developing renewable and less polluting forms of energy, encouraging a more efficient use of energy, promoting a better management of marine and forest resources, and ensuring universal access to drinking water.

165. We know that technology based on the use of highly polluting fossil fuels – especially coal, but also oil and, to a lesser degree, gas – needs to be progressively replaced without delay. Until greater progress is made in developing widely accessible sources of renewable energy, it is legitimate to choose the lesser of two evils or to find short-term solutions. But the international community has still not reached adequate agreements about the responsibility for paying the costs of this energy transition. In recent decades, environmental issues have given rise to considerable public debate and have elicited a variety of committed and generous civic responses. Politics and business have been slow to react in a way

commensurate with the urgency of the challenges facing our world. Although the post-industrial period may well be remembered as one of the most irresponsible in history, nonetheless there is reason to hope that humanity at the dawn of the twenty-first century will be remembered for having generously shouldered its grave responsibilities.

166. Worldwide, the ecological movement has made significant advances, thanks also to the efforts of many organizations of civil society. It is impossible here to mention them all, or to review the history of their contributions. But thanks to their efforts, environmental questions have increasingly found a place on public agendas and encouraged more far-sighted approaches. This notwithstanding, recent World Summits on the environment have not lived up to expectations because, due to lack of political will, they were unable to reach truly meaningful and effective global agreements on the environment.

167. The 1992 Earth Summit in Rio de Janeiro is worth mentioning. It proclaimed that “human beings are at the centre of concerns for sustainable development”.¹²⁶ Echoing the 1972 Stockholm Declaration, it enshrined international cooperation to care for the ecosystem of the entire earth, the obligation of those who cause pollu-

¹²⁶ *Rio Declaration on Environment and Development* (14 June 1992), Principle 1.

tion to assume its costs, and the duty to assess the environmental impact of given projects and works. It set the goal of limiting greenhouse gas concentration in the atmosphere, in an effort to reverse the trend of global warming. It also drew up an agenda with an action plan and a convention on biodiversity, and stated principles regarding forests. Although the summit was a real step forward, and prophetic for its time, its accords have been poorly implemented, due to the lack of suitable mechanisms for oversight, periodic review and penalties in cases of non-compliance. The principles which it proclaimed still await an efficient and flexible means of practical implementation.

168. Among positive experiences in this regard, we might mention, for example, the Basel Convention on hazardous wastes, with its system of reporting, standards and controls. There is also the binding Convention on international trade in endangered species of wild fauna and flora, which includes on-site visits for verifying effective compliance. Thanks to the Vienna Convention for the protection of the ozone layer and its implementation through the Montreal Protocol and amendments, the problem of the layer's thinning seems to have entered a phase of resolution.

169. As far as the protection of biodiversity and issues related to desertification are concerned, progress has been far less significant. With regard to climate change, the advances have been

regrettably few. Reducing greenhouse gases requires honesty, courage and responsibility, above all on the part of those countries which are more powerful and pollute the most. The Conference of the United Nations on Sustainable Development, “Rio+20” (Rio de Janeiro 2012), issued a wide-ranging but ineffectual outcome document. International negotiations cannot make significant progress due to positions taken by countries which place their national interests above the global common good. Those who will have to suffer the consequences of what we are trying to hide will not forget this failure of conscience and responsibility. Even as this Encyclical was being prepared, the debate was intensifying. We believers cannot fail to ask God for a positive outcome to the present discussions, so that future generations will not have to suffer the effects of our ill-advised delays.

170. Some strategies for lowering pollutant gas emissions call for the internationalization of environmental costs, which would risk imposing on countries with fewer resources burdensome commitments to reducing emissions comparable to those of the more industrialized countries. Imposing such measures penalizes those countries most in need of development. A further injustice is perpetrated under the guise of protecting the environment. Here also, the poor end up paying the price. Furthermore, since the effects of climate change will be felt for a long time to

come, even if stringent measures are taken now, some countries with scarce resources will require assistance in adapting to the effects already being produced, which affect their economies. In this context, there is a need for common and differentiated responsibilities. As the bishops of Bolivia have stated, “the countries which have benefited from a high degree of industrialization, at the cost of enormous emissions of greenhouse gases, have a greater responsibility for providing a solution to the problems they have caused”.¹²⁷

171. The strategy of buying and selling “carbon credits” can lead to a new form of speculation which would not help reduce the emission of polluting gases worldwide. This system seems to provide a quick and easy solution under the guise of a certain commitment to the environment, but in no way does it allow for the radical change which present circumstances require. Rather, it may simply become a ploy which permits maintaining the excessive consumption of some countries and sectors.

172. For poor countries, the priorities must be to eliminate extreme poverty and to promote the social development of their people. At the same time, they need to acknowledge the scandalous level of consumption in some privileged sectors

¹²⁷ BOLIVIAN BISHOPS’ CONFERENCE, Pastoral Letter on the Environment and Human Development in Bolivia *El universo, don de Dios para la vida* (March 2012), 86.

of their population and to combat corruption more effectively. They are likewise bound to develop less polluting forms of energy production, but to do so they require the help of countries which have experienced great growth at the cost of the ongoing pollution of the planet. Taking advantage of abundant solar energy will require the establishment of mechanisms and subsidies which allow developing countries access to technology transfer, technical assistance and financial resources, but in a way which respects their concrete situations, since “the compatibility of [infrastructures] with the context for which they have been designed is not always adequately assessed”.¹²⁸ The costs of this would be low, compared to the risks of climate change. In any event, these are primarily ethical decisions, rooted in solidarity between all peoples.

173. Enforceable international agreements are urgently needed, since local authorities are not always capable of effective intervention. Relations between states must be respectful of each other’s sovereignty, but must also lay down mutually agreed means of averting regional disasters which would eventually affect everyone. Global regulatory norms are needed to impose obligations and prevent unacceptable actions, for example, when powerful companies dump contam-

¹²⁸ PONTIFICAL COUNCIL FOR JUSTICE AND PEACE, *Energy, Justice and Peace*, IV, 1, Vatican City (2014), 53.

inated waste or offshore polluting industries in other countries.

174. Let us also mention the system of governance of the oceans. International and regional conventions do exist, but fragmentation and the lack of strict mechanisms of regulation, control and penalization end up undermining these efforts. The growing problem of marine waste and the protection of the open seas represent particular challenges. What is needed, in effect, is an agreement on systems of governance for the whole range of so-called “global commons”.

175. The same mindset which stands in the way of making radical decisions to reverse the trend of global warming also stands in the way of achieving the goal of eliminating poverty. A more responsible overall approach is needed to deal with both problems: the reduction of pollution and the development of poorer countries and regions. The twenty-first century, while maintaining systems of governance inherited from the past, is witnessing a weakening of the power of nation states, chiefly because the economic and financial sectors, being transnational, tends to prevail over the political. Given this situation, it is essential to devise stronger and more efficiently organized international institutions, with functionaries who are appointed fairly by agreement among national governments, and empowered to impose sanctions. As Benedict XVI has affirmed in continuity with the social

teaching of the Church: “To manage the global economy; to revive economies hit by the crisis; to avoid any deterioration of the present crisis and the greater imbalances that would result; to bring about integral and timely disarmament, food security and peace; to guarantee the protection of the environment and to regulate migration: for all this, there is urgent need of a true world political authority, as my predecessor Blessed John XXIII indicated some years ago”.¹²⁹ Diplomacy also takes on new importance in the work of developing international strategies which can anticipate serious problems affecting us all.

II. DIALOGUE FOR NEW NATIONAL AND LOCAL POLICIES

176. There are not just winners and losers among countries, but within poorer countries themselves. Hence different responsibilities need to be identified. Questions related to the environment and economic development can no longer be approached only from the standpoint of differences between countries; they also call for greater attention to policies on the national and local levels.

177. Given the real potential for a misuse of human abilities, individual states can no longer ignore their responsibility for planning, coordi-

¹²⁹ BENEDICT XVI, Encyclical Letter *Caritas in Veritate* (29 June 2009), 67: *AAS* 101 (2009).

nation, oversight and enforcement within their respective borders. How can a society plan and protect its future amid constantly developing technological innovations? One authoritative source of oversight and coordination is the law, which lays down rules for admissible conduct in the light of the common good. The limits which a healthy, mature and sovereign society must impose are those related to foresight and security, regulatory norms, timely enforcement, the elimination of corruption, effective responses to undesired side-effects of production processes, and appropriate intervention where potential or uncertain risks are involved. There is a growing jurisprudence dealing with the reduction of pollution by business activities. But political and institutional frameworks do not exist simply to avoid bad practice, but also to promote best practice, to stimulate creativity in seeking new solutions and to encourage individual or group initiatives.

178. A politics concerned with immediate results, supported by consumerist sectors of the population, is driven to produce short-term growth. In response to electoral interests, governments are reluctant to upset the public with measures which could affect the level of consumption or create risks for foreign investment. The myopia of power politics delays the inclusion of a far-sighted environmental agenda within the overall agenda of governments. Thus we

forget that “time is greater than space”,¹³⁰ that we are always more effective when we generate processes rather than holding on to positions of power. True statecraft is manifest when, in difficult times, we uphold high principles and think of the long-term common good. Political powers do not find it easy to assume this duty in the work of nation-building.

179. In some places, cooperatives are being developed to exploit renewable sources of energy which ensure local self-sufficiency and even the sale of surplus energy. This simple example shows that, while the existing world order proves powerless to assume its responsibilities, local individuals and groups can make a real difference. They are able to instil a greater sense of responsibility, a strong sense of community, a readiness to protect others, a spirit of creativity and a deep love for the land. They are also concerned about what they will eventually leave to their children and grandchildren. These values are deeply rooted in indigenous peoples. Because the enforcement of laws is at times inadequate due to corruption, public pressure has to be exerted in order to bring about decisive political action. Society, through non-governmental organizations and intermediate groups, must put pressure on governments to develop more rigorous regulations, procedures and controls. Unless citizens

¹³⁰ Apostolic Exhortation *Evangelii Gaudium* (24 November 2013), 222: *AAS* 105 (2013), 1111.

control political power – national, regional and municipal – it will not be possible to control damage to the environment. Local legislation can be more effective, too, if agreements exist between neighbouring communities to support the same environmental policies.

