

# SUSTAINABILITY AFTER THE BIG BEAUTIFUL BILL



# THE STONE HOUSE GROUP

BUILDING STEWARDSHIP

**25**  
YEARS

## Who We Are

- **550+** Clients
- **150+** Education Clients
- **26** Years

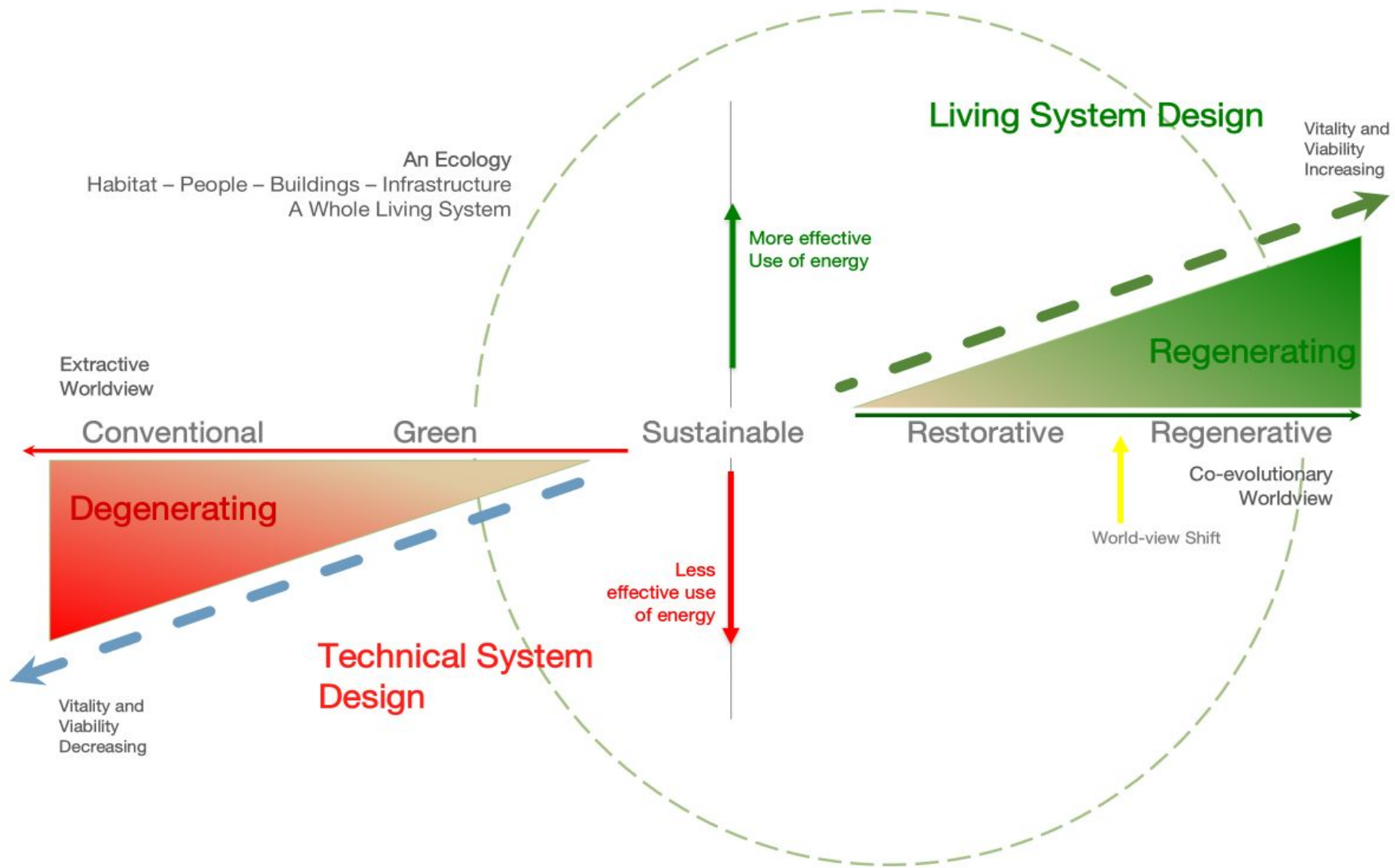
**Bethlehem, PA**  
**Washington, D.C.**

*Strengthening the mission and distinctive needs of academic, not-for-profit and corporate institutions*



