

Chapter 9: Commercial Energy Conservation and Renewable Energy

GOAL: Erie County will move toward net zero carbon emission commercial buildings and support the transition to a decarbonized electrical grid.

Commercial buildings provide the setting for much of the social, cultural, and economic activity in Erie County, but almost all of them were constructed at a time before the burning of fossil fuels for energy was a concern. During Erie County's cold winters, buildings require significant amounts of energy for heating, while the changing climate is resulting in increased energy loads to cool buildings during hot summer months. Furthermore, many of the buildings in Erie County were constructed before proper insulation, high-performing windows, or energy-smart, fossil-free technologies became available. Consequently, commercial buildings contribute significantly to our carbon footprint, with office buildings alone accounting for 22% of statewide greenhouse gas emissions, mostly from natural gas use.

Decarbonizing commercial energy in Erie County requires a deep understanding of the value of carbon reduction and energy efficiency within the commercial building sector while partnering with key stakeholder utilities and energy consumers. From there, the Erie County government can work toward improvements in three ways:

- 1) from the demand side by supporting improved energy code implementation in buildings and building electrification;
- 2) from the supply side by supporting ramped-up renewable electricity production; and
- 3) from the interface between both sides by encouraging the incorporation of energy storage and flexible, smart management of electrical demand on the grid. Because the electrical grid serving Erie County already has the lowest GHG emissions rate of any region in the country, with a GHG emission rate less than one third the national average, Erie County is already well on its way toward a decarbonized electric energy supply.

In the future, new commercial buildings that are compliant with more efficient energy codes and deploying high performance technologies will interface with a decarbonized grid built from distributed renewables and storage. A smarter grid will manage its loads such that electricity will be sent from wherever it is produced to wherever it is needed and buildings will scale back electricity usage in times of high demand. However, Erie County's transition to a decarbonized grid is not only a technological challenge, but will also require clear and reliable information for planning energy projects and consistent advocacy for the County government's goal of net zero carbon emission buildings and a decarbonized electrical grid.

Infographics/Call-Outs Boxes to Be Added Later:

- Passive design techniques for buildings
- Smart grid technology + load management
- It's Only Getting Better! (The Grid)p

DEFINITIONS FOR ACTIONS SPECIFICATIONS
Short-term: By or before 2030
Medium-term: By 2040
Long-term: By 2050
Direct: County government can directly control the action – relating to County operations and infrastructure
Indirect: Regional agencies and municipalities have control and/or County government can support/influence
Support: State or Federal policies and programs

STRATEGY 1: Building Performance & Efficiency Education

Build market awareness and educate commercial building owners about building performance.

The commercial buildings in Erie County are major energy users, and until such time as the grid is carbon-free and buildings are electrified, they will remain significant contributors to GHG emissions. This is to be expected, given the advanced age of much of the commercial building stock. As the climate shifts toward hotter summers in Erie County with more frequent extreme heat events, the energy demand for cooling technologies will rise, placing even more demand on the electrical grid. While the Erie County government sets its long-term sights on system-wide changes, it must not lose perspective on the need to improve commercial building performance throughout Erie County to reduce the electricity loads put on the grid, which reduces the overall need for new renewable energy sources over time.

A significant additional step toward reducing the GHG emissions associated with current commercial buildings is to develop a clear understanding about the drivers of energy use in commercial buildings and transparent communication to all stakeholders about building energy performance. The gaps in information include:

- Sound business cases for high-performance strategies in old buildings in cold climates exist, but may not be readily known to building owners and managers.

- The energy performance of a building relative to its comparable peers is often unclear to both the current owners hoping to improve efficiency and to prospective buyers or renters looking to mitigate future energy cost risk.
- Information about funding and financing for efficiency improvements may be hard to find or understand.

The Erie County government can play a significant role in closing the information gaps among commercial building stakeholders with clear market signals demanding high performance, energy efficiency, and the reduction of GHG emissions from its commercial building inventory.