180. There are no uniform recipes, because each country or region has its own problems and limitations. It is also true that political realism may call for transitional measures and technologies, so long as these are accompanied by the gradual framing and acceptance of binding commitments. At the same time, on the national and local levels, much still needs to be done, such as promoting ways of conserving energy. These would include favouring forms of industrial production with maximum energy efficiency and diminished use of raw materials, removing from the market products which are less energy efficient or more polluting, improving transport systems, and encouraging the construction and repair of buildings aimed at reducing their energy consumption and levels of pollution. Political activity on the local level could also be directed to modifying consumption, developing an economy of waste disposal and recycling, protecting certain species and planning a diversified agriculture and the rotation of crops. Agriculture in poorer regions can be improved through investment in rural infrastructures, a better organization of local or national markets, systems of irrigation,

and the development of techniques of sustainable agriculture. New forms of cooperation and community organization can be encouraged in order to defend the interests of small producers and preserve local ecosystems from destruction. Truly, much can be done!

181. Here, continuity is essential, because policies related to climate change and environmental protection cannot be altered with every change of government. Results take time and demand immediate outlays which may not produce tangible effects within any one government's term. That is why, in the absence of pressure from the public and from civic institutions, political authorities will always be reluctant to intervene, all the more when urgent needs must be met. To take up these responsibilities and the costs they entail, politicians will inevitably clash with the mindset of short-term gain and results which dominates present-day economics and politics. But if they are courageous, they will attest to their God-given dignity and leave behind a testimony of selfless responsibility. A healthy politics is sorely needed, capable of reforming and coordinating institutions, promoting best practices and overcoming undue pressure and bureaucratic inertia. It should be added, though, that even the best mechanisms can break down when there are no worthy goals and values, or a genuine and profound humanism to serve as the basis of a noble and generous society.

III. DIALOGUE AND TRANSPARENCY IN DECISION-MAKING

182. An assessment of the environmental impact of business ventures and projects demands transparent political processes involving a free exchange of views. On the other hand, the forms of corruption which conceal the actual environmental impact of a given project, in exchange for favours, usually produce specious agreements which fail to inform adequately and to allow for full debate.

183. Environmental impact assessment should not come after the drawing up of a business proposition or the proposal of a particular policy, plan or programme. It should be part of the process from the beginning, and be carried out in a way which is interdisciplinary, transparent and free of all economic or political pressure. It should be linked to a study of working conditions and possible effects on people's physical and mental health, on the local economy and on public safety. Economic returns can thus be forecast more realistically, taking into account potential scenarios and the eventual need for further investment to correct possible undesired effects. A consensus should always be reached between the different stakeholders, who can offer a variety of approaches, solutions and alternatives. The local population should have a special place at the table; they are concerned about their own future and that of their children, and can consider

goals transcending immediate economic interest. We need to stop thinking in terms of “interventions” to save the environment in favour of policies developed and debated by all interested parties. The participation of the latter also entails being fully informed about such projects and their different risks and possibilities; this includes not just preliminary decisions but also various follow-up activities and continued monitoring. Honesty and truth are needed in scientific and political discussions; these should not be limited to the issue of whether or not a particular project is permitted by law.

184. In the face of possible risks to the environment which may affect the common good now and in the future, decisions must be made “based on a comparison of the risks and benefits foreseen for the various possible alternatives”.¹³¹ This is especially the case when a project may lead to a greater use of natural resources, higher levels of emission or discharge, an increase of refuse, or significant changes to the landscape, the habitats of protected species or public spaces. Some projects, if insufficiently studied, can profoundly affect the quality of life of an area due to very different factors such as unforeseen noise pollution, the shrinking of visual horizons, the loss of cultural values, or the effects of nuclear energy use. The culture of consumerism,

¹³¹ PONTIFICAL COUNCIL FOR JUSTICE AND PEACE, *Compendium of the Social Doctrine of the Church*, 469.

which prioritizes short-term gain and private interest, can make it easy to rubber-stamp authorizations or to conceal information.

185. In any discussion about a proposed venture, a number of questions need to be asked in order to discern whether or not it will contribute to genuine integral development. What will it accomplish? Why? Where? When? How? For whom? What are the risks? What are the costs? Who will pay those costs and how? In this discernment, some questions must have higher priority. For example, we know that water is a scarce and indispensable resource and a fundamental right which conditions the exercise of other human rights. This indisputable fact overrides any other assessment of environmental impact on a region.

186. The Rio Declaration of 1992 states that “where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a pretext for postponing cost-effective measures”¹³² which prevent environmental degradation. This precautionary principle makes it possible to protect those who are most vulnerable and whose ability to defend their interests and to assemble incontrovertible evidence is limited. If objective information suggests that serious and irreversible damage may result, a project

¹³² *Rio Declaration on the Environment and Development* (14 June 1992), Principle 15.

should be halted or modified, even in the absence of indisputable proof. Here the burden of proof is effectively reversed, since in such cases objective and conclusive demonstrations will have to be brought forward to demonstrate that the proposed activity will not cause serious harm to the environment or to those who inhabit it.

187. This does not mean being opposed to any technological innovations which can bring about an improvement in the quality of life. But it does mean that profit cannot be the sole criterion to be taken into account, and that, when significant new information comes to light, a reassessment should be made, with the involvement of all interested parties. The outcome may be a decision not to proceed with a given project, to modify it or to consider alternative proposals.

188. There are certain environmental issues where it is not easy to achieve a broad consensus. Here I would state once more that the Church does not presume to settle scientific questions or to replace politics. But I am concerned to encourage an honest and open debate so that particular interests or ideologies will not prejudice the common good.

IV. POLITICS AND ECONOMY IN DIALOGUE FOR HUMAN FULFILMENT

189. Politics must not be subject to the economy, nor should the economy be subject to the

dictates of an efficiency-driven paradigm of technocracy. Today, in view of the common good, there is urgent need for politics and economics to enter into a frank dialogue in the service of life, especially human life. Saving banks at any cost, making the public pay the price, foregoing a firm commitment to reviewing and reforming the entire system, only reaffirms the absolute power of a financial system, a power which has no future and will only give rise to new crises after a slow, costly and only apparent recovery. The financial crisis of 2007-08 provided an opportunity to develop a new economy, more attentive to ethical principles, and new ways of regulating speculative financial practices and virtual wealth. But the response to the crisis did not include rethinking the outdated criteria which continue to rule the world. Production is not always rational, and is usually tied to economic variables which assign to products a value that does not necessarily correspond to their real worth. This frequently leads to an overproduction of some commodities, with unnecessary impact on the environment and with negative results on regional economies.¹³³ The financial bubble also tends to be a productive bubble. The problem of the real economy is not confronted with vigour, yet it is the real economy which makes diversification and improvement in production possible,

¹³³ Cf. MEXICAN BISHOPS' CONFERENCE, EPISCOPAL COMMISSION FOR PASTORAL AND SOCIAL CONCERNS, *Jesucristo, vida y esperanza de los indígenas e campesinos* (14 January 2008).

helps companies to function well, and enables small and medium businesses to develop and create employment.

190. Here too, it should always be kept in mind that “environmental protection cannot be assured solely on the basis of financial calculations of costs and benefits. The environment is one of those goods that cannot be adequately safeguarded or promoted by market forces”.¹³⁴ Once more, we need to reject a magical conception of the market, which would suggest that problems can be solved simply by an increase in the profits of companies or individuals. Is it realistic to hope that those who are obsessed with maximizing profits will stop to reflect on the environmental damage which they will leave behind for future generations? Where profits alone count, there can be no thinking about the rhythms of nature, its phases of decay and regeneration, or the complexity of ecosystems which may be gravely upset by human intervention. Moreover, biodiversity is considered at most a deposit of economic resources available for exploitation, with no serious thought for the real value of things, their significance for persons and cultures, or the concerns and needs of the poor.

191. Whenever these questions are raised, some react by accusing others of irrationally at-

¹³⁴ PONTIFICAL COUNCIL FOR JUSTICE AND PEACE, *Compendium of the Social Doctrine of the Church*, 470.

tempting to stand in the way of progress and human development. But we need to grow in the conviction that a decrease in the pace of production and consumption can at times give rise to another form of progress and development. Efforts to promote a sustainable use of natural resources are not a waste of money, but rather an investment capable of providing other economic benefits in the medium term. If we look at the larger picture, we can see that more diversified and innovative forms of production which impact less on the environment can prove very profitable. It is a matter of openness to different possibilities which do not involve stifling human creativity and its ideals of progress, but rather directing that energy along new channels.

192. For example, a path of productive development, which is more creative and better directed, could correct the present disparity between excessive technological investment in consumption and insufficient investment in resolving urgent problems facing the human family. It could generate sensible and profitable ways of reusing, revamping and recycling, and it could also improve the energy efficiency of cities. Productive diversification offers the fullest possibilities to human ingenuity to create and innovate, while at the same time protecting the environment and creating more sources of employment. Such creativity would be a worthy expression of our most noble human qualities, for we would be striving

intelligently, boldly and responsibly to promote a sustainable and equitable development within the context of a broader concept of quality of life. On the other hand, to find ever new ways of despoiling nature, purely for the sake of new consumer items and quick profit, would be, in human terms, less worthy and creative, and more superficial.

193. In any event, if in some cases sustainable development were to involve new forms of growth, in other cases, given the insatiable and irresponsible growth produced over many decades, we need also to think of containing growth by setting some reasonable limits and even re-tracing our steps before it is too late. We know how unsustainable is the behaviour of those who constantly consume and destroy, while others are not yet able to live in a way worthy of their human dignity. That is why the time has come to accept decreased growth in some parts of the world, in order to provide resources for other places to experience healthy growth. Benedict XVI has said that “technologically advanced societies must be prepared to encourage more sober lifestyles, while reducing their energy consumption and improving its efficiency”.¹³⁵

194. For new models of progress to arise, there is a need to change “models of global develop-

¹³⁵ *Message for the 2010 World Day of Peace*, 9: AAS 102 (2010), 46.

ment”;¹³⁶ this will entail a responsible reflection on “the meaning of the economy and its goals with an eye to correcting its malfunctions and misapplications”.¹³⁷ It is not enough to balance, in the medium term, the protection of nature with financial gain, or the preservation of the environment with progress. Halfway measures simply delay the inevitable disaster. Put simply, it is a matter of redefining our notion of progress. A technological and economic development which does not leave in its wake a better world and an integrally higher quality of life cannot be considered progress. Frequently, in fact, people’s quality of life actually diminishes – by the deterioration of the environment, the low quality of food or the depletion of resources – in the midst of economic growth. In this context, talk of sustainable growth usually becomes a way of distracting attention and offering excuses. It absorbs the language and values of ecology into the categories of finance and technocracy, and the social and environmental responsibility of businesses often gets reduced to a series of marketing and image-enhancing measures.