Certified  
**B**  
Corporation





### Trajectory of Ecological Design

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# Build a Better Building

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*Improve Planning*



*Lower EUI*



*Lower Cost*



*Know the Market*

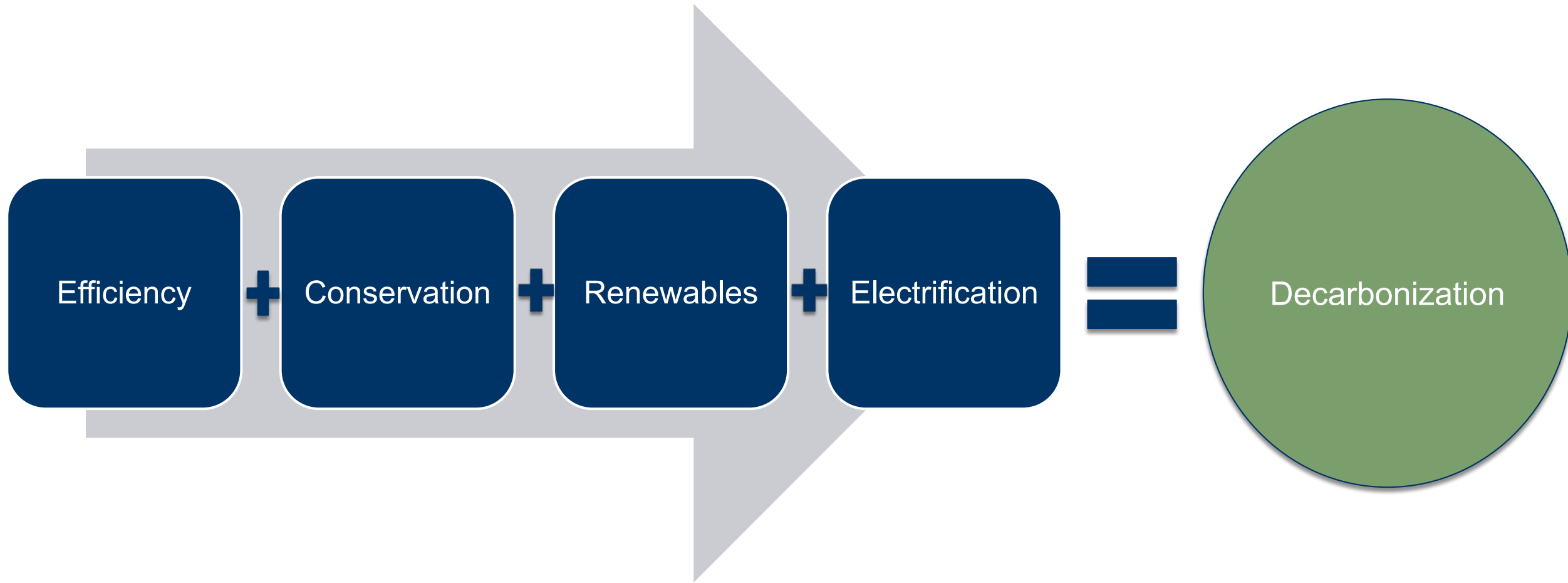


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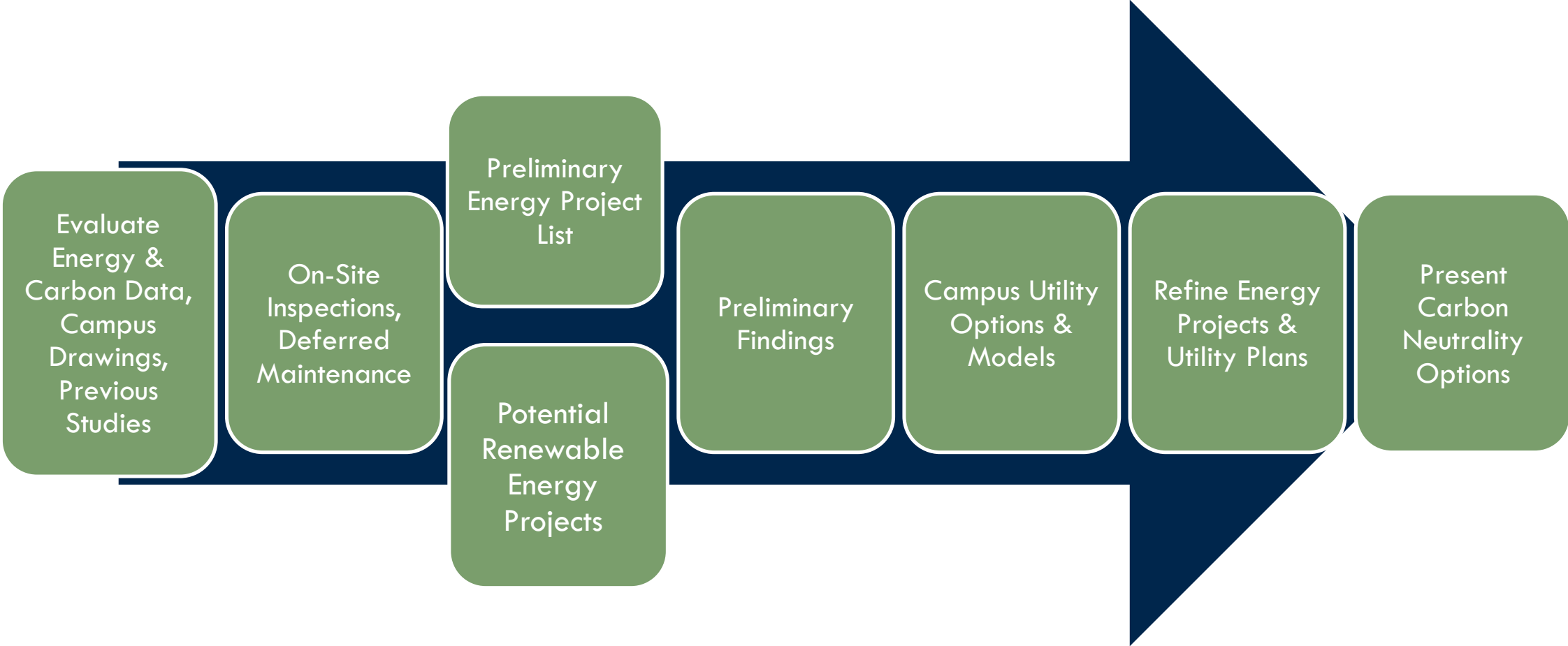
# Improve Planning

# The Decarbonization Equation

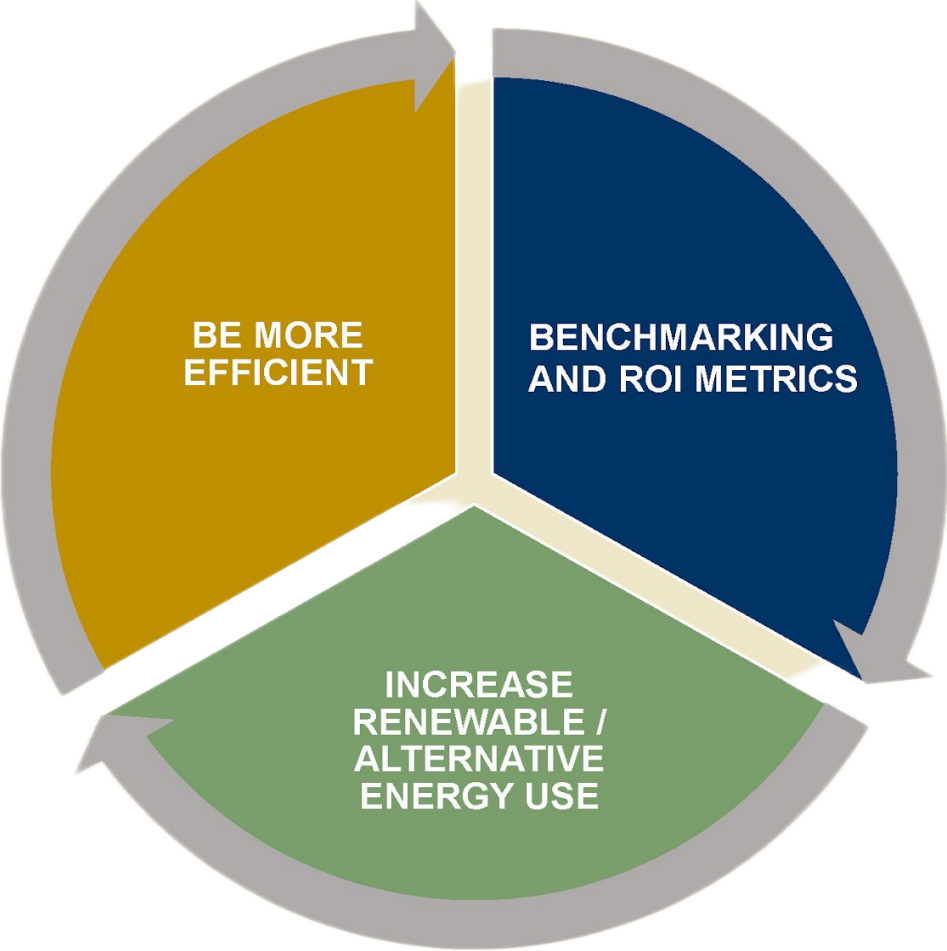
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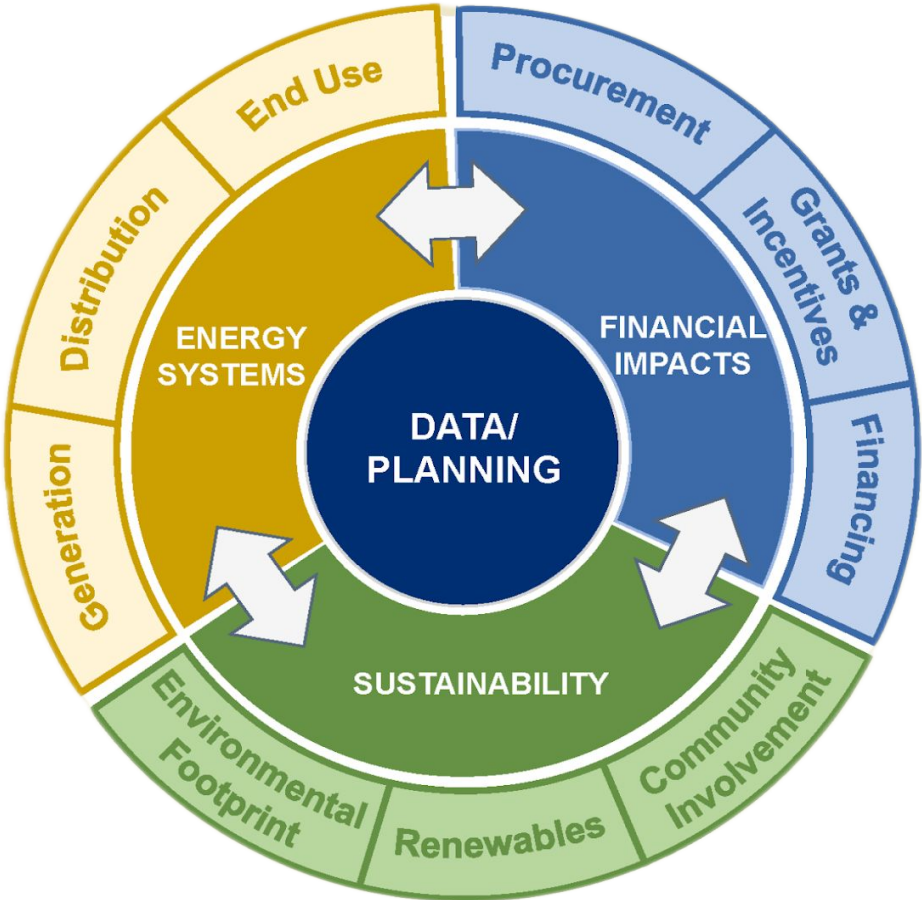
# Utility & Carbon Master Planning Process