ACTION ITEM	HORIZON	SPHERE OF INFLUENCE	LEAD COUNTY ENTITY	PARTNERS
1.1: Create and maintain a website to connect the community to key local and industry resources (including case studies) related to building energy performance.	Short-Term	Direct	DEP, DPW	AIA, USGBC, SBR, NYSERDA, Buffalo & Erie County Library
1.2: Advocate for utility companies to include energy performance ratings on energy bills.	Medium-Term/ Long-Term	Support	DEP, DPW	Utilities, NYSAC, PSC
1.3: Advocate for building performance information requirements and resources to address building efficiency be provided to homebuyers and renters at time of closing or leasing.	Medium-Term/ Long-Term	Indirect	DEP, DPW	Energy Performance Contractors, Utilities, NYSERDA, association of realtors, Clerk's Office
1.4: Advocate for public benchmarking and disclosure of commercial building energy consumption for larger buildings.	Long-term	Indirect	DEP	NYS, local governments, NYSERDA, WNYSBR
1.5: Educate developers on funding and financing opportunities, including PACE financing.	Short-Term/ Medium-Term	Indirect	DEP, DPW	Local financial institutions, EIC NY

1.6: Use high performing County-owned buildings and facilities to educate the community on building efficiency opportunities.	Short-Term/ Medium-Term	Direct	DEP, DPW	NYSERDA, Arc, USGBC
1.7: Work with Industrial Development Authorities to incentivize high performing buildings.	Short-Term/ Medium-Term	Indirect	Office of Economic Development, DEP	ECIDA, Regional IDA's, Chambers

Infographics/Call-Outs Boxes to Be Added Later:

- Commercial scale heat pumps, including district heat pumps
- PACE financing farm case study

STRATEGY 2: Decarbonized Power Sector

Decarbonize the power sector by increasing renewable energy sources and decreasing fossil fuel energy sources.

The largest reductions in Erie County’s carbon footprint will be seen by the electrification of buildings and transportation using renewable energy. To maximize the benefits of electrification, New York State has set a goal of 100% zero-emission electricity by 2040. Fortunately, New York State already has one of the lowest carbon-based electric supplies in the United States, with about 57% of our state’s electricity generated by zero emissions sources, including solar, wind, nuclear, and hydropower. Reaching this goal will require a much broader deployment of renewable energy sources. To be successful in our community, the Erie County government must continue leading this transition, while working to protect important resources including agricultural and Native lands, as well as ecologically sensitive areas.

The Erie County government currently supports utility-scale renewable energy development in some key ways. For most utility-scale projects, the County’s Department of Environment and Planning reviews site plans and advises local governments on approval determinations. Typically, developers negotiate Payment in Lieu of Taxes (PILOT) agreements with towns, school districts and the County, which reduces real estate taxes for developers. This system reflects that solar and wind projects create community benefits, do not create increased demands on municipal services, and give the County government some leverage on whether and how the projects move forward. The County government also hosts trainings for local government leaders and staff regarding renewable energy planning and permitting. The Erie County government also provides planning grants through its Office of Agriculture to support updates to municipal comprehensive Plans, zoning regulations, and ordinances.

Despite these positive actions, the Erie County government must do more to decarbonize the power sector. There is increasing confusion in the community regarding the benefits and impacts of renewable energy, and the County needs to proactively provide scientific information in plain,

accessible language while advocating for appropriate clean energy projects. The County government must also support the development of a workforce with the skills to implement clean energy projects, including training workers from disadvantaged communities, which is discussed in the Economic and Workforce Development chapter. Finally, the Erie County government will lead our community with innovative solutions that support an affordable and equitable transition to clean energy, which is being planned through its ECLIPSE program.