195. The principle of the maximization of profits, frequently isolated from other considerations, reflects a misunderstanding of the very concept of the economy. As long as production

¹³⁶ *Ibid.*

¹³⁷ *Ibid.*, 5: p. 43.

is increased, little concern is given to whether it is at the cost of future resources or the health of the environment; as long as the clearing of a forest increases production, no one calculates the losses entailed in the desertification of the land, the harm done to biodiversity or the increased pollution. In a word, businesses profit by calculating and paying only a fraction of the costs involved. Yet only when “the economic and social costs of using up shared environmental resources are recognized with transparency and fully borne by those who incur them, not by other peoples or future generations”,¹³⁸ can those actions be considered ethical. An instrumental way of reasoning, which provides a purely static analysis of realities in the service of present needs, is at work whether resources are allocated by the market or by state central planning.

196. What happens with politics? Let us keep in mind the principle of subsidiarity, which grants freedom to develop the capabilities present at every level of society, while also demanding a greater sense of responsibility for the common good from those who wield greater power. Today, it is the case that some economic sectors exercise more power than states themselves. But economics without politics cannot be justified, since this would make it impossible to favour

¹³⁸ BENEDICT XVI, Encyclical Letter *Caritas in Veritate* (29 June 2009), 50: *AAS* 101 (2009), 686.

other ways of handling the various aspects of the present crisis. The mindset which leaves no room for sincere concern for the environment is the same mindset which lacks concern for the inclusion of the most vulnerable members of society. For “the current model, with its emphasis on success and self-reliance, does not appear to favour an investment in efforts to help the slow, the weak or the less talented to find opportunities in life”.¹³⁹

197. What is needed is a politics which is far-sighted and capable of a new, integral and interdisciplinary approach to handling the different aspects of the crisis. Often, politics itself is responsible for the disrepute in which it is held, on account of corruption and the failure to enact sound public policies. If in a given region the state does not carry out its responsibilities, some business groups can come forward in the guise of benefactors, wield real power, and consider themselves exempt from certain rules, to the point of tolerating different forms of organized crime, human trafficking, the drug trade and violence, all of which become very difficult to eradicate. If politics shows itself incapable of breaking such a perverse logic, and remains caught up in inconsequential discussions, we will continue to avoid facing the major problems of humani-

¹³⁹ Apostolic Exhortation *Evangelii Gaudium* (24 November 2013), 209: *AAS* 105 (2013), 1107.

ty. A strategy for real change calls for rethinking processes in their entirety, for it is not enough to include a few superficial ecological considerations while failing to question the logic which underlies present-day culture. A healthy politics needs to be able to take up this challenge.

198. Politics and the economy tend to blame each other when it comes to poverty and environmental degradation. It is to be hoped that they can acknowledge their own mistakes and find forms of interaction directed to the common good. While some are concerned only with financial gain, and others with holding on to or increasing their power, what we are left with are conflicts or spurious agreements where the last thing either party is concerned about is caring for the environment and protecting those who are most vulnerable. Here too, we see how true it is that “unity is greater than conflict”.¹⁴⁰

V. RELIGIONS IN DIALOGUE WITH SCIENCE

199. It cannot be maintained that empirical science provides a complete explanation of life, the interplay of all creatures and the whole of reality. This would be to breach the limits imposed by its own methodology. If we reason only within the confines of the latter, little room would be left for aesthetic sensibility, poetry, or even rea-

¹⁴⁰ *Ibid.*, 228: *AAS* 105 (2013), 1113.

son's ability to grasp the ultimate meaning and purpose of things.¹⁴¹ I would add that "religious classics can prove meaningful in every age; they have an enduring power to open new horizons... Is it reasonable and enlightened to dismiss certain writings simply because they arose in the context of religious belief?"¹⁴² It would be quite simplistic to think that ethical principles present themselves purely in the abstract, detached from any context. Nor does the fact that they may be couched in religious language detract from their value in public debate. The ethical principles capable of being apprehended by reason can always reappear in different guise and find expression in a variety of languages, including religious language.

200. Any technical solution which science claims to offer will be powerless to solve the se-

¹⁴¹ Cf. Encyclical Letter *Lumen Fidei* (29 June 2013), 34: *AAS* 105 (2013), 577: "Nor is the light of faith, joined to the truth of love, extraneous to the material world, for love is always lived out in body and spirit; the light of faith is an incarnate light radiating from the luminous life of Jesus. It also illumines the material world, trusts its inherent order, and knows that it calls us to an ever widening path of harmony and understanding. The gaze of science thus benefits from faith: faith encourages the scientist to remain constantly open to reality in all its inexhaustible richness. Faith awakens the critical sense by preventing research from being satisfied with its own formulae and helps it to realize that nature is always greater. By stimulating wonder before the profound mystery of creation, faith broadens the horizons of reason to shed greater light on the world which discloses itself to scientific investigation".

¹⁴² Apostolic Exhortation *Evangelii Gaudium* (24 November 2013), 256: *AAS* 105 (2013), 1123.

rious problems of our world if humanity loses its compass, if we lose sight of the great motivations which make it possible for us to live in harmony, to make sacrifices and to treat others well. Believers themselves must constantly feel challenged to live in a way consonant with their faith and not to contradict it by their actions. They need to be encouraged to be ever open to God's grace and to draw constantly from their deepest convictions about love, justice and peace. If a mistaken understanding of our own principles has at times led us to justify mistreating nature, to exercise tyranny over creation, to engage in war, injustice and acts of violence, we believers should acknowledge that by so doing we were not faithful to the treasures of wisdom which we have been called to protect and preserve. Cultural limitations in different eras often affected the perception of these ethical and spiritual treasures, yet by constantly returning to their sources, religions will be better equipped to respond to today's needs.

201. The majority of people living on our planet profess to be believers. This should spur religions to dialogue among themselves for the sake of protecting nature, defending the poor, and building networks of respect and fraternity. Dialogue among the various sciences is likewise needed, since each can tend to become enclosed in its own language, while specialization leads to a certain isolation and the absolutization of its own

field of knowledge. This prevents us from confronting environmental problems effectively. An open and respectful dialogue is also needed between the various ecological movements, among which ideological conflicts are not infrequently encountered. The gravity of the ecological crisis demands that we all look to the common good, embarking on a path of dialogue which requires patience, self-discipline and generosity, always keeping in mind that “realities are greater than ideas”.¹⁴³

¹⁴³ *Ibid.*, 231: p. 1114.

CHAPTER SIX
ECOLOGICAL EDUCATION
AND SPIRITUALITY

202. Many things have to change course, but it is we human beings above all who need to change. We lack an awareness of our common origin, of our mutual belonging, and of a future to be shared with everyone. This basic awareness would enable the development of new convictions, attitudes and forms of life. A great cultural, spiritual and educational challenge stands before us, and it will demand that we set out on the long path of renewal.

I. TOWARDS A NEW LIFESTYLE

203. Since the market tends to promote extreme consumerism in an effort to sell its products, people can easily get caught up in a whirlwind of needless buying and spending. Compulsive consumerism is one example of how the techno-economic paradigm affects individuals. Romano Guardini had already foreseen this: “The gadgets and technics forced upon him by the patterns of machine production and of abstract planning mass man accepts quite simply; they are the forms of life itself. To either a greater or lesser degree mass man is convinced that

his conformity is both reasonable and just”.¹⁴⁴ This paradigm leads people to believe that they are free as long as they have the supposed freedom to consume. But those really free are the minority who wield economic and financial power. Amid this confusion, postmodern humanity has not yet achieved a new self-awareness capable of offering guidance and direction, and this lack of identity is a source of anxiety. We have too many means and only a few insubstantial ends.

204. The current global situation engenders a feeling of instability and uncertainty, which in turn becomes “a seedbed for collective selfishness”.¹⁴⁵ When people become self-centred and self-enclosed, their greed increases. The emptier a person’s heart is, the more he or she needs things to buy, own and consume. It becomes almost impossible to accept the limits imposed by reality. In this horizon, a genuine sense of the common good also disappears. As these attitudes become more widespread, social norms are respected only to the extent that they do not clash with personal needs. So our concern cannot be limited merely to the threat of extreme weather events, but must also extend to the catastrophic consequences of social unrest. Obsession with a

¹⁴⁴ ROMANO GUARDINI, *Das Ende der Neuzeit*, 9th edition, Würzburg, 1965, 66-67 (English: *The End of the Modern World*, Wilmington, 1998, 60).

¹⁴⁵ JOHN PAUL II, *Message for the 1990 World Day of Peace*, 1: AAS 82 (1990), 147.

consumerist lifestyle, above all when few people are capable of maintaining it, can only lead to violence and mutual destruction.

205. Yet all is not lost. Human beings, while capable of the worst, are also capable of rising above themselves, choosing again what is good, and making a new start, despite their mental and social conditioning. We are able to take an honest look at ourselves, to acknowledge our deep dissatisfaction, and to embark on new paths to authentic freedom. No system can completely suppress our openness to what is good, true and beautiful, or our God-given ability to respond to his grace at work deep in our hearts. I appeal to everyone throughout the world not to forget this dignity which is ours. No one has the right to take it from us.

206. A change in lifestyle could bring healthy pressure to bear on those who wield political, economic and social power. This is what consumer movements accomplish by boycotting certain products. They prove successful in changing the way businesses operate, forcing them to consider their environmental footprint and their patterns of production. When social pressure affects their earnings, businesses clearly have to find ways to produce differently. This shows us the great need for a sense of social responsibility on the part of consumers. “Purchasing is always a moral –

and not simply economic – act”.¹⁴⁶ Today, in a word, “the issue of environmental degradation challenges us to examine our lifestyle”.¹⁴⁷

207. The Earth Charter asked us to leave behind a period of self-destruction and make a new start, but we have not as yet developed a universal awareness needed to achieve this. Here, I would echo that courageous challenge: “As never before in history, common destiny beckons us to seek a new beginning... Let ours be a time remembered for the awakening of a new reverence for life, the firm resolve to achieve sustainability, the quickening of the struggle for justice and peace, and the joyful celebration of life”.¹⁴⁸

208. We are always capable of going out of ourselves towards the other. Unless we do this, other creatures will not be recognized for their true worth; we are unconcerned about caring for things for the sake of others; we fail to set limits on ourselves in order to avoid the suffering of others or the deterioration of our surroundings. Disinterested concern for others, and the rejection of every form of self-centeredness and self-absorption, are essential if we truly wish to care for our brothers and sisters and for the nat-

¹⁴⁶ BENEDICT XVI, Encyclical Letter *Caritas in Veritate* (29 June 2009), 66: *AAS* 101 (2009), 699.

¹⁴⁷ ID., *Message for the 2010 World Day of Peace*, 11: *AAS* 102 (2010), 48.

¹⁴⁸ *Earth Charter*, The Hague (29 June 2000).

ural environment. These attitudes also attune us to the moral imperative of assessing the impact of our every action and personal decision on the world around us. If we can overcome individualism, we will truly be able to develop a different lifestyle and bring about significant changes in society.

II. EDUCATING FOR THE COVENANT BETWEEN HUMANITY AND THE ENVIRONMENT

209. An awareness of the gravity of today's cultural and ecological crisis must be translated into new habits. Many people know that our current progress and the mere amassing of things and pleasures are not enough to give meaning and joy to the human heart, yet they feel unable to give up what the market sets before them. In those countries which should be making the greatest changes in consumer habits, young people have a new ecological sensitivity and a generous spirit, and some of them are making admirable efforts to protect the environment. At the same time, they have grown up in a milieu of extreme consumerism and affluence which makes it difficult to develop other habits. We are faced with an educational challenge.

210. Environmental education has broadened its goals. Whereas in the beginning it was mainly centred on scientific information, consciousness-raising and the prevention of environmental risks, it tends now to include a critique of the

“myths” of a modernity grounded in a utilitarian mindset (individualism, unlimited progress, competition, consumerism, the unregulated market). It seeks also to restore the various levels of ecological equilibrium, establishing harmony within ourselves, with others, with nature and other living creatures, and with God. Environmental education should facilitate making the leap towards the transcendent which gives ecological ethics its deepest meaning. It needs educators capable of developing an ethics of ecology, and helping people, through effective pedagogy, to grow in solidarity, responsibility and compassionate care.

211. Yet this education, aimed at creating an “ecological citizenship”, is at times limited to providing information, and fails to instil good habits. The existence of laws and regulations is insufficient in the long run to curb bad conduct, even when effective means of enforcement are present. If the laws are to bring about significant, long-lasting effects, the majority of the members of society must be adequately motivated to accept them, and personally transformed to respond. Only by cultivating sound virtues will people be able to make a selfless ecological commitment. A person who could afford to spend and consume more but regularly uses less heating and wears warmer clothes, shows the kind of convictions and attitudes which help to protect the environment. There is a nobility in the duty to care for creation through little daily actions, and it is won-

derful how education can bring about real changes in lifestyle. Education in environmental responsibility can encourage ways of acting which directly and significantly affect the world around us, such as avoiding the use of plastic and paper, reducing water consumption, separating refuse, cooking only what can reasonably be consumed, showing care for other living beings, using public transport or car-pooling, planting trees, turning off unnecessary lights, or any number of other practices. All of these reflect a generous and worthy creativity which brings out the best in human beings. Reusing something instead of immediately discarding it, when done for the right reasons, can be an act of love which expresses our own dignity.

212. We must not think that these efforts are not going to change the world. They benefit society, often unbeknown to us, for they call forth a goodness which, albeit unseen, inevitably tends to spread. Furthermore, such actions can restore our sense of self-esteem; they can enable us to live more fully and to feel that life on earth is worthwhile.

213. Ecological education can take place in a variety of settings: at school, in families, in the media, in catechesis and elsewhere. Good education plants seeds when we are young, and these continue to bear fruit throughout life. Here, though, I would stress the great importance of the family, which is “the place in which life – the

gift of God – can be properly welcomed and protected against the many attacks to which it is exposed, and can develop in accordance with what constitutes authentic human growth. In the face of the so-called culture of death, the family is the heart of the culture of life”.¹⁴⁹ In the family we first learn how to show love and respect for life; we are taught the proper use of things, order and cleanliness, respect for the local ecosystem and care for all creatures. In the family we receive an integral education, which enables us to grow harmoniously in personal maturity. In the family we learn to ask without demanding, to say “thank you” as an expression of genuine gratitude for what we have been given, to control our aggressivity and greed, and to ask forgiveness when we have caused harm. These simple gestures of heartfelt courtesy help to create a culture of shared life and respect for our surroundings.

214. Political institutions and various other social groups are also entrusted with helping to raise people’s awareness. So too is the Church. All Christian communities have an important role to play in ecological education. It is my hope that our seminaries and houses of formation will provide an education in responsible simplicity of life, in grateful contemplation of God’s world, and in concern for the needs of the poor and the protection of the environment. Because the

¹⁴⁹ JOHN PAUL II, Encyclical Letter *Centesimus Annus* (1 May 1991), 39: *AAS* 83 (1991), 842.

stakes are so high, we need institutions empowered to impose penalties for damage inflicted on the environment. But we also need the personal qualities of self-control and willingness to learn from one another.

215. In this regard, “the relationship between a good aesthetic education and the maintenance of a healthy environment cannot be overlooked”.¹⁵⁰ By learning to see and appreciate beauty, we learn to reject self-interested pragmatism. If someone has not learned to stop and admire something beautiful, we should not be surprised if he or she treats everything as an object to be used and abused without scruple. If we want to bring about deep change, we need to realize that certain mindsets really do influence our behaviour. Our efforts at education will be inadequate and ineffectual unless we strive to promote a new way of thinking about human beings, life, society and our relationship with nature. Otherwise, the paradigm of consumerism will continue to advance, with the help of the media and the highly effective workings of the market.

III. ECOLOGICAL CONVERSION

216. The rich heritage of Christian spirituality, the fruit of twenty centuries of personal and communal experience, has a precious contribu-

¹⁵⁰ ID., *Message for the 1990 World Day of Peace*, 14: AAS 82 (1990), 155.

tion to make to the renewal of humanity. Here, I would like to offer Christians a few suggestions for an ecological spirituality grounded in the convictions of our faith, since the teachings of the Gospel have direct consequences for our way of thinking, feeling and living. More than in ideas or concepts as such, I am interested in how such a spirituality can motivate us to a more passionate concern for the protection of our world. A commitment this lofty cannot be sustained by doctrine alone, without a spirituality capable of inspiring us, without an “interior impulse which encourages, motivates, nourishes and gives meaning to our individual and communal activity”.¹⁵¹ Admittedly, Christians have not always appropriated and developed the spiritual treasures bestowed by God upon the Church, where the life of the spirit is not dissociated from the body or from nature or from worldly realities, but lived in and with them, in communion with all that surrounds us.

217. “The external deserts in the world are growing, because the internal deserts have become so vast”.¹⁵² For this reason, the ecological crisis is also a summons to profound interior conversion. It must be said that some committed and prayerful Christians, with the excuse of real-

¹⁵¹ Apostolic Exhortation *Evangelii Gaudium* (24 Nov 2013), 261: *AAS* 105 (2013), 1124.

¹⁵² BENEDICT XVI, *Homily for the Solemn Inauguration of the Petrine Ministry* (24 April 2005): *AAS* 97 (2005), 710.

ism and pragmatism, tend to ridicule expressions of concern for the environment. Others are passive; they choose not to change their habits and thus become inconsistent. So what they all need is an “ecological conversion”, whereby the effects of their encounter with Jesus Christ become evident in their relationship with the world around them. Living our vocation to be protectors of God’s handiwork is essential to a life of virtue; it is not an optional or a secondary aspect of our Christian experience.

218. In calling to mind the figure of Saint Francis of Assisi, we come to realize that a healthy relationship with creation is one dimension of overall personal conversion, which entails the recognition of our errors, sins, faults and failures, and leads to heartfelt repentance and desire to change. The Australian bishops spoke of the importance of such conversion for achieving reconciliation with creation: “To achieve such reconciliation, we must examine our lives and acknowledge the ways in which we have harmed God’s creation through our actions and our failure to act. We need to experience a conversion, or change of heart”.¹⁵³

219. Nevertheless, self-improvement on the part of individuals will not by itself remedy the extremely complex situation facing our world to-

¹⁵³ AUSTRALIAN CATHOLIC BISHOPS’ CONFERENCE, *A New Earth – The Environmental Challenge* (2002).

day. Isolated individuals can lose their ability and freedom to escape the utilitarian mindset, and end up prey to an unethical consumerism bereft of social or ecological awareness. Social problems must be addressed by community networks and not simply by the sum of individual good deeds. This task “will make such tremendous demands of man that he could never achieve it by individual initiative or even by the united effort of men bred in an individualistic way. The work of dominating the world calls for a union of skills and a unity of achievement that can only grow from quite a different attitude”.¹⁵⁴ The ecological conversion needed to bring about lasting change is also a community conversion.

220. This conversion calls for a number of attitudes which together foster a spirit of generous care, full of tenderness. First, it entails gratitude and gratuitousness, a recognition that the world is God’s loving gift, and that we are called quietly to imitate his generosity in self-sacrifice and good works: “Do not let your left hand know what your right hand is doing... and your Father who sees in secret will reward you” (*Mt* 6:3-4). It also entails a loving awareness that we are not disconnected from the rest of creatures, but joined in a splendid universal communion. As believers, we do not look at the world from without but from within, conscious of the bonds with

¹⁵⁴ ROMANO GUARDINI, *Das Ende der Neuzeit*, 72 (*The End of the Modern World*, 65-66).

which the Father has linked us to all beings. By developing our individual, God-given capacities, an ecological conversion can inspire us to greater creativity and enthusiasm in resolving the world's problems and in offering ourselves to God "as a living sacrifice, holy and acceptable" (*Rom* 12:1). We do not understand our superiority as a reason for personal glory or irresponsible dominion, but rather as a different capacity which, in its turn, entails a serious responsibility stemming from our faith.

221. Various convictions of our faith, developed at the beginning of this Encyclical can help us to enrich the meaning of this conversion. These include the awareness that each creature reflects something of God and has a message to convey to us, and the security that Christ has taken unto himself this material world and now, risen, is intimately present to each being, surrounding it with his affection and penetrating it with his light. Then too, there is the recognition that God created the world, writing into it an order and a dynamism that human beings have no right to ignore. We read in the Gospel that Jesus says of the birds of the air that "not one of them is forgotten before God" (*Lk* 12:6). How then can we possibly mistreat them or cause them harm? I ask all Christians to recognize and to live fully this dimension of their conversion. May the power and the light of the grace we have received also be evident in our relationship to other creatures and to the world

around us. In this way, we will help nurture that sublime fraternity with all creation which Saint Francis of Assisi so radiantly embodied.

IV. JOY AND PEACE

222. Christian spirituality proposes an alternative understanding of the quality of life, and encourages a prophetic and contemplative lifestyle, one capable of deep enjoyment free of the obsession with consumption. We need to take up an ancient lesson, found in different religious traditions and also in the Bible. It is the conviction that “less is more”. A constant flood of new consumer goods can baffle the heart and prevent us from cherishing each thing and each moment. To be serenely present to each reality, however small it may be, opens us to much greater horizons of understanding and personal fulfilment. Christian spirituality proposes a growth marked by moderation and the capacity to be happy with little. It is a return to that simplicity which allows us to stop and appreciate the small things, to be grateful for the opportunities which life affords us, to be spiritually detached from what we possess, and not to succumb to sadness for what we lack. This implies avoiding the dynamic of dominion and the mere accumulation of pleasures.

223. Such sobriety, when lived freely and consciously, is liberating. It is not a lesser life or one lived with less intensity. On the contrary, it is a way of living life to the full. In reality, those

who enjoy more and live better each moment are those who have given up dipping here and there, always on the look-out for what they do not have. They experience what it means to appreciate each person and each thing, learning familiarity with the simplest things and how to enjoy them. So they are able to shed unsatisfied needs, reducing their obsessiveness and weariness. Even living on little, they can live a lot, above all when they cultivate other pleasures and find satisfaction in fraternal encounters, in service, in developing their gifts, in music and art, in contact with nature, in prayer. Happiness means knowing how to limit some needs which only diminish us, and being open to the many different possibilities which life can offer.

224. Sobriety and humility were not favourably regarded in the last century. And yet, when there is a general breakdown in the exercise of a certain virtue in personal and social life, it ends up causing a number of imbalances, including environmental ones. That is why it is no longer enough to speak only of the integrity of ecosystems. We have to dare to speak of the integrity of human life, of the need to promote and unify all the great values. Once we lose our humility, and become enthralled with the possibility of limitless mastery over everything, we inevitably end up harming society and the environment. It is not easy to promote this kind of healthy humility or happy sobriety when we consider our-

selves autonomous, when we exclude God from our lives or replace him with our own ego, and think that our subjective feelings can define what is right and what is wrong.

225. On the other hand, no one can cultivate a sober and satisfying life without being at peace with him or herself. An adequate understanding of spirituality consists in filling out what we mean by peace, which is much more than the absence of war. Inner peace is closely related to care for ecology and for the common good because, lived out authentically, it is reflected in a balanced lifestyle together with a capacity for wonder which takes us to a deeper understanding of life. Nature is filled with words of love, but how can we listen to them amid constant noise, interminable and nerve-wracking distractions, or the cult of appearances? Many people today sense a profound imbalance which drives them to frenetic activity and makes them feel busy, in a constant hurry which in turn leads them to ride rough-shod over everything around them. This too affects how they treat the environment. An integral ecology includes taking time to recover a serene harmony with creation, reflecting on our lifestyle and our ideals, and contemplating the Creator who lives among us and surrounds us, whose presence “must not be contrived but found, uncovered”.¹⁵⁵

¹⁵⁵ Apostolic Exhortation *Evangelii Gaudium* (24 November 2013), 71: *AAS* 105 (2013), 1050.

226. We are speaking of an attitude of the heart, one which approaches life with serene attentiveness, which is capable of being fully present to someone without thinking of what comes next, which accepts each moment as a gift from God to be lived to the full. Jesus taught us this attitude when he invited us to contemplate the lilies of the field and the birds of the air, or when seeing the rich young man and knowing his restlessness, “he looked at him with love” (*Mk* 10:21). He was completely present to everyone and to everything, and in this way he showed us the way to overcome that unhealthy anxiety which makes us superficial, aggressive and compulsive consumers.

227. One expression of this attitude is when we stop and give thanks to God before and after meals. I ask all believers to return to this beautiful and meaningful custom. That moment of blessing, however brief, reminds us of our dependence on God for life; it strengthens our feeling of gratitude for the gifts of creation; it acknowledges those who by their labours provide us with these goods; and it reaffirms our solidarity with those in greatest need.

V. CIVIC AND POLITICAL LOVE

228. Care for nature is part of a lifestyle which includes the capacity for living together and communion. Jesus reminded us that we have God as our common Father and that this makes

us brothers and sisters. Fraternal love can only be gratuitous; it can never be a means of repaying others for what they have done or will do for us. That is why it is possible to love our enemies. This same gratuitousness inspires us to love and accept the wind, the sun and the clouds, even though we cannot control them. In this sense, we can speak of a “universal fraternity”.

229. We must regain the conviction that we need one another, that we have a shared responsibility for others and the world, and that being good and decent are worth it. We have had enough of immorality and the mockery of ethics, goodness, faith and honesty. It is time to acknowledge that light-hearted superficiality has done us no good. When the foundations of social life are corroded, what ensues are battles over conflicting interests, new forms of violence and brutality, and obstacles to the growth of a genuine culture of care for the environment.

230. Saint Therese of Lisieux invites us to practise the little way of love, not to miss out on a kind word, a smile or any small gesture which sows peace and friendship. An integral ecology is also made up of simple daily gestures which break with the logic of violence, exploitation and selfishness. In the end, a world of exacerbated consumption is at the same time a world which mistreats life in all its forms.

231. Love, overflowing with small gestures of mutual care, is also civic and political, and

it makes itself felt in every action that seeks to build a better world. Love for society and commitment to the common good are outstanding expressions of a charity which affects not only relationships between individuals but also “macro-relationships, social, economic and political ones”.¹⁵⁶ That is why the Church set before the world the ideal of a “civilization of love”.¹⁵⁷ Social love is the key to authentic development: “In order to make society more human, more worthy of the human person, love in social life – political, economic and cultural – must be given renewed value, becoming the constant and highest norm for all activity”.¹⁵⁸ In this framework, along with the importance of little everyday gestures, social love moves us to devise larger strategies to halt environmental degradation and to encourage a “culture of care” which permeates all of society. When we feel that God is calling us to intervene with others in these social dynamics, we should realize that this too is part of our spirituality, which is an exercise of charity and, as such, matures and sanctifies us.

232. Not everyone is called to engage directly in political life. Society is also enriched by a countless array of organizations which work to

¹⁵⁶ BENEDICT XVI, Encyclical Letter *Caritas in Veritate* (29 June 2009) 2: *AAS* 101 (2009), 642.

¹⁵⁷ PAUL VI, *Message for the 1977 World Day of Peace*. *AAS* 68 (1976), 709.

¹⁵⁸ PONTIFICAL COUNCIL FOR JUSTICE AND PEACE, *Compendium of the Social Doctrine of the Church*, 582.

promote the common good and to defend the environment, whether natural or urban. Some, for example, show concern for a public place (a building, a fountain, an abandoned monument, a landscape, a square), and strive to protect, restore, improve or beautify it as something belonging to everyone. Around these community actions, relationships develop or are recovered and a new social fabric emerges. Thus, a community can break out of the indifference induced by consumerism. These actions cultivate a shared identity, with a story which can be remembered and handed on. In this way, the world, and the quality of life of the poorest, are cared for, with a sense of solidarity which is at the same time aware that we live in a common home which God has entrusted to us. These community actions, when they express self-giving love, can also become intense spiritual experiences.

VI. SACRAMENTAL SIGNS AND THE CELEBRATION OF REST

233. The universe unfolds in God, who fills it completely. Hence, there is a mystical meaning to be found in a leaf, in a mountain trail, in a dewdrop, in a poor person's face.¹⁵⁹ The ideal is

¹⁵⁹ The spiritual writer Ali al-Khawas stresses from his own experience the need not to put too much distance between the creatures of the world and the interior experience of God. As he puts it: "Prejudice should not have us criticize those who seek ecstasy in music or poetry. There is a subtle mystery in

not only to pass from the exterior to the interior to discover the action of God in the soul, but also to discover God in all things. Saint Bonaventure teaches us that “contemplation deepens the more we feel the working of God’s grace within our hearts, and the better we learn to encounter God in creatures outside ourselves”.¹⁶⁰

234. Saint John of the Cross taught that all the goodness present in the realities and experiences of this world “is present in God eminently and infinitely, or more properly, in each of these sublime realities is God”.¹⁶¹ This is not because the finite things of this world are really divine, but because the mystic experiences the intimate connection between God and all beings, and thus feels that “all things are God”.¹⁶² Standing awe-struck before a mountain, he or she cannot separate this experience from God, and perceives that the interior awe being lived has to be entrusted to the Lord: “Mountains have heights and they are plentiful, vast, beautiful, graceful, bright and fragrant. These mountains are what my Beloved is to me. Lonely valleys are quiet, pleasant, cool,

each of the movements and sounds of this world. The initiate will capture what is being said when the wind blows, the trees sway, water flows, flies buzz, doors creak, birds sing, or in the sound of strings or flutes, the sighs of the sick, the groans of the afflicted...” (EVA DE VITRAY-MEYEROVITCH [ed.], *Anthologie du soufisme*, Paris 1978, 200).

¹⁶⁰ *In II Sent.*, 23, 2, 3.

¹⁶¹ *Cántico Espiritual*, XIV, 5.

¹⁶² *Ibid.*

shady and flowing with fresh water; in the variety of their groves and in the sweet song of the birds, they afford abundant recreation and delight to the senses, and in their solitude and silence, they refresh us and give rest. These valleys are what my Beloved is to me”.¹⁶³

235. The Sacraments are a privileged way in which nature is taken up by God to become a means of mediating supernatural life. Through our worship of God, we are invited to embrace the world on a different plane. Water, oil, fire and colours are taken up in all their symbolic power and incorporated in our act of praise. The hand that blesses is an instrument of God’s love and a reflection of the closeness of Jesus Christ, who came to accompany us on the journey of life. Water poured over the body of a child in Baptism is a sign of new life. Encountering God does not mean fleeing from this world or turning our back on nature. This is especially clear in the spirituality of the Christian East. “Beauty, which in the East is one of the best loved names expressing the divine harmony and the model of humanity transfigured, appears everywhere: in the shape of a church, in the sounds, in the colours, in the lights, in the scents”.¹⁶⁴ For Christians, all the creatures of the material universe find their

¹⁶³ *Ibid.*, XIV, 6-7.