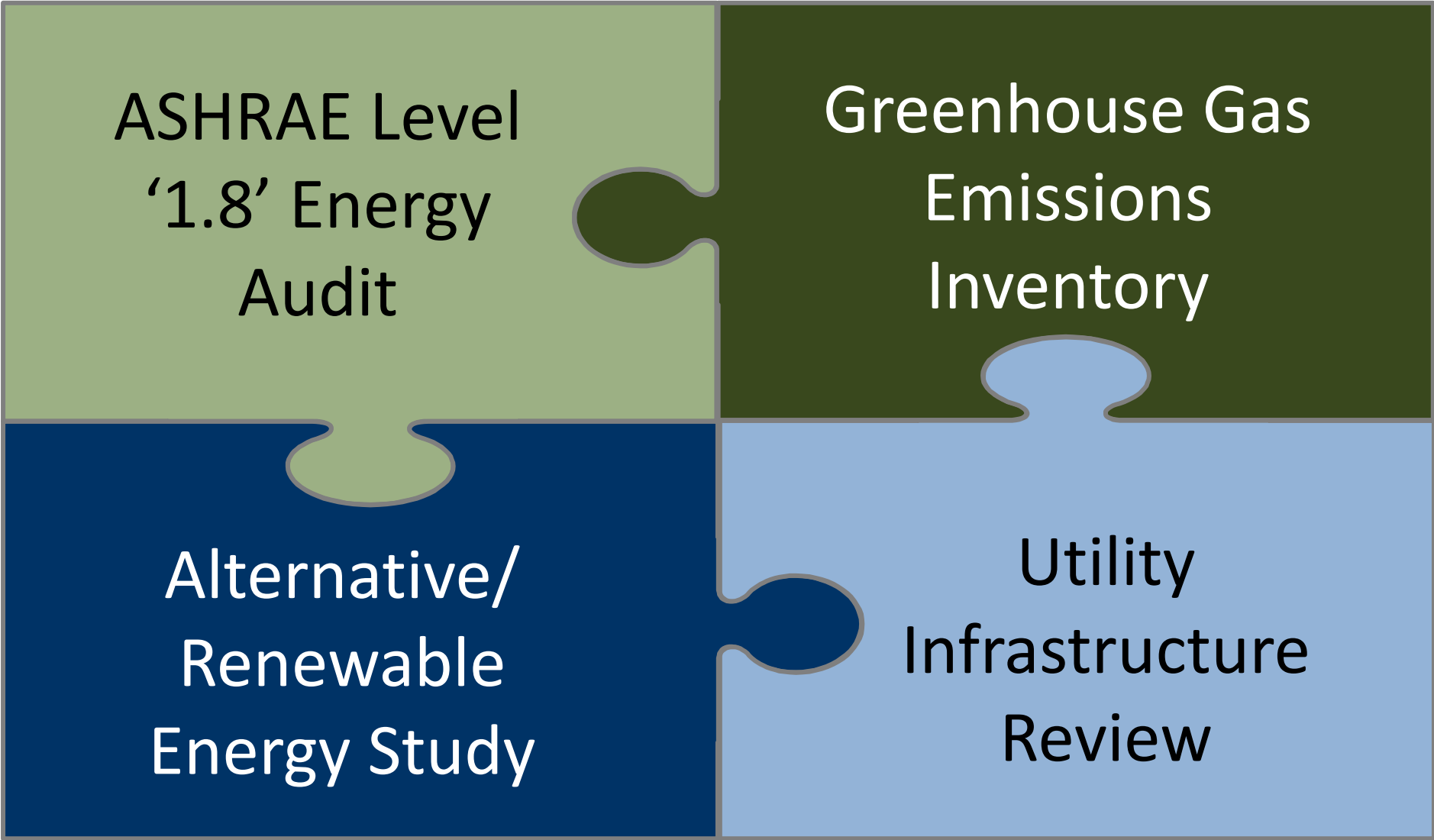


# Goals of the Relationship



# The SHG Approach





ASHRAE Level  
'1.8' Energy  
Audit

Greenhouse Gas  
Emissions  
Inventory

Alternative/  
Renewable  
Energy Study

Utility  
Infrastructure  
Review

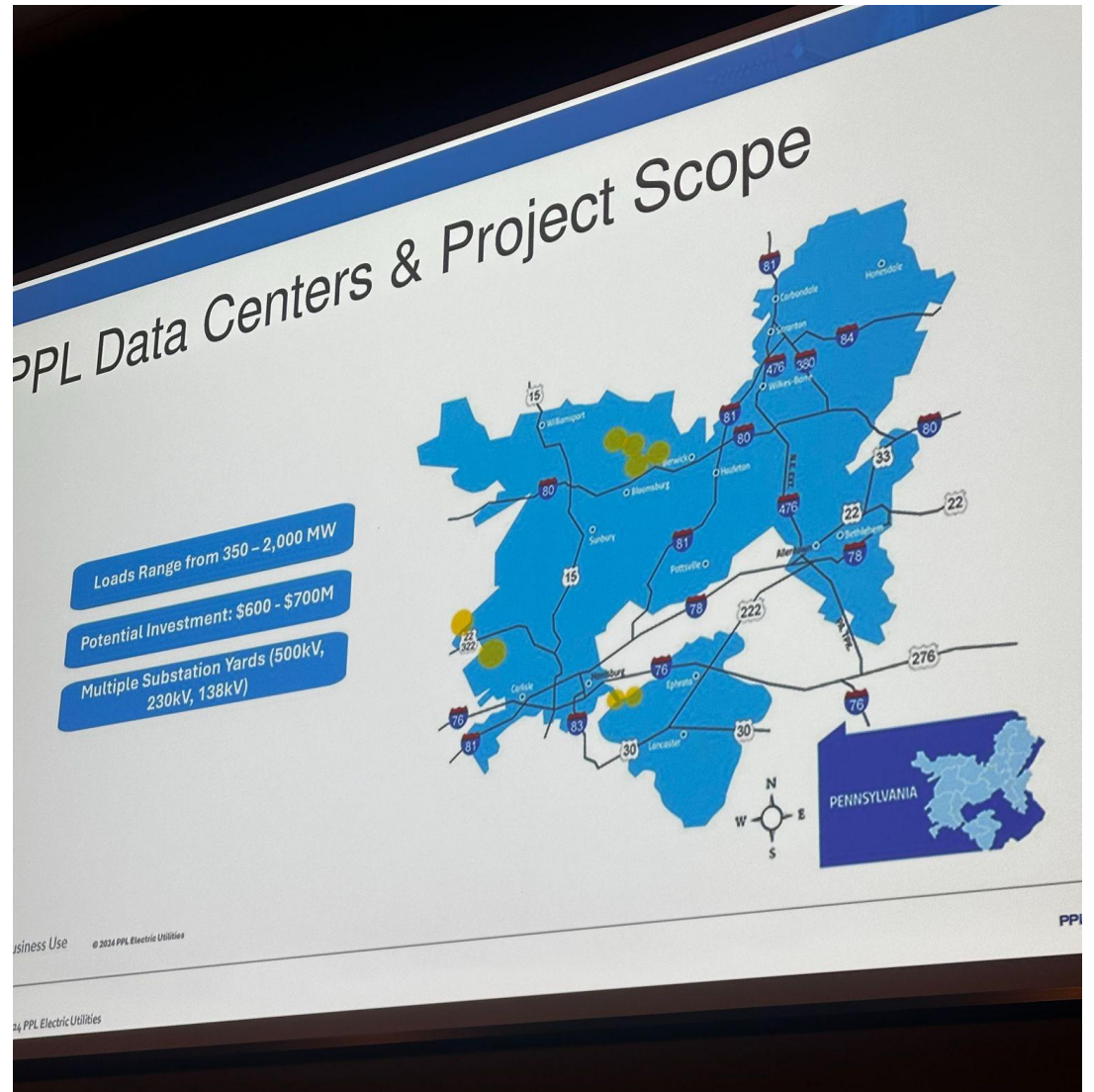
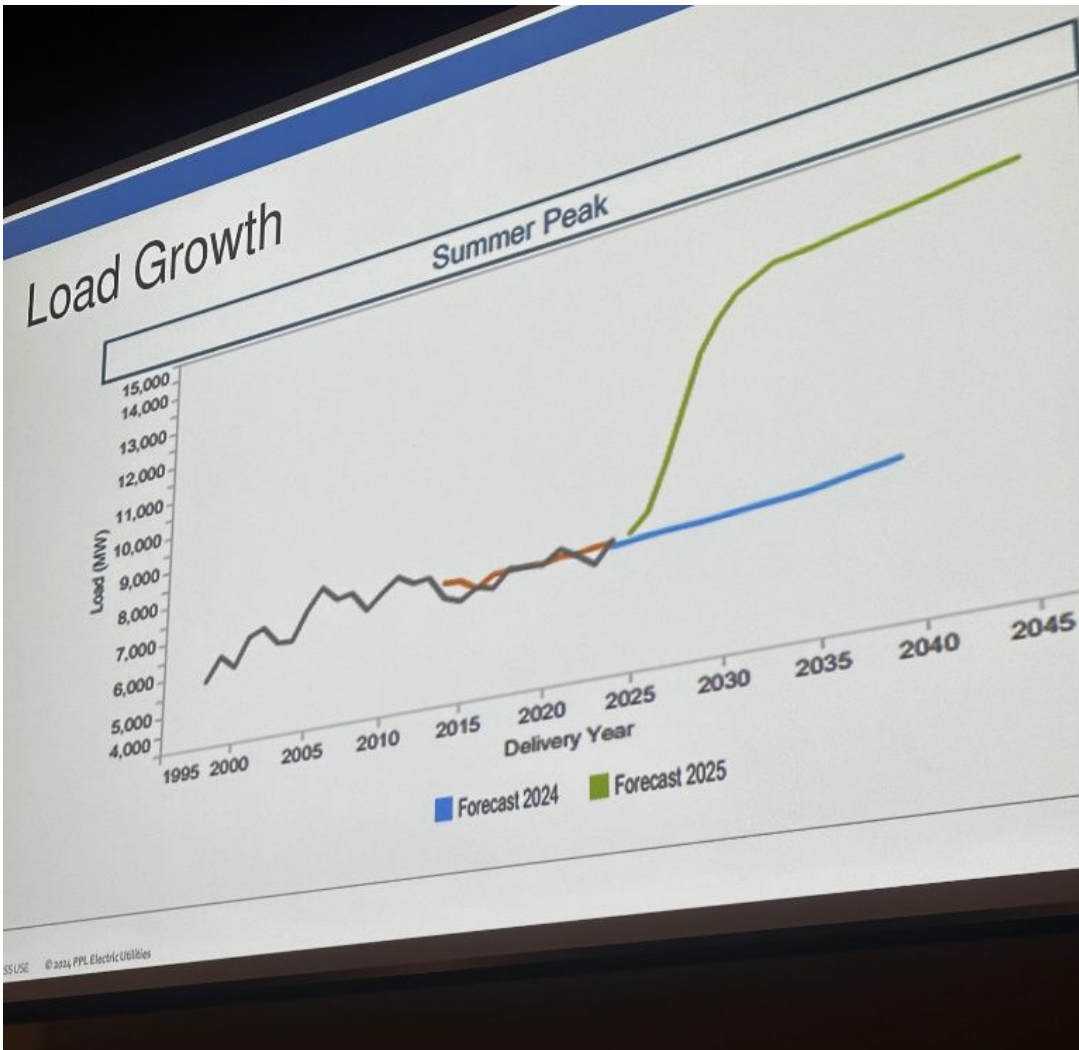
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# Lower Cost

# A “negawatt” is now worth a lot more!

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- Energy rates are anticipated to increase at **twice the rate of inflation**
- Grid modernization efforts and growth of AI / data centers are contributing to this cost increase
- Every kilowatt-hour saved through conservation is now worth twice as much in avoided future costs as it was five years ago



# Market Context

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## ***TierPoint***

- Approved: Breinigsville, 100 MW expansion of existing 16 MW TEK Park



## ***Eli Lilly***

- Announced: Fogelsville, \$3.5B 925k square foot pharmaceutical manufacturing facility



## ***Former Air Products HQ***

- Proposed: Upper Macungie Twp, 2.6M square foot hyperscale data center



Bloomberg News found that electricity now costs as much as 267% more for a single month than it did five years ago in areas located near significant data center activity

### 3. Subregion Output Emission Rates – Greenhouse Gases (eGRID2014v2)

eGRID subregion acronym	eGRID subregion name	Total output emission rates				Fossil fuel output emission rate	Non-baseload output emission rates			
		CO <sub>2</sub> (lb/MWh)	CH <sub>4</sub> (lb/GWh)	N <sub>2</sub> O (lb/GWh)	CO <sub>2</sub> e (lb/MWh)	CO <sub>2</sub> (lb/MWh)	CO <sub>2</sub> (lb/MWh)	CH <sub>4</sub> (lb/GWh)	N <sub>2</sub> O (lb/GWh)	CO <sub>2</sub> e (lb/MWh)
AKGD	ASCC Alaska Grid	926.5	46.6	7.2	929.7	1,093.0	1,051.6	47.9	7.8	1,055.1
AKMS	ASCC Miscellaneous	680.5	36.1	6.0	683.1	3,416.4	3,766.0	176.5	30.5	3,779.1
AZNM	WECC Southwest	875.6	66.4	9.3	879.9	1,466.1	1,257.1	67.7	9.2	1,261.4
CAMX	WECC California	568.6	33.1	4.0	570.5	866.6	913.9	35.5	4.2	915.8
ERCT	ERCOT All	1,142.8	81.8	11.6	1,148.0	1,455.3	1,389.4	85.6	11.9	1,394.9
FRCC	FRCC All	1,075.2	87.8	12.1	1,080.8	1,259.1	1,209.0	82.1	11.3	1,214.2
HIMS	HICC Miscellaneous	940.8	95.3	15.2	947.5	1,515.0	1,329.2	142.9	22.6	1,339.2
HIOA	HICC Oahu	1,479.4	159.4	24.5	1,490.4	1,523.9	1,470.1	140.0	22.4	1,480.0
MROE	MRO East	1,663.8	191.2	28.2	1,676.5	2,007.2	1,808.7	200.9	29.4	1,822.0
MROW	MRO West	1,365.1	161.4	23.3	1,375.6	2,196.3	2,032.7	238.4	34.3	2,048.2
NEWE	NPCC New England	570.9	96.0	12.8	576.8	1,011.3	1,066.0	107.9	14.7	1,072.6
NWPP	WECC Northwest	907.0	97.8	14.2	913.4	1,866.1	1,562.3	154.0	22.1	1,572.4
NYCW	NPCC NYC/Westchester	665.5	24.4	3.0	666.9	1,206.4	1,312.8	25.9	3.0	1,314.2
NYLI	NPCC Long Island	1,196.2	132.4	17.2	1,204.3	1,143.0	1,345.4	43.8	5.7	1,348.1
NYUP	NPCC Upstate NY	365.7	30.7	4.1	367.6	1,111.7	1,194.7	90.5	12.4	1,200.4
RFCE	RFC East	829.4	73.9	11.2	834.5	1,480.3	1,472.6	119.7	17.3	1,480.5

## 1. Subregion Output Emission Rates (eGRID2023)

eGRID subregion acronym	eGRID subregion name	Total output emission rates							Non-baseload output emission rates							Grid Gross Loss (%)
		lb/MWh							lb/MWh							
		CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	CO <sub>2</sub> e	Annual NO <sub>x</sub>	Ozone Season NO <sub>x</sub>	SO <sub>2</sub>	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	CO <sub>2</sub> e	Annual NO <sub>x</sub>	Ozone Season NO <sub>x</sub>	SO <sub>2</sub>	
AKGD	ASCC Alaska Grid	899.6	0.086	0.012	905.1	5.6	6.2	0.310	1,077.6	0.116	0.016	1,085.0	6.4	7.0	0.463	4.1%
AKMS	ASCC Miscellaneous	520.5	0.026	0.004	522.4	8.1	7.9	0.708	1,548.6	0.067	0.012	1,553.7	24.4	23.6	2.110	4.1%
AZNM	WECC Southwest	703.7	0.039	0.005	706.2	0.4	0.4	0.103	1,175.1	0.063	0.008	1,179.1	0.6	0.6	0.171	4.1%
CAMX	WECC California	428.5	0.025	0.003	430.0	0.3	0.3	0.020	958.3	0.048	0.006	961.2	0.6	0.6	0.041	4.1%
ERCT	ERCOT All	733.9	0.043	0.006	736.6	0.4	0.5	0.319	1,242.7	0.075	0.010	1,247.5	0.9	0.9	0.656	4.2%
FRCC	FRCC All	782.3	0.041	0.005	784.8	0.2	0.2	0.128	981.7	0.043	0.006	984.4	0.3	0.3	0.150	4.2%
HIMS	HICC Miscellaneous	1,123.4	0.146	0.022	1,133.3	7.6	7.2	4.489	1,596.4	0.170	0.027	1,608.2	11.7	11.6	6.169	4.4%
HIOA	HICC Oahu	1,489.5	0.134	0.021	1,498.9	3.9	3.7	4.280	1,753.4	0.159	0.025	1,764.6	4.5	4.3	5.041	4.4%
MROE	MRO East	1,397.3	0.116	0.017	1,405.0	1.0	1.0	0.277	1,701.2	0.159	0.023	1,711.7	1.1	1.2	0.365	4.2%
MROW	MRO West	920.1	0.097	0.014	926.6	0.7	0.8	0.896	1,776.7	0.180	0.026	1,788.6	1.4	1.4	1.575	4.2%
NEWE	NPCC New England	539.3	0.063	0.008	543.2	0.3	0.3	0.116	885.1	0.067	0.009	889.3	0.4	0.3	0.137	4.2%
NWPP	WECC Northwest	631.7	0.054	0.008	635.3	0.6	0.5	0.268	1,613.4	0.146	0.021	1,623.0	1.6	1.6	0.752	4.1%
NYCW	NPCC NYC/Westchester	864.5	0.022	0.002	865.7	0.2	0.3	0.024	976.9	0.019	0.002	978.0	0.4	0.4	0.011	4.2%
NYLI	NPCC Long Island	1,180.7	0.140	0.018	1,189.3	0.8	0.8	0.331	1,316.4	0.050	0.006	1,319.4	0.8	0.7	0.126	4.2%
NYUP	NPCC Upstate NY	242.1	0.011	0.001	242.8	0.1	0.1	0.027	909.3	0.041	0.005	911.8	0.4	0.4	0.103	4.2%
PRMS	Puerto Rico Miscellaneous	1,543.1	0.077	0.012	1,548.5	3.9	4.1	3.695	1,636.7	0.072	0.012	1,642.0	4.4	4.7	4.735	
RFCE	RFC East	596.9	0.036	0.005	599.2	0.2	0.2	0.212	1,175.6	0.077	0.010	1,180.5	0.6	0.6	0.618	4.2%

# Inflation Reduction Act (IRA)

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- Largest climate investment in US history, designed to mobilize private capital to achieve our climate goals and strengthen long-term growth
- Includes building construction, fleet EV, solar, battery, HVAC installations, and more
- **30-50% tax credit**, w/ direct pay provision for non-profits



*“Incentive Reactivation Act” ?*

# “One Big Beautiful Bill Act” (OBBBA)

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- Signed July 4<sup>th</sup>, 2025
- Key Restrictions to Clean Energy Credits:
  - Accelerated deadline for solar and wind projects
  - New restrictions on credits for projects with foreign ownership, control, or material sourcing – “Foreign Entity of Concern” (FEOC)
  - Elimination of most tax credits for EVs, charging, and residential clean energy
- Still Eligible:
  - Elective pay, geo-exchange, and FEOC-compliant batteries, fuel cells, and CHP



Blog

July 10, 2025

Clean Energy Tax Credit Changes Under the One Big Beautiful Bill Act (OBBBA)

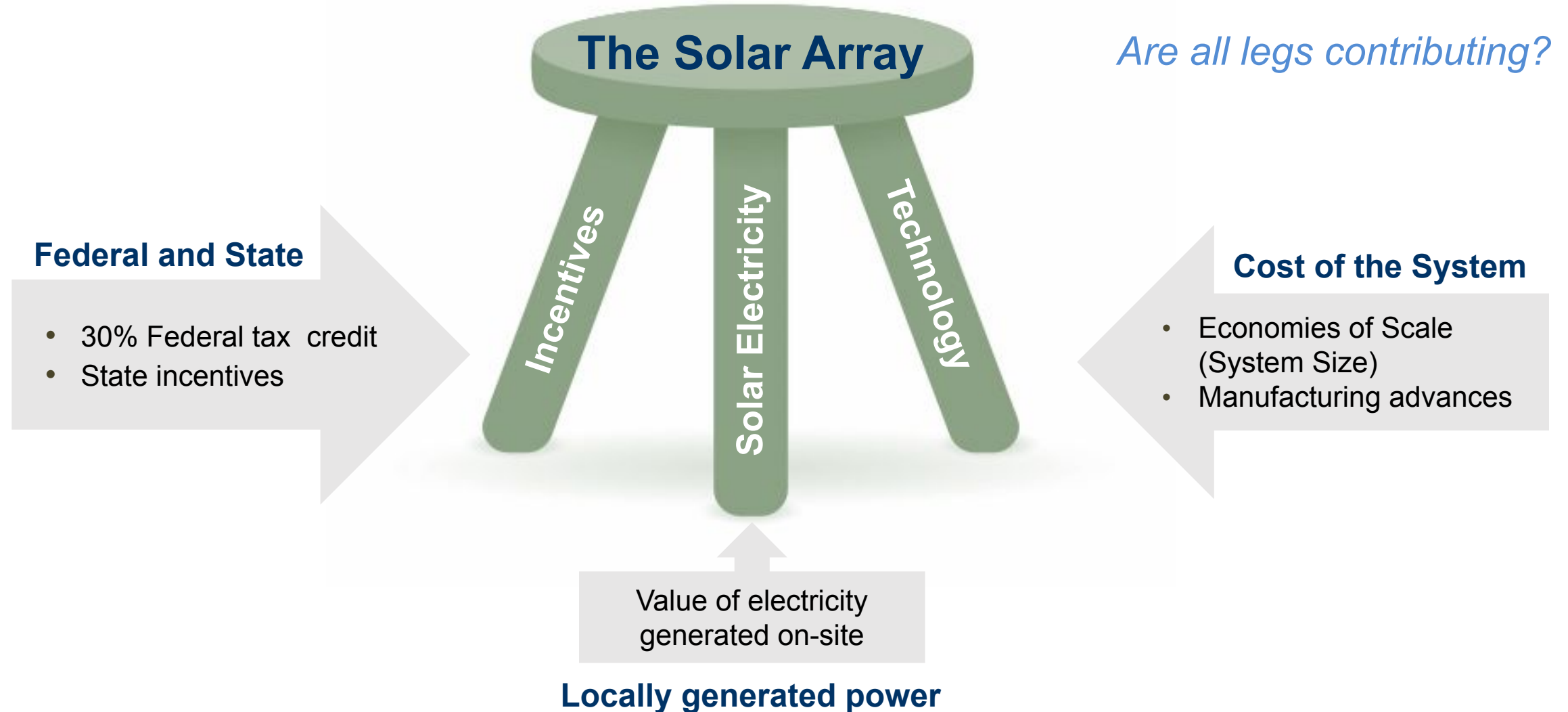
Read more



<https://www.theshg.com/post/clean-energy-tax-credit-changes-under-the-one-big-beautiful-bill-act-obbba>

# The Solar Stool

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# Building-Integrated Photovoltaics (BIPV)

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## Traditional Solar



## Roofit.Solar

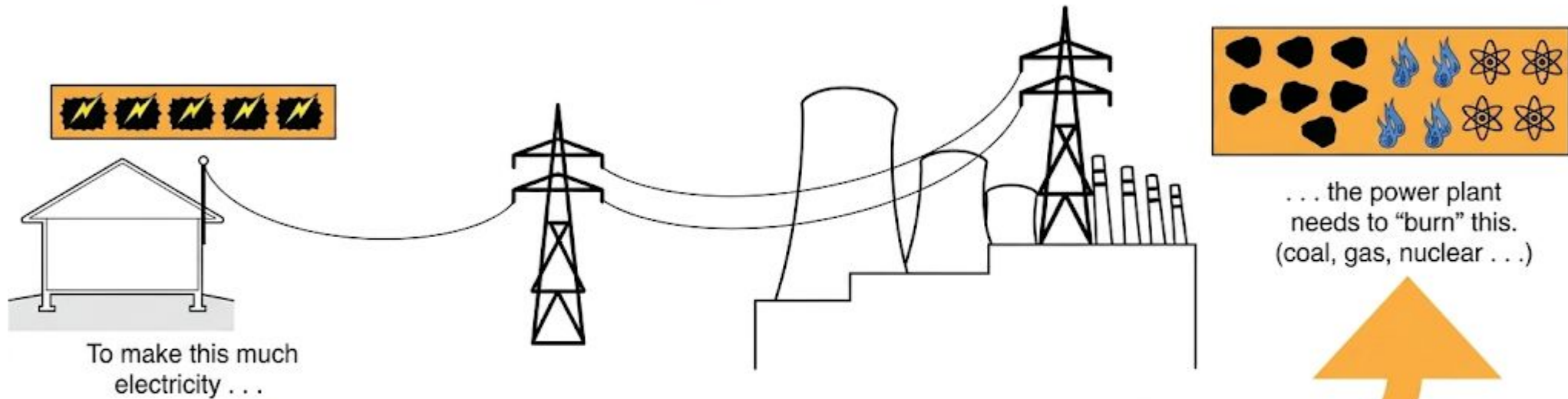


# Distributed Generation

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Electricity:

~20 million Btu/year site energy → ~67 million Btu/year source energy



# Lower EUI

EUI = Energy Usage Intensity (MMBTU/SF)

# Passive House Principles

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- **Climate-Specific Design:** Precision-tuned for local North American weather data.
- **Air-Tight Construction:** Eliminates drafts and moisture issues for extreme durability.
- **Continuous Ventilation:** Constant filtered fresh air for superior indoor health.
- **Thermal Resiliency:** Maintains safe indoor temperatures during power outages.
- **70%+ Energy Savings:** Massive reduction in heating/cooling loads; Net Zero ready.



*Muhlenberg College*

# Air-Source Heat Pumps

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REWIRING  
AMERICA

Menu ▾

Make a plan

## Do heat pumps work in cold climates?

The answer is short and simple: Yes!



NYS Clean Heat

LEARN ABOUT HEAT PUMPS

## Do Heat Pumps Really Work in Cold Climates?

Yes. There are heat pumps available today that are specifically designed to work in cold climates and are capable of meeting up to 100% of a New York home's heating needs.

### Today's Heat Pumps Are Better Than Ever

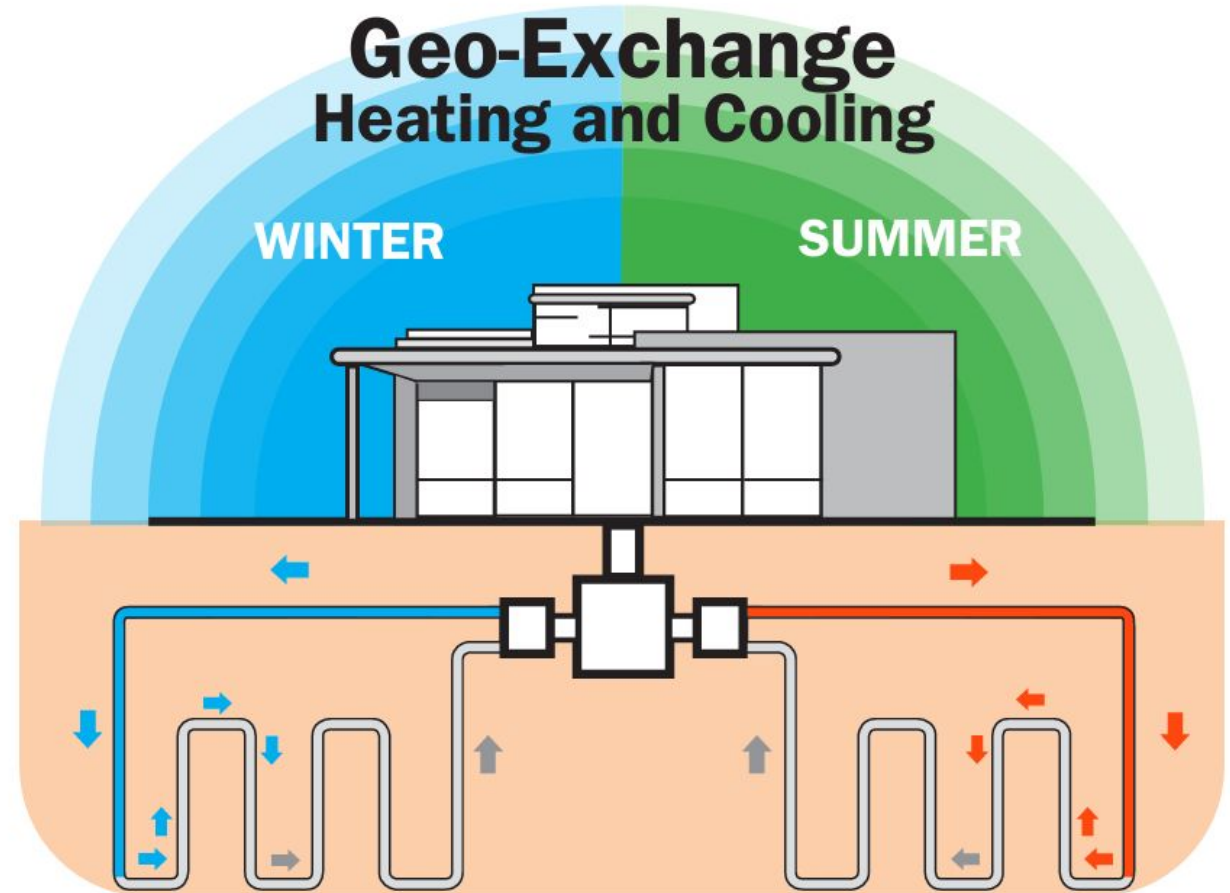
<https://homes.rewiringamerica.org/articles/heating-and-cooling/heat-pumps-cold-weather>

<https://cleanheat.ny.gov/heat-pumps-cold-climates-do-they-work/>

# Ground-Source Heat Pumps

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- Earth is used as an energy storage medium with energy drawn from the earth in the winter and rejected in the summer
- Relatively consistent earth temperatures year-round allow high system efficiency throughout the year (COP of 4 to 8)
- **Federal ITC 30% incentive still available!**



# Optimizing HVAC with Smart Sensors

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## EnOcean I/O Controllers

An affordable and flexible solution for optimizing building automation and enabling smart control.



## Smart Occupancy Sensing

Utilizes wireless, low-maintenance sensors to detect real-time occupancy for HVAC setback control.



## Deep HVAC Setback

Achieves significant energy savings by adjusting temperature based on non-occupancy, ideal for variable-use spaces.

# Case Study: Smart Sensors

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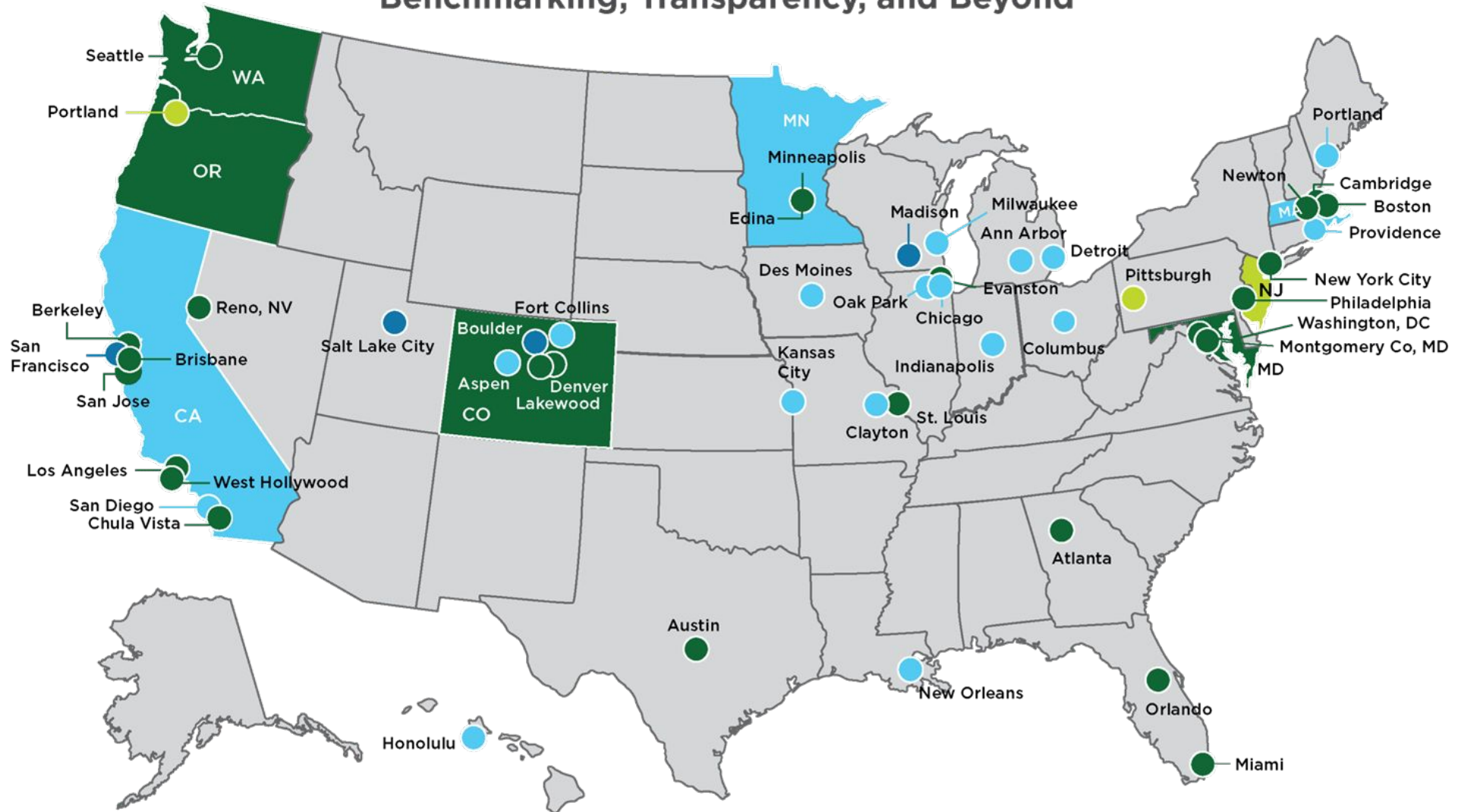