ACTION ITEM	HORIZON	SPHERE OF INFLUENCE	LEAD COUNTY ENTITY	PARTNERS
2.1: Coordinate and serve as a conduit for information in support of renewable energy projects.	Short-term/Long-term	Indirect	DEP	Local governments, developers, NYSERDA, SBR
2.2: Educate and train municipal leaders on how to plan and permit renewable energy development.	Short-term/Long-term	Indirect	DEP	UBRI, NYSERDA, NYSDOS, local governments
2.3: Emphasize projects that conserve energy in the County’s CDBG program.	Short-Term/Long-term	Indirect	DEP	HUD, local governments, SBR
2.4: Support finance programs such as PILOT and PACE for renewable energy projects.	Short-term/Long-term	Indirect	DEP	County IDAs, businesses, SBR, developers, NYSERDA
2.5: Advocate for the alignment of economic development policy and incentives for renewable energy with climate goals.	Short-term/Long-term	Indirect	Office of Economic Development	County IDAs, local governments, developers, SBR, NYSERDA

Infographics/Call-Outs Boxes to Be Added Later:

- Geothermal heat pumps vs geothermal power

STRATEGY 3: Energy Code

Support improved implementation of building energy codes.

Constructing new commercial buildings efficiently and incorporating energy efficiency into rehabilitation projects is much more cost effective than later retrofitting existing buildings while creating healthier buildings that provide health and energy burden reduction benefits to

multifamily and business tenants. New York State promulgates an Energy Code that is enforced by local governments and is frequently updated to incorporate improved practices. In addition to the required Energy Code, the New York State Energy Research Development Authority (NYSERDA) released the 2020 NYStretch Energy Code to support higher efficiency standards and serves as an option for municipalities to adopt as an alternative to the existing Energy Code. Local governments are not always able to fully enforce the Energy Code, and there is an opportunity for the Erie County government to support its municipalities so they can better implement the Energy Code while supporting implementation of the NYStretch Energy Code. Enforcement of the Energy Code for commercial buildings is especially important regarding multifamily residential buildings where low- and moderate-income residents live because this will reduce their energy cost burden while improving health for a population that is often negatively impacted by substandard housing.

As we look for opportunities to revitalize our communities and update an aging building stock, the Erie County government will continue to advance energy efficiency measures by educating code officials on new smart technologies and their integration into building systems. By partnering with the New York Department of State, NYSEDA, and other experts, the Erie County government will continue to provide training sessions on Energy Code and other specialized energy topics for municipalities and commercial building owners. Topics may include long-duration battery storage, solar power generation, wind power generation, and potentially geothermal heating and cooling systems. These trainings can target not just municipalities, but also renters, landlords, homeowners, businesses, and building professionals. Including training attendees from disadvantaged communities. Additionally, the Erie County government will develop educational materials such as business case studies that will be shared with elected officials and planning board members to highlight clean energy advantages and encourage the adoption of the NYStretch Energy Code. Finally, the Erie County government will identify opportunities to directly support improvements in County-wide code compliance by providing technical support to local governments for Energy Code compliance implementation.

ACTION ITEM	HORIZON	SPHERE OF INFLUENCE	LEAD COUNTY ENTITY	PARTNERS
3.1: Educate local governments on energy and building codes, including NYStretch Code and ASHRAE.	Short-term/ Ongoing	Indirect	DEP	NYS Dept of State, NYSEDA, Utilities, UBRI/1 Region Forward, BOMA, Association of Local Governments

3.2: Provide direct technical support to local governments for Energy Code compliance and implementation.	Short-term/ Ongoing	Direct	DEP	Association of Local Governments, IDAs, Construction Exchange, AIA, NYCOM, NYSAC
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Infographics/Call-Outs Boxes to Be Added Later:

- Code/Stretch Code Cycle
- Grid and microgrid / smart grid technologies
- Age of building stock

STRATEGY 4: Energy Storage & Demand Management

Increase the use of energy storage and demand management.

Today’s electrical grid adjusts to large fluctuations in electric demand mostly by ramping up and down the electricity generated at fossil fuel power plants. However, the grid will become increasingly powered by renