

Unlock energy savings and convert them into
“bankable” income-producing assets.



E-CAPITAL
D E V E L O P M E N T

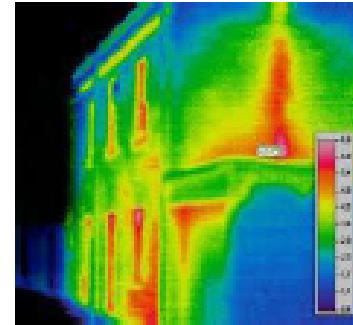
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Energy-Efficiency Projects Are Solid Investments with Desirable Characteristics

- ❖ ROI's are high: 10% to 30% (or more);
- ❖ Payback Periods are relatively short;
- ❖ Payout Periods are relatively long;
- ❖ Yields: Predictable, Measureable, Verifiable;
- ❖ Cash flows: Can be Guaranteed, Insured
- ❖ Credit Enhancement: The retrofit itself makes it easier to pay for the project, while also raising the value of the underlying Real Estate asset;



SIZE MATTERS: The largest impact is often from higher-cost ECM's with longer useful life-cycles and paybacks.



Recommended ECM's	Useful Life (yrs)	ECM Cost	Annual Savings*	Simple Payback (yrs)	Life Cycle Savings	Savings / Cost Ratio
Lighting	7.0	\$ 80,000	\$ 77,500	1.0	\$ 542,500	6.78
BMS (Controls)	12.0	\$ 125,000	\$ 85,000	1.5	\$ 1,020,000	8.16
HVAC System	25.0	\$ 300,000	\$ 78,000	3.8	\$ 1,950,000	6.50
Insulation	20.0	\$ 95,000	\$ 9,500	10.0	\$ 190,000	2.00
Boiler / Heating	30.0	\$ 400,000	\$ 75,000	5.3	\$ 2,250,000	5.63
TOTAL "BUNDLE" OF ECM'S:		\$ 1,000,000	\$ 325,000	3.1	\$ 5,952,500	5.95

Non-Cash Benefits from Retrofits

- ❖ Upgrading to the newer technologies
- ❖ Increased efficiencies in daily operations
- ❖ No disruptions from system breakdowns
- ❖ Better working / tenant conditions
- ❖ Attracting better tenants / higher rents
- ❖ Higher NOI's mean higher RE values

Motivating CEO's & CFO's to do what's best for both themselves and the environment



Sticks and Carrots...

NYC's "Greener, Greater Buildings Plan" (2009)

Local Law 84 – Benchmarking: Requires owners of large buildings (i.e. over 25,000 gross ft.²) to annually measure their energy / water consumption and submit these data to the City.

Local Law 85 - NYC Energy Conservation Code (NYCECC): Requires buildings to meet the most current energy codes for any renovation or alteration project (incl. 2010 Energy Conservation Construction Code of New York State (ECCCNYS), Local Law 85 of 2009, Local Law 48 of 2010 and Local Law 1 of 2011.

Local Law 87: Energy Audits & Retro-Commissioning: Mandates that all large buildings to undergo periodic energy audits, to perform retro-commissioning measures and to submit these data to the City.

Local Law 88 - Lighting Upgrades & Sub-Metering: Requires all large buildings to upgrade their lighting in compliance with NYCECC; to install electrical sub-meters for each non-residential tenant space over 5,000 gross ft.² ; and provide monthly energy statements. The compliance deadline for both the lighting and sub-metering requirements is 2025.

NYC's "Climate Mobilization Act" (2019)

Local Laws 92 & 94 – Green Roofs & Solar PV: Requiring green roofs solar PV systems on certain new construction and renovation projects.

Local Law 95 – Building Labeling: Adjusting metrics used for letter grades assessing building energy performance.

Local Law 96 – PACE: Establishing clean energy financing tools for building owners (more on this below).

Local Law 97 – Emissions Limitations: First-of-its-kind legislation placing emissions limits on NYC's large buildings, both commercial and residential.

Local Law 98 – Wind Energy: Obliging the Department of Buildings to include wind energy generation in its toolbox of renewable energy technologies.

NYC's Local Law 97 – Emissions Limitations

Emissions reduction targets represent a **40% carbon reduction by 2030** and an **80% carbon reduction by 2050** relative to 2005 levels. Limits are assigned according to building occupancy type, with accommodations made for energy-intensive facilities involved in healthcare. Emissions limits for both the first and second compliance periods may be adjusted through the **rulemaking process**. Limits become much more stringent during the second compliance period.

ANNUAL BUILDING EMISSIONS LIMIT 2024-2029		Carbon Limit (KgCO ₂ e/sf)*	
Occupancy Group(s)	Space Use	2024-2029	2030-2034
B- Ambulatory Health	Medical Office, Labs	23.81	11.93
M - Mercantile	Retail	11.81	4.03
I-1 - Facilities	Care & Rehab facilities	11.38	5.98
A - Assembly	Assembly	10.74	4.2
R-1 - Hotel	Hotel	9.87	5.26
B - Business	Office	8.46	4.53
E - Educational & I4 - Custodial Care	School, Daycare	7.58	3.44
R-2 - Residential	Multi family housing	6.75	4.07
F - Factory	Factory	5.74	1.67
S - Storage & U - Utility	Storage/Warehouse	4.26	1.10

*converted from metric tons to kilograms for easier reading

NYC's Local Law 97 – Penalties for Non-Compliance

- Failure to submit an annual report (by a “qualified energy professional”) for a covered building will result in a penalty of \$.50 per square foot for each month the violation is not corrected.
- False reporting will result in a penalty of \$500,000 per violation.
- If your building emissions per square foot in a particular year are higher than the allowable limit set forth in the law, you are subject to a penalty of \$268 per square foot multiplied by the difference between the emissions limit and your reported emissions.

For example, a 1,000,000 square foot commercial office building (group B), has an emissions limit of .00846 tCO₂e/sf/yr in 2024. If the actual reported emissions is .009729 (15% higher), then the annual penalty is \$340,092.

NYC's "Climate Mobilization Act" (2019)

Queens Chamber of Commerce panel on 'Climate Mobilization Act' (7/31/19):

"If you're a building owner here today, and you're worried about fines, I don't want your money. I want your carbon," Councilmember Costa Constantinides told the audience.

Constantinides, who led the charge on the set of climate bills, has made climate change one of his signature issues, and is chair of the Council's Environmental Protection Committee.



NYC's "Climate Mobilization Act" (2019)

These laws are so ambitious, they're sparking an "Energy Gold Rush" and exposing clients to lots of new risks.



Legal and risk management professionals will play a key role in implementing these new laws effectively and safely.

Mitigating Risks and Maximizing Returns

Clients and advisors must focus on:

- ❖ **Upgrading Equipment** (paid for through savings)
- ❖ **Solid Projects** (hard numbers - not “Gut Feel Factor”)
- ❖ **Large Life-Cycle Savings** (vs. Simple Payback)
- ❖ **Investment Returns** (not just the incentives)
- ❖ **Guarantees / Insurance** (protecting the cash flows)
- ❖ **Strong Teams** (Professionals, Contractors, Financiers)



ENERGY PROJECT PERFORMANCE INSURANCE



Hartford Steam Boiler



Munich RE



hannover **re**[®]



Swiss Re



“This is Physics, not Metaphysics”



BENCHMARKING / ASSESSMENTS:

ASTM is an international standards organization that develops and publishes voluntary consensus technical standards for a wide range of materials, products, systems, and services.



METHODS FOR AUDITING / SAVINGS CALCULATIONS:

A.S.H.R.E.A. (American Society of Heating, Refrigeration and Air-Conditioning Engineers)

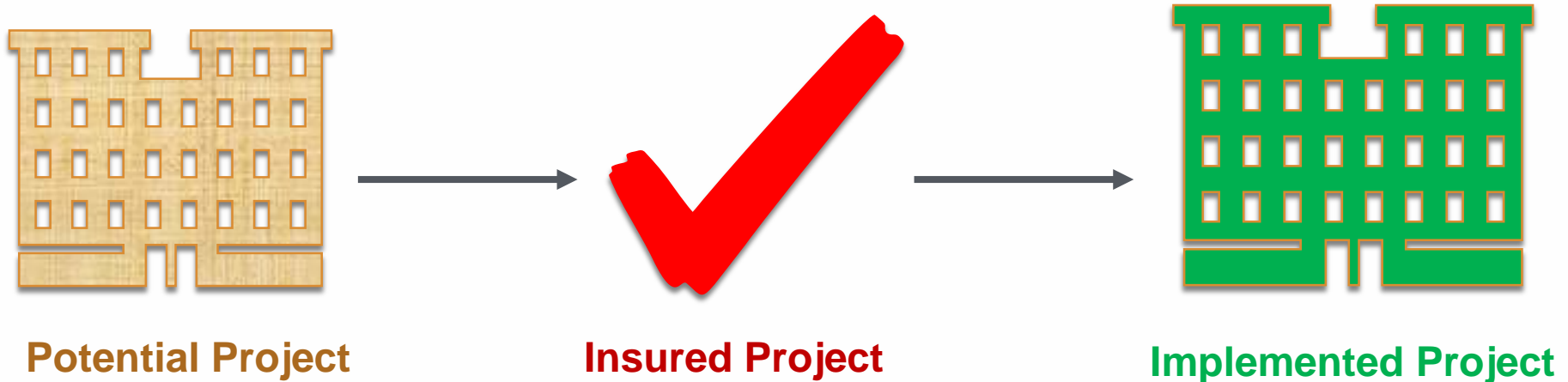


PERFORMANCE MEASUREMENT & VERIFICATION:

International Performance Measurement and Verification Protocol (“IPMVP”)

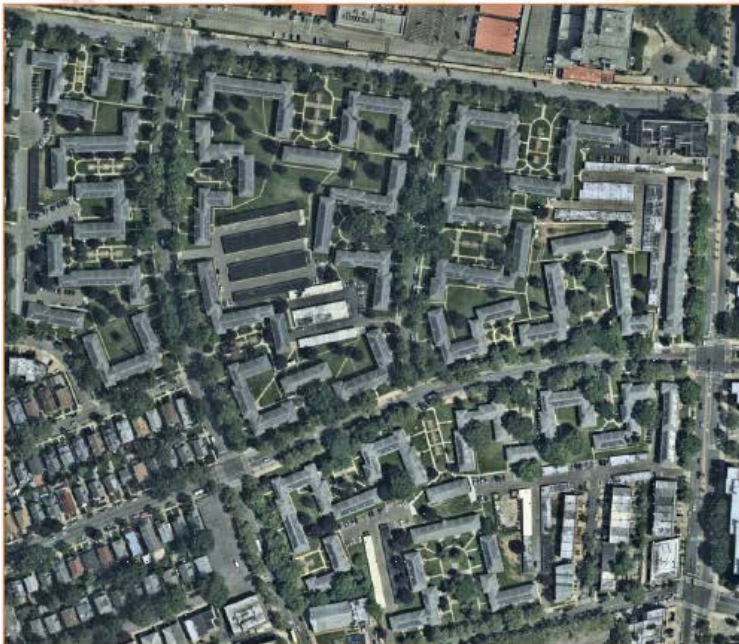
“An Insurable Project is an Investable Project”

- ✓ **Insurer validates project’s economics and engineering**
- ✓ **Large balance sheet to backstop savings guarantees**
- ✓ **Performance shortfalls resolved as insurance claims**
- ✓ **Economic analysis becomes a “Line-Item” Decision**



SOLAR SHORTFALL INSURANCE

Securing a Solar Future for 930 Families



***Georgetown Mews Co-op (Flushing, NY) - 1.55 MW
Backstopped by 5-Year Solar Shortfall Policy***



Energy Services Agreements (ESA's) Portfolio of Small- to Mid-Sized Business

- Install new Energy Management System, lighting, HVAC.
- Systems are connected to the internet and remotely accessible.
- Includes an operating system that learns from its environment.
- Used to maximize systems' performance, efficiency, productivity.
- ECM installations are paid for by rebates and future savings.
- JouleSmart owns the ECM's until fully repaid.
- **No out-of-pocket for owners.**
- **Future savings are guaranteed and insured.**



Local Law 96: P.A.C.E. (Property-Assessed Clean Energy)

City or county creates type of land-secured financing district or similar legal mechanism



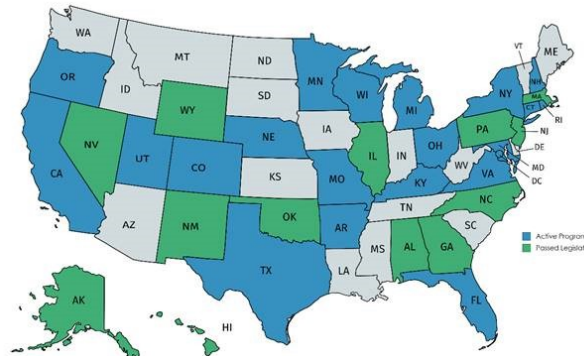
Property owners voluntarily sign-up for financing and make energy improvements



Proceeds from revenue bond or other financing provided to property owner to pay for energy project



Property owner pays assessment through property tax bill (up to 20 years)



Resources

- <https://www1.nyc.gov/site/buildings/codes/local-laws.page>
- <https://be-exchange.org/insight/the-climate-mobilization-act-int-1253/>
- https://dslp.com/content/pdfs/Climate_Mobilization_Act_White_Paper.pdf
- <https://queenseagle.com/all/queens-chamber-of-commerce-hosts-panel-on-climate-mobilization-act>
- <https://www.tandfonline.com/doi/abs/10.1080/10406026.2017.1415074?scroll=top&needAccess=true&journalCode=becj20>
- <https://www.pacenation.org/wp-content/uploads/2018/04/CMBS-Article.pdf>



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