- “Micro-BAS” connects directly to HVAC controllers
- Wireless self-powered (energy-harvesting) occupancy sensors
- Automated Demand Control Ventillation (DCV) and standby setpoints
- Master schedule combined with occupancy-triggered overrides
- Web interface for data monitoring, logging, and setpoint adjustment

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# Know the Market

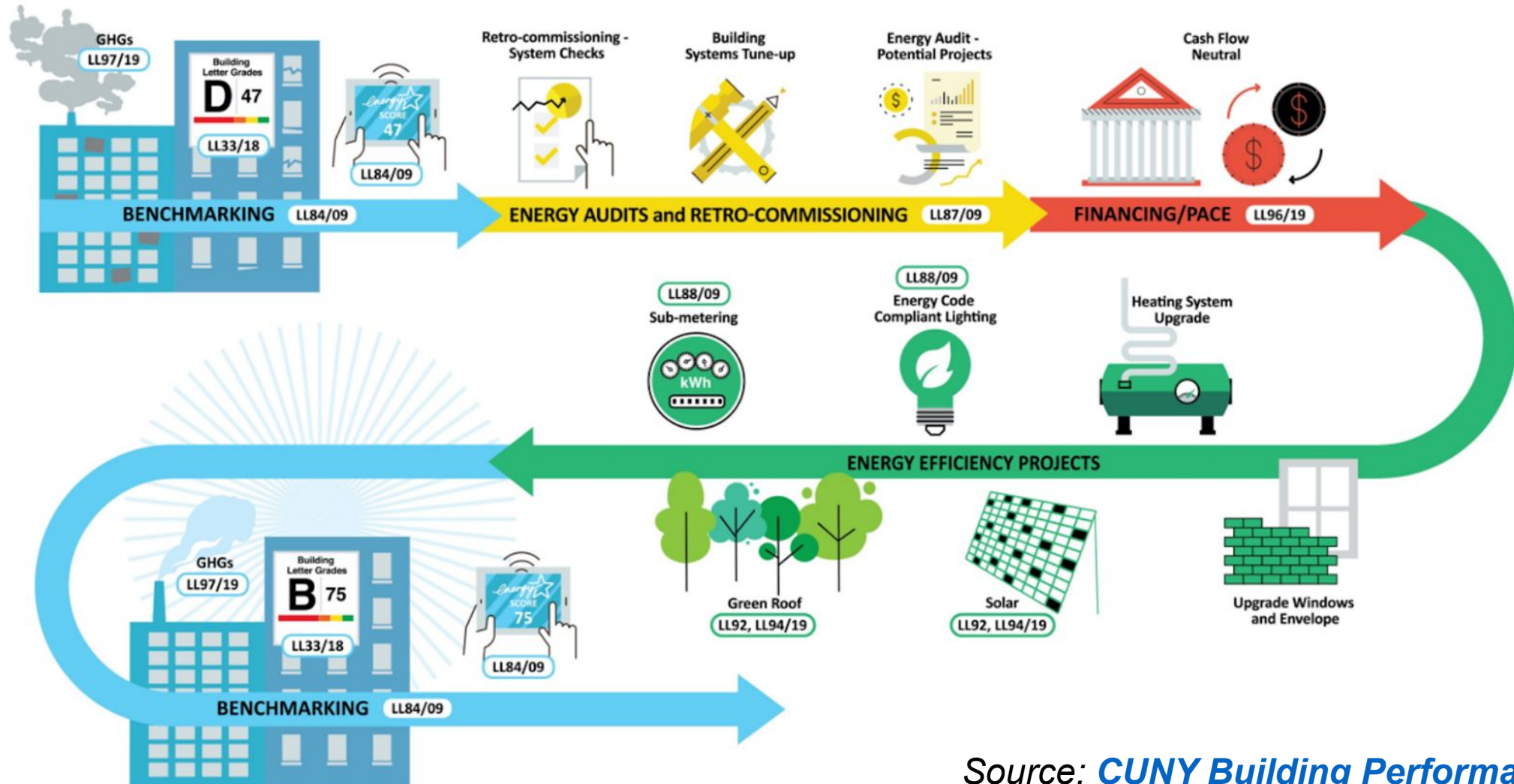
# U.S. City, County, and State Policies for Existing Buildings: Benchmarking, Transparency, and Beyond



- Benchmarking required for public and commercial buildings
- Benchmarking required for public, commercial, and multifamily buildings
- Benchmarking and additional actions required for public and commercial buildings
- Benchmarking and additional actions required for public, commercial, and multifamily buildings

# NYC Local Laws Map

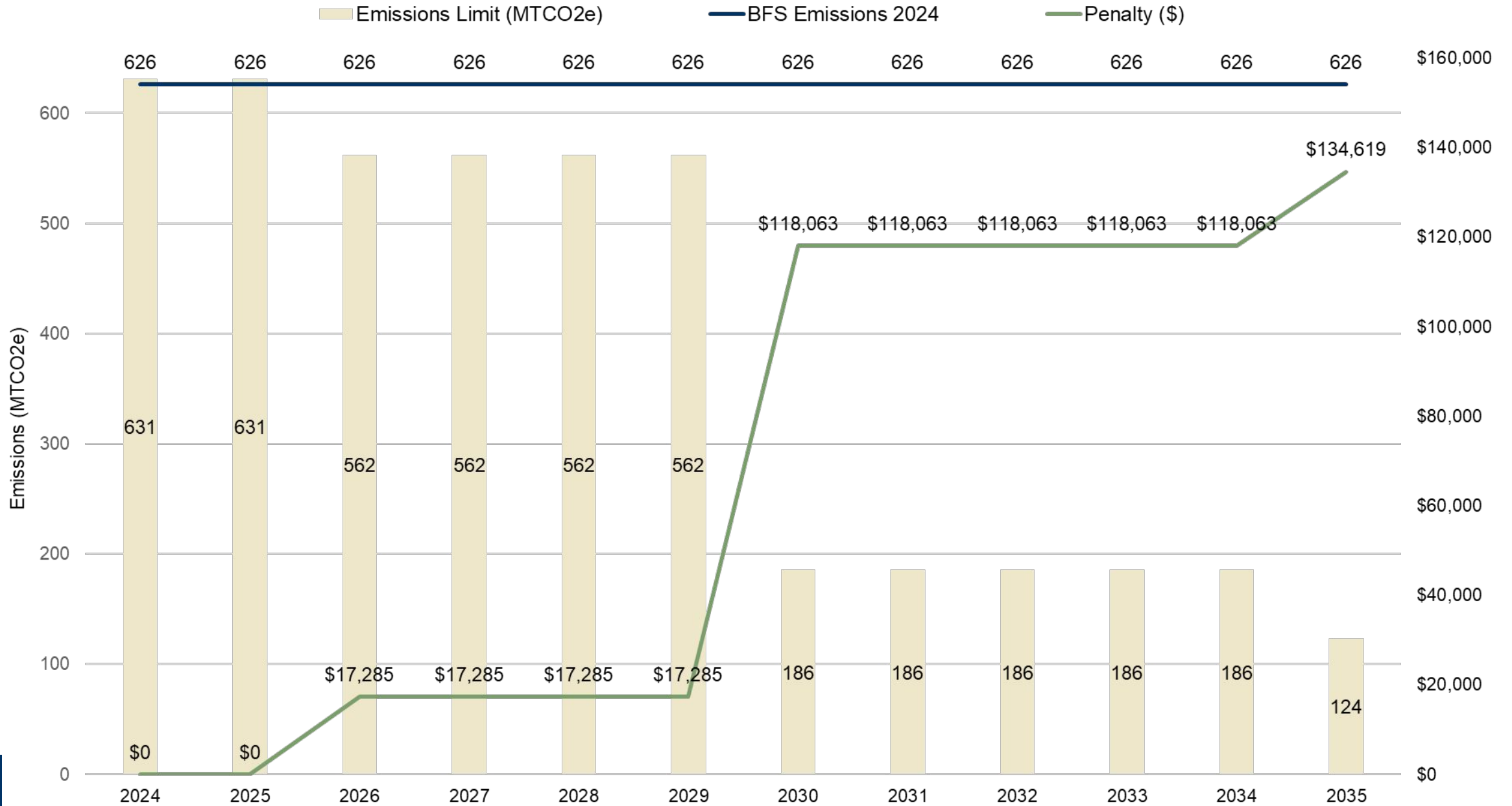
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Source: [CUNY Building Performance Lab](#)