¹⁶⁴ JOHN PAUL II, Apostolic Letter *Orientalis Lumen* (2 May 1995), 11: *AAS* 87 (1995), 757.

true meaning in the incarnate Word, for the Son of God has incorporated in his person part of the material world, planting in it a seed of definitive transformation. “Christianity does not reject matter. Rather, bodiliness is considered in all its value in the liturgical act, whereby the human body is disclosed in its inner nature as a temple of the Holy Spirit and is united with the Lord Jesus, who himself took a body for the world’s salvation”.¹⁶⁵

236. It is in the Eucharist that all that has been created finds its greatest exaltation. Grace, which tends to manifest itself tangibly, found unsurpassable expression when God himself became man and gave himself as food for his creatures. The Lord, in the culmination of the mystery of the Incarnation, chose to reach our intimate depths through a fragment of matter. He comes not from above, but from within, he comes that we might find him in this world of ours. In the Eucharist, fullness is already achieved; it is the living centre of the universe, the overflowing core of love and of inexhaustible life. Joined to the incarnate Son, present in the Eucharist, the whole cosmos gives thanks to God. Indeed the Eucharist is itself an act of cosmic love: “Yes, cosmic! Because even when it is celebrated on the humble altar of a country church, the Eucharist is always in some way celebrated on the al-

¹⁶⁵ *Ibid.*

tar of the world”.¹⁶⁶ The Eucharist joins heaven and earth; it embraces and penetrates all creation. The world which came forth from God’s hands returns to him in blessed and undivided adoration: in the bread of the Eucharist, “creation is projected towards divinization, towards the holy wedding feast, towards unification with the Creator himself”.¹⁶⁷ Thus, the Eucharist is also a source of light and motivation for our concerns for the environment, directing us to be stewards of all creation.

237. On Sunday, our participation in the Eucharist has special importance. Sunday, like the Jewish Sabbath, is meant to be a day which heals our relationships with God, with ourselves, with others and with the world. Sunday is the day of the Resurrection, the “first day” of the new creation, whose first fruits are the Lord’s risen humanity, the pledge of the final transfiguration of all created reality. It also proclaims “man’s eternal rest in God”.¹⁶⁸ In this way, Christian spirituality incorporates the value of relaxation and festivity. We tend to demean contemplative rest as something unproductive and unnecessary, but this is to do away with the very thing which is most important about work: its meaning. We

¹⁶⁶ ID., Encyclical Letter *Ecclesia de Eucharistia* (17 April 2003), 8: *AAS* 95 (2003), 438.

¹⁶⁷ BENEDICT XVI, *Homily for the Mass of Corpus Domini* (15 June 2006): *AAS* 98 (2006), 513.

¹⁶⁸ *Catechism of the Catholic Church*, 2175.

are called to include in our work a dimension of receptivity and gratuity, which is quite different from mere inactivity. Rather, it is another way of working, which forms part of our very essence. It protects human action from becoming empty activism; it also prevents that unfettered greed and sense of isolation which make us seek personal gain to the detriment of all else. The law of weekly rest forbade work on the seventh day, “so that your ox and your donkey may have rest, and the son of your maidservant, and the stranger, may be refreshed” (*Ex* 23:12). Rest opens our eyes to the larger picture and gives us renewed sensitivity to the rights of others. And so the day of rest, centred on the Eucharist, sheds its light on the whole week, and motivates us to greater concern for nature and the poor.

VII. THE TRINITY AND THE RELATIONSHIP BETWEEN CREATURES

238. The Father is the ultimate source of everything, the loving and self-communicating foundation of all that exists. The Son, his reflection, through whom all things were created, united himself to this earth when he was formed in the womb of Mary. The Spirit, infinite bond of love, is intimately present at the very heart of the universe, inspiring and bringing new pathways. The world was created by the three Persons acting as a single divine principle, but each one of them performed this common work in accord-

ance with his own personal property. Consequently, “when we contemplate with wonder the universe in all its grandeur and beauty, we must praise the whole Trinity”.¹⁶⁹

239. For Christians, believing in one God who is trinitarian communion suggests that the Trinity has left its mark on all creation. Saint Bonaventure went so far as to say that human beings, before sin, were able to see how each creature “testifies that God is three”. The reflection of the Trinity was there to be recognized in nature “when that book was open to man and our eyes had not yet become darkened”.¹⁷⁰ The Franciscan saint teaches us that *each creature bears in itself a specifically Trinitarian structure*, so real that it could be readily contemplated if only the human gaze were not so partial, dark and fragile. In this way, he points out to us the challenge of trying to read reality in a Trinitarian key.

240. The divine Persons are subsistent relations, and the world, created according to the divine model, is a web of relationships. Creatures tend towards God, and in turn it is proper to every living being to tend towards other things, so that throughout the universe we can find any number of constant and secretly interwoven re-

¹⁶⁹ JOHN PAUL II, *Catechesis* (2 August 2000), 4: *Insegnamenti* 23/2 (2000), 112.

¹⁷⁰ *Quaest. Disp. de Myst. Trinitatis*, 1, 2 concl.

relationships.¹⁷¹ This leads us not only to marvel at the manifold connections existing among creatures, but also to discover a key to our own fulfillment. The human person grows more, matures more and is sanctified more to the extent that he or she enters into relationships, going out from themselves to live in communion with God, with others and with all creatures. In this way, they make their own that trinitarian dynamism which God imprinted in them when they were created. Everything is interconnected, and this invites us to develop a spirituality of that global solidarity which flows from the mystery of the Trinity.

VIII. QUEEN OF ALL CREATION

241. Mary, the Mother who cared for Jesus, now cares with maternal affection and pain for this wounded world. Just as her pierced heart mourned the death of Jesus, so now she grieves for the sufferings of the crucified poor and for the creatures of this world laid waste by human power. Completely transfigured, she now lives with Jesus, and all creatures sing of her fairness. She is the Woman, “clothed in the sun, with the moon under her feet, and on her head a crown of twelve stars” (*Rev* 12:1). Carried up into heaven, she is the Mother and Queen of all creation. In her glorified body, together with the Risen Christ, part of creation has reached the fullness of its beauty. She

¹⁷¹ Cf. THOMAS AQUINAS, *Summa Theologiae*, I, q. 11, art. 3; q. 21, art. 1, ad 3; q. 47, art. 3.

treasures the entire life of Jesus in her heart (cf. *Lk* 2:19,51), and now understands the meaning of all things. Hence, we can ask her to enable us to look at this world with eyes of wisdom.

242. At her side in the Holy Family of Nazareth, stands the figure of Saint Joseph. Through his work and generous presence, he cared for and defended Mary and Jesus, delivering them from the violence of the unjust by bringing them to Egypt. The Gospel presents Joseph as a just man, hard-working and strong. But he also shows great tenderness, which is not a mark of the weak but of those who are genuinely strong, fully aware of reality and ready to love and serve in humility. That is why he was proclaimed custodian of the universal Church. He too can teach us how to show care; he can inspire us to work with generosity and tenderness in protecting this world which God has entrusted to us.

IX. BEYOND THE SUN

243. At the end, we will find ourselves face to face with the infinite beauty of God (cf. *1 Cor* 13:12), and be able to read with admiration and happiness the mystery of the universe, which with us will share in unending plenitude. Even now we are journeying towards the sabbath of eternity, the new Jerusalem, towards our common home in heaven. Jesus says: "I make all things new" (*Rev* 21:5). Eternal life will be a shared experience of

awe, in which each creature, resplendently transfigured, will take its rightful place and have something to give those poor men and women who will have been liberated once and for all.

244. In the meantime, we come together to take charge of this home which has been entrusted to us, knowing that all the good which exists here will be taken up into the heavenly feast. In union with all creatures, we journey through this land seeking God, for “if the world has a beginning and if it has been created, we must enquire who gave it this beginning, and who was its Creator”.¹⁷² Let us sing as we go. May our struggles and our concern for this planet never take away the joy of our hope.

245. God, who calls us to generous commitment and to give him our all, offers us the light and the strength needed to continue on our way. In the heart of this world, the Lord of life, who loves us so much, is always present. He does not abandon us, he does not leave us alone, for he has united himself definitively to our earth, and his love constantly impels us to find new ways forward. *Praise be to him!*

* * *

246. At the conclusion of this lengthy reflection which has been both joyful and troubling, I pro-

¹⁷² BASIL THE GREAT, *Hom. in Hexaemeron*, I, 2, 6: PG 29, 8.

pose that we offer two prayers. The first we can share with all who believe in a God who is the all-powerful Creator, while in the other we Christians ask for inspiration to take up the commitment to creation set before us by the Gospel of Jesus.

A prayer for our earth

All-powerful God,
you are present in the whole universe
and in the smallest of your creatures.
You embrace with your tenderness all that exists.
Pour out upon us the power of your love,
that we may protect life and beauty.
Fill us with peace, that we may live
as brothers and sisters, harming no one.
O God of the poor,
help us to rescue the abandoned
and forgotten of this earth,
so precious in your eyes.
Bring healing to our lives,
that we may protect the world and not prey on it,
that we may sow beauty,
not pollution and destruction.
Touch the hearts
of those who look only for gain
at the expense of the poor and the earth.
Teach us to discover the worth of each thing,
to be filled with awe and contemplation,
to recognize that we are profoundly united
with every creature
as we journey towards your infinite light.
We thank you for being with us each day.

Encourage us, we pray, in our struggle
for justice, love and peace.

A Christian prayer in union with creation

Father, we praise you with all your creatures.
They came forth from your all-powerful hand;
they are yours, filled with your presence and your
tender love.

Praise be to you!

Son of God, Jesus,
through you all things were made.
You were formed in the womb of Mary our
Mother,
you became part of this earth,
and you gazed upon this world with human eyes.
Today you are alive in every creature
in your risen glory.

Praise be to you!

Holy Spirit, by your light
you guide this world towards the Father's love
and accompany creation as it groans in travail.
You also dwell in our hearts
and you inspire us to do what is good.

Praise be to you!

Triune Lord,
wondrous community of infinite love,
teach us to contemplate you
in the beauty of the universe,
for all things speak of you.
Awaken our praise and thankfulness

for every being that you have made.
Give us the grace to feel profoundly joined
to everything that is.

God of love, show us our place in this world
as channels of your love
for all the creatures of this earth,
for not one of them is forgotten in your sight.
Enlighten those who possess power and money
that they may avoid the sin of indifference,
that they may love the common good,
advance the weak,
and care for this world in which we live.
The poor and the earth are crying out.
O Lord, seize us with your power and light,
help us to protect all life,
to prepare for a better future,
for the coming of your Kingdom
of justice, peace, love and beauty.
Praise be to you!
Amen.

Given in Rome at Saint Peter's on 24 May,
the Solemnity of Pentecost, in the year 2015, the
third of my Pontificate.

Franciscus

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Jessica Bacher is the Executive Director of the Land Use Law Center. Established in 1993, the Land Use Law Center is dedicated to fostering the development of sustainable communities and regions through the promotion of innovative land use strategies and dispute resolution techniques. As the Executive Director, Ms. Bacher's responsibilities include development and implementation of projects relating to local land use practice, energy siting, distressed property remediation, transit-oriented development, sustainable communities, land use responses to sea level rise, and code enforcement, as well as providing strategic assistance to numerous municipalities. Most recently, she led the City of Newburgh, New York, in the development of a distressed property remediation implementation plan that focuses on the creation of a land bank. Additionally, Ms. Bacher serves as a trainer for the Center's award-winning Land Use Leadership Alliance Training Program that has educated over 2,500 local leaders in land use strategies, consensus building, and regional stewardship. Ms. Bacher also is Chair of the Land Use Planning & Zoning Committee for the American Bar Association's Section of State and Local Government Law and chairs its Distressed Properties Sub-Committee. At Pace Law School, Ms. Bacher serves as adjunct professor, teaching Land Use Law, Sustainable Development Survey, and the Advanced Land Use and Sustainable Development Seminar. She also administers the Center's academic programs and guides student research. In addition, she is a Clinic Lecturer at Yale School of Forestry and Environmental Studies, where she manages the School's Land Use Clinic. Ms. Bacher authors regular land use features in New York and national publications and has edited numerous small books in the fields of Land Use and Real Estate Law, including *Breaking Ground* and *Planning and Building in Priority Growth Districts*. She also presents at regional and national conferences and served on the New York State Sea Level Rise Task Force Legal Work Group. Ms. Bacher was selected by the American Bar Association to receive the Jefferson B. Fordham Award, an award presented to a young practitioner who has shown great promise through her contributions to the field. Ms. Bacher received her J.D. *summa cum laude* from Pace Law School in 2003, along with a certificate in Environmental Law.

Biography of Philip Bein

Philip Bein is the Watershed Inspector General for the New York City Watershed. He is a joint-appointee of New York's Attorney General and Governor, working within the New York State Attorney General's Office. In this position he litigates and makes policy recommendations to help protect the City's watershed, which provides drinking water to nine million New Yorkers. His cases include enforcement actions and impact litigation on behalf of the State to protect water quality both within and outside of the New York City Watershed. *See, e.g., State v. Prato*, 45 Misc. 3d 722 (Sup. Ct. Putnam Cty. 2014) (cleanup of City's Croton Falls Reservoir and adjacent land); *Catskill Mountain Chapter of Trout Unlimited v. EPA*, 8 F. Supp. 3d 500 (S.D.N.Y. 2014) (leading coalition of nine states in successful challenge to EPA's water transfers rule); *Coalition of Watershed Towns v. EPA*, 552 F.3d 216 (2d Cir. 2008) (upholding filtration avoidance determination for New York City's Cat-Del water supply system). Mr. Bein was the recipient of the Louis J. Lefkowitz Memorial Group Award for leading ten enforcement actions to restore the Bronx River's water quality. *See State of New York v. City of Yonkers*, 2004 WL 5213504 (Sup. Ct. Westchester Cty. 2004), *aff'd*, 35 A.D. 2d 719 (2d Dep't 2006). He has practiced environmental law in the Attorney General's Office since 1999. Mr. Bein received his JD from the New York University School of Law, an MS in economics from the Massachusetts Institute of Technology, and a BA from Haverford College.

Lt. Liza-J Bobseine is a Supervising Environmental Conservation Officer for the New York State Department of Environmental Conservation assigned to Region 2. She has been with the Division of Law Enforcement for nine years and has been a Supervisor in New York City for three years, currently handling Brooklyn and Manhattan. She is the lead instructor for the Department's Environmental Conservation Law (ECL) Fish & Wildlife Instructor Team. She received her Master's of Science in Natural Resource Management from the State University of New York College of Environmental Science and Forestry in Syracuse, New York.

Susan Brailey

Ms. Brailey served as an Assistant District Attorney in Westchester County for thirty one years, spending twenty five years in the Investigations Division. She began prosecuting environmental criminal cases in the early 1990's and was assigned to the Environmental Crimes Unit upon its formation in 1994. She served as the Chief of the Environmental Crimes Unit from 1996 until her retirement. She received her JD from Loyola University School of Law in 1979. She is in private practice in Katonah, New York.

Dan Chorost

Dan is an environmental and commercial litigator. His expertise also includes environmental impact review, compliance, enforcement and auditing.

Dan represents clients in a wide variety of disputes before federal, state and local trial and appellate courts and before administrative bodies. He regularly litigates complex Superfund matters, including throughout Long Island and along New Jersey's Passaic River. On behalf of the Town of Cortlandt, Dan blocked construction of a natural gas pipeline through critical environmental areas of Westchester County. He also successfully defended legal challenges to the environmental reviews of major developments including Brooklyn's Atlantic Yards/Barclays Center, Columbia University's expansion in Manhattanville and the renovation of Manhattan's Seventh Regiment Armory.

Dan's other litigation experience includes: prevailing in a breach of contract trial for Domino Sugar and securing the maximum possible money judgment; successfully suing a federal agency under the Administrative Procedure Act to strike down its guidance as improper rulemaking; bringing RCRA imminent and substantial endangerment claims on behalf of municipal water suppliers and building tenants; and representing clients in New York Navigation Law lawsuits arising out of petroleum spills. He also has resolved disputes through mediation and arbitration.

Dan also counsels property owners and developers on all aspects of developing or renovating real estate, from environmental due diligence and property acquisition through remediation and permitting. In this capacity, he advises on the required level and scope of environmental review under the State Environmental Quality Review Act and the National Environmental Policy Act, and interfaces with consultants and local counsel on the preparation of key documents such as environmental impact statements and agency SEQRA and NEPA findings.

Dan advises clients on environmental reviews for projects large and small, including the Barclays Center and Columbia University projects, and the formerly-proposed NASCAR Speedway on Staten Island. He also counselled a major New York City museum on historic preservation issues in connection with its renovation. Dan advises clients regarding compliance with environmental statutes, regulations, and permits pertaining to air and water discharges, petroleum bulk storage, spill control plans, and port security measures; he also regularly defends clients in regulatory enforcement proceedings. Dan oversees audits of hazardous waste, water, air, and chemical and petroleum storage programs, and advises clients on complying with "green building" requirements and incentives. He writes and lectures on Superfund, brownfields redevelopment, and other issues.

Before joining SPR in 2002, Dan clerked for a United States District Court judge, and practiced as a litigator at Schulte Roth & Zabel and at Hogan Lovells (then Squadron Ellenoff Plesant & Sheinfeld). He has been a SPR principal since 2007.

Dan is SPR's Hiring Partner and oversees the firm's Summer Associate Program.



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Alita J. Giuda is a member of the Firm's Oil and Gas, Environmental, Commercial Litigation and Land Use, Zoning and Real Estate Development practice groups.

Ms. Giuda has experience representing various commercial and industrial clients, including operators of solid waste management facilities, railroad operators, developers, oil and gas companies, governmental entities, and various businesses in a number of areas of environmental law, including the New York State Environmental Quality Review Act, the Clean Water Act, the New York State Brownfield Cleanup Program, New York's solid waste management facility program, and other state and federal environmental and regulatory programs.

She has previously advised clients on a number of permitting and land use matters, including evaluating applicable zoning requirements, developing strategy, and drafting zoning amendments to accommodate client needs. She is also experienced in representation of the oil and gas industry, including regulatory proceedings, pipeline issues, as well as an in depth knowledge of the environmental issues and regulatory requirements related to oil and gas development.

In her environmental and regulatory work, Alita regularly advises clients with respect to satisfying the numerous procedural and substantive environmental and land use requirements associated with developing projects ranging from state or county-wide E-911 communications systems, mixed use development projects, retail projects, and others. Additionally, Alita has represented clients in several civil and criminal environmental enforcement matters, including developing appropriate cleanup standards, negotiating Consent Orders with the regulatory agency, and advising clients with respect to ongoing site monitoring and maintenance activities.

Alita also regularly represents clients and is experienced in a wide variety of litigation matters, including both environmental litigation (Article 78 proceedings, declaratory judgments and other relief), as well as complex commercial litigation. She litigates in state and federal court at both the trial and appellate levels on a variety of issues, including contract interpretation, commercial disputes, trade secrets and others. She has successfully represented clients seeking injunctive relief to protect their leasehold via a Yellowstone injunction, as well as to protect trade secrets and confidential information. She also researches and develops litigation strategies to defend SEQRA and/or regulatory approvals, exemptions from local land use regulation, and to oppose unfavorable regulatory proposals, statutes, and other actions.

Undergraduate: Colgate University, B.A., 2002, magna cum laude

Law school: Albany Law School of Union University, J.D., 2006

Court Admissions: New York, Pennsylvania, United States District Court for Northern and Western Districts of New York

Bar Association Memberships: New York State Bar Association, Women's Bar Association of the State of New York, Albany County Bar Association, Rensselaer County Bar Association

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SIVE, PAGET & RIESEL P.C.

OVER FIFTY YEARS OF ENVIRONMENTAL LAW

Devin McDougall



Devin McDougall is an associate attorney at Sive, Paget and Riesel, in New York City, where he has an active practice relating to renewable energy, with an emphasis on photovoltaic generation projects. He has worked on solar projects in New York, Massachusetts, and the Midwest, and is presently advising on a 55-megawatt community solar project in Minnesota. He is also counsel to Sustainable Westchester's Municipal Solar Buyers' Group. Devin's broader practice includes litigation, infrastructure projects, and brownfields redevelopment. He is a member of the New York City Bar Association's Energy Law Committee and a graduate of Columbia Law School and McGill University.

Affiliations

- Member, Committee on Energy Law, New York City Bar Association
- Graduate, New York City Environmental Law Leadership Institute

Publications

- [Regulatory Best Practices For Remediation of Toxic Legacy Contamination](#), co-author, Blacksmith Institute (2013)
- [Storm King environmental law principle at risk after ruling](#), interviewee Devin McDougall, lohud.com (March 30, 2013)
- [Reconciling *Lujan v. Defenders of Wildlife* and *Massachusetts v. EPA* on the Set of Procedural Rights Eligible for Relaxed Article III Standing](#), *Columbia Journal of Environmental Law*, Vol. 37, No. 1 (2012)

Hugh L. McLean

Mr. McLean is an Assistant Attorney General in the NYS Attorney General's Criminal Enforcement and Financial Crimes Bureau and has been prosecuting environmental crimes for more than twenty years. He is also the current chairman of the NYS District Attorneys Association's Environmental Crimes Sub-Committee. He received his J.D. from New York University School of Law in 1986 and an LL.M. in Environmental Law from Pace University School of Law in 1992.