# Local Law 97 Emissions Projections

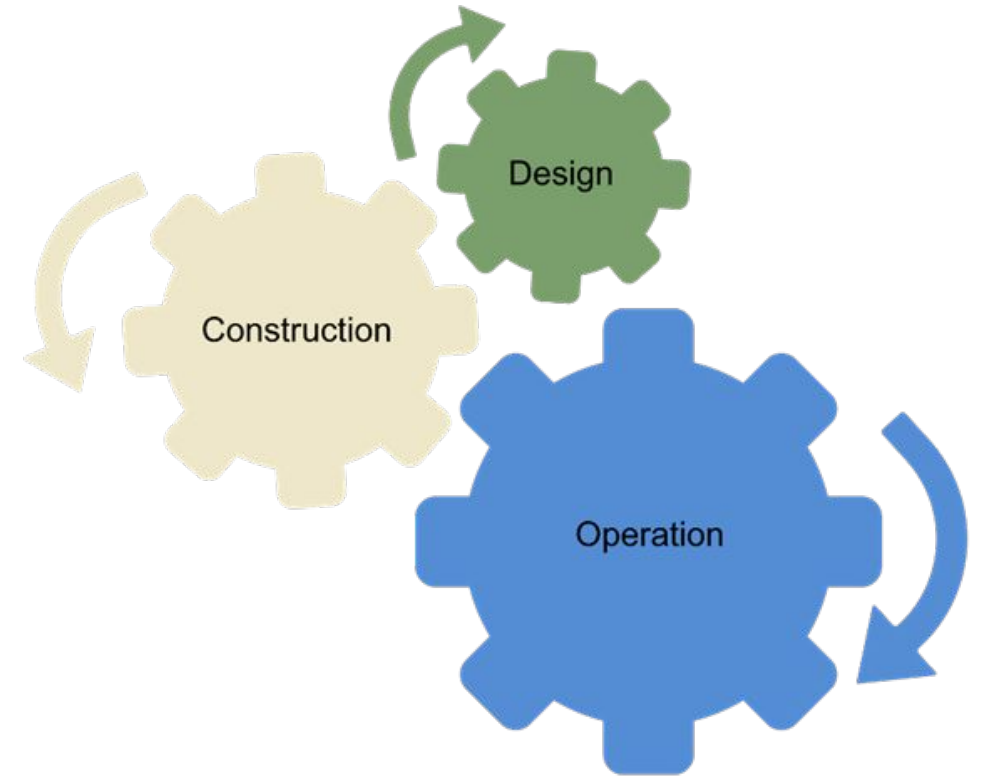
Sample NYC Client



# Goals of the Commissioning Process

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- Ensure that a building design meets its owner's project requirements, and that the building performs according to design intent
- Improve energy performance, thereby reducing energy costs
- Ensure operability and maintainability by occupants and staff
- Provide a safe, comfortable and healthy building for occupants
- Improve owner and operator training and documentation



*Commissioning (Cx) is a code requirement per IECC!*

# Common Construction Installation Issues

**Continuous Insulation at Hangers**



**Improper Duct Transitions**



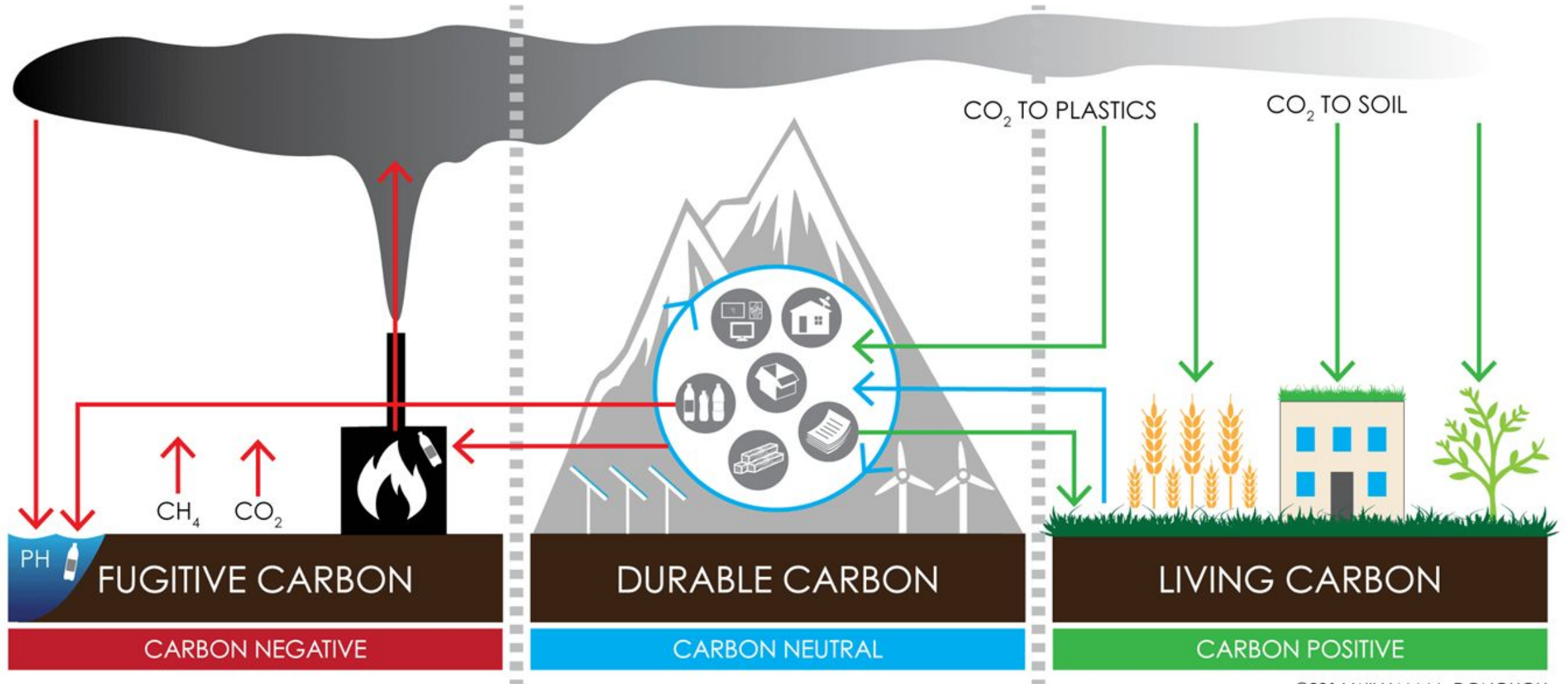
**Inaccessible Access Panels**



**Protection of Ductwork**



# THE NEW LANGUAGE OF CARBON



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## Voluntary Carbon Markets (VCMs)

A decentralized market where individuals and organizations can **voluntarily** buy and sell carbon credits to offset their carbon footprint.

VCMs are not government-mandated.

*\*In 2021 the voluntary carbon market was worth \$2 billion, and is expected to grow to \$10-40 billion (USD) by 2030.*



## Compliance Carbon Markets (CCMs)

Where regulated entities are **required** to meet government-mandated carbon reduction targets by buying and selling carbon credits.

Examples: EU Emissions Trading System (ETS); California's Cap-and-Trade Program, RGGI

*\*EU ETS revenues reached \$47.4 billion (USD) in 2023.*

# Low-Carbon Innovations



**It's not easy  
being green!**



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# Final Takeaways

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- **Think beyond “Business as Usual”**
  - Leverage innovative funding opportunities to prove that green initiatives are fiscally responsible.
  - Make connections to deferred maintenance funding and capital project funding.
- **Reduce Energy -> Reduce Costs**
  - Reduce Energy Usage Intensity (**EUI**) through targeted conservation, efficiency projects and smarter building policies.
- **Stakeholder Buy-In**
  - Make it part of the brand, the program - it's no longer an 'operating' cost
- **Use Short Term Gains and Incremental Progress to Achieve Long Term Plan**
  - Consider feasible means of working towards decarbonization in the interim, thinking of sustainability as a long run