Kathy Robb is a partner in the New York office of Hunton & Williams LLP, where she represents water districts, developers, electric utilities, energy companies, investors, lenders, manufacturers, and paper mills on environmental law issues, including litigation in state and federal district and appellate courts, regulatory and compliance advice, and advice on environmental risks and structuring in complex business transactions. Her focus is on water quality and water supply issues under the Clean Water Act, the Endangered Species Act, NEPA, CERCLA sites with PCB's and other contamination in sediments, and groundwater. She is admitted to practice in the US Supreme Court and the US Court of Appeals for the First, Second, Third, Fifth, Ninth, and Tenth Circuits, where she has represented parties on cases involving the All-American Canal, Glen Canyon Dam, the silvery minnow, and the whooping crane, among others. She is a member of the New York, Virginia, and American Bar Associations, and chaired the ABA's 2014 Water Law Conference. She served on the board of the Environmental Law Institute, where she is now vice-chair of the Leadership Council, and serves on the Advisory Boards of Bloomberg BNA's *Environmental Due Diligence Guide* and Bloomberg BNA's *Water Law and Policy Monitor*. She is a past chair of the Environmental Law Committee of the New York City Bar, and currently serves on the Executive Committee. She also is an adjunct professor at Pace Law School, teaching international environmental law and human rights. She speaks and writes frequently on environmental law.

David Sandbank

Since joining the New York State Energy Research and Development Authority (NYSERDA) to manage New York State's \$1 billion NY-Sun initiative in November 2014, David Sandbank has overseen the largest year-over-year growth of solar in New York State. In addition, he led the design and launch of a comprehensive Community Solar program to reduce the over-all cost of solar in the State and enable access to solar for all New Yorkers. NY-Sun's Community Solar portfolio of Community Distributed Solar, Solarize, Affordable Solar and K-Solar are part of a state-wide approach to build a self-sustaining solar industry by 2023. Prior to joining NYSERDA, Sandbank worked as a solar developer for five years, helping a start-up grow into a \$30 million company. As the first employee of the start-up, Sandbank helped build a staff of more than 100 and oversaw company operations, marketing, engineering and installation teams. He has actively worked with government agencies, policy makers and utility companies to help advance the solar industry in New York and, in November 2013, was elected vice president of the New York Solar Energy Industries Association (NYSEIA), the statewide non-profit membership and trade association dedicated to advancing the solar energy industry in New York State.

LAWRENCE P. SCHNAPF

Lawrence P. Schnapf is an environmental attorney based in New York City and New Jersey with over 30 years of national environmental experience and is the principal of Schnapf LLC. Larry primarily concentrates on environmental risks associated with corporate, real estate and brownfield transactions; commercial financing including asset-based lending, syndicated loans, mezzanine loans and distressed debt; bankruptcy, workouts and corporate restructuring. He has extensive experience with brownfield redevelopment and financing, including representing affordable housing developers and assisting local development corporations or not-for-profit organizations with their brownfield planning programs. Larry also represents clients in federal and state environmental litigation, enforcement actions, administrative proceedings and private cost recovery actions. He has also served as liaison counsel for PRP steering committees.

He has also written numerous articles on environmental law, is the general editor/contributing author of “**Environmental Issues in Business Transactions**” published by the Business Law Section of the ABA and is also the author of “**Managing Environmental Liability in Transactions and Brownfield Redevelopment**” published by JurisLaw Publishing. He is also contributing author for several chapters of “**Brownfield Practice and Law: The Cleanup and Redevelopment of Contaminated Properties**” published by Matthew Bender and the Matthew Bender “**Environmental Law Practice Guide**”.

Larry is the vice-chair of the Environmental Law Section of the New York State Bar Association (NYSBA), co-chair of the NYSBA Brownfield Task Force, and a board member of the NYC Brownfield Partnership. He was also the chair of the Brownfield Committee of the Environmental Business Association of New York from 2002-2008.

He is a past Chair of the ABA Section of Business Law Committee on Environmental, Energy and Natural Resources Law. He is also a member of the board of Bloomfield BNA Environmental Due Diligence Guide and a member of the Society of Environmental Journalists.

Larry has also served on a number of ASTM Task Groups, including Chair of the legal sub-committee for the 2013 revisions to the ASTM E1527 Phase 1 Standard and co-Chair of the legal sub-committee for the ASTM Vapor Intrusion Task Group.

Larry is an adjunct professor of environmental law at New York Law School and a faculty member of the NYLS Center for Real Estate Studies where he teaches “Environmental Issues in Business Transactions,” “Environmental Law and Practice” and a mini-course on “Brownfields Redevelopment”. He was also on the faculty of the Center for Christian Studies at Fifth Avenue Presbyterian Church where he taught “The Bible and the Environment.”

He is listed in the New York Super Lawyers-Metro Edition (2010-2015); the Super Lawyers Business Edition (2011-15); The International Who's Who of Environmental Lawyers (2008-2015) as well as appearing in Chambers USA Client Guide of America's Leading Lawyers for Business. Larry has received the AV® Preeminent Rating from Martindale-Hubbell, the highest possible Peer Review Rating.

You can visit the Schnapf LLC website at www.schnapflaw.com and follow him on the Linked-in Environmental Issues in Business Transactions group (https://www.linkedin.com/groups?viewMembers=&gid=3607181&sik=1428719600979&goback=%2Egmp_3607181).

Noah Shaw is General Counsel of the New York State Energy Research and Development Authority (NYSERDA), a public benefit corporation that advances innovative energy solutions to improve New York State's economy and environment. As General Counsel, Noah is responsible for a broad range of policy, governance, compliance and transactional matters.

Before joining NYSERDA, Noah served as Senior Advisor to the General Counsel at the U.S. Department of Energy (DOE). In that role, he worked closely with the Secretary and his staff, as well as other DOE senior management and officials, advising on a broad range of issues. In particular, his programmatic work focused on the DOE offices of Energy Efficiency and Renewable Energy, the Loan Programs Office and Congressional Affairs. He was a member of the Secretary's Energy Finance Working Group and the Climate Action Plan team; in those roles, he worked within DOE and with interagency partners including the White House Office of Science and Technology Policy and Council on Environmental Quality, the Department of the Treasury, the Securities and Exchange Commission, and the Office of Management and Budget to help provide market certainty and close funding gaps for renewable energy and energy efficiency projects.

Prior to DOE, Noah was a senior associate at the Boston office of Mintz Levin Cohn Ferris Glovsky & Popeo, PC. Mr. Shaw received a bachelor's degree from Brandeis University and his juris doctor degree from Northeastern University School of Law.

Reed Super is the founder and principal of Super Law Group, LLC. Since 1993, Reed has represented non-profit organizations, community groups and citizens in public interest environmental and land use litigation in state and federal courts and before environmental agencies under various federal and state laws. Previously, Reed was the Legal Director for Waterkeeper Alliance, a Senior Clinical Staff Attorney and Lecturer-in-Law at Columbia Law School's Environmental Law Clinic, and a Senior Attorney and the Hudson River program director at (Hudson) Riverkeeper, Inc. In the 1990s, Reed practiced environmental law in San Francisco at Thelen, Marrin, Johnson and Bridges; Sheppard Mullin, Richter and Hampton; Shute, Mihaly & Weinberger; and the Law Office of Reed W. Super. He is a graduate of the University of Virginia School of Law (J.D., 1992), the University of Virginia's Darden School of Business (M.B.A, 1992), and Duke University (A.B., 1985).

Nicholas M. Ward-Willis

Principal Member



Professional Experience

Nicholas Ward-Willis represents businesses, developers, individuals, property managers and public bodies in a variety of land use, real estate and environmental issues, ranging from commercial and real estate transactions to state and federal environmental litigation. Mr. Ward-Willis has extensive experience in negotiating orders on consent with state and federal agencies in a variety of matters, including hazardous waste sites and oil spill sites. In the course of representation of his clients, Mr. Ward-Willis interacts with consultants on oil spills, mold and hazardous waste remediations. He represents private clients before various land use boards and assists the firm's public and private sector clients in complying with the State Environmental Quality Review Act, the New York City Watershed Regulations and other environmental laws.

In addition to processing land use applications on behalf of clients, Mr. Ward-Willis has prosecuted and argued Article 78 cases before trial and appellate courts. He counsels property managers, cooperatives, condominiums, homeowners' associations and municipalities. Mr. Ward-Willis manages the firm's role as City Attorney for the City of Beacon, Dutchess County and, on behalf of the firm, serves as counsel to several planning Boards in Westchester County, including the Village of Rye Brook.

Mr. Ward-Willis joined Keane & Beane following his graduation from law school.

Admissions

- State and Federal Courts of New York
- State and Federal Courts of Connecticut

Professional Associations

- Dutchess County Bar Association
- New York State Bar Association (Co-Chair, Real Property Law Section Committee on Green Real Estate; Member, Executive Council of the Conference of Bar Leaders; Member, Environmental Law Section)
- Westchester County Bar Association
- White Plains Bar Association (Director)

Professional Activities/Publications

Mr. Ward-Willis is a frequent lecturer on land use and environmental issues, including SEQRA, RLUIPA, toxic torts, brownfields and environmental issues for residential real estate attorneys. These seminars have included "The Greening of America's Favorite Pastime – A Discussion of Green Building Techniques Applied to the New York Mets' Construction of Citi Field"; "Federal Stormwater Regulations Under the Clean Water Act" and "Encouraging Sustainable Development Through SEQRA and Land Use Regulations." He also frequently lectures on the laws and regulations of oil storage tanks.

Community Service

Mr. Ward-Willis coaches baseball, soccer and softball in the Town of Somers.

Education

- 1993, J.D., *cum laude*, Pace University School of Law (Member of the *Environmental Law Review*)
- 1993, Environmental Law Certificate, Pace University School of Law
- 1990, B.A., State University of New York at Albany

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Practice Areas

- Environmental Law
- Land Development & Zoning
- Litigation & Dispute Resolution
- Municipal Law
- Real Estate

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Leo Wiegman

Leo Wiegman serves as Executive Director of Sustainable Westchester Inc, a nonprofit representing nearly 40 cities, towns and villages with over 800,000 residents in Westchester County on a broad range of sustainability initiatives. Leo is co-founder and president of Croton Energy Group Inc, a firm that is both a NYSEERDA eligible solar installer and an independent contractor to NYSEERDA providing technical assistance on energy topics for local governments. Leo is co-author of two recent books, *The Climate Solutions Consensus* with David Blockstein and *Heirlooms to Live In* with Mark Hutker on residential architecture, as well as author of dozens of articles on energy policy. Leo also served 3 terms as Mayor and 2 terms as Trustee of the Village of Croton-on-Hudson NY. Previously, he was a book publisher and editor for nearly three decades. He holds BS from Tufts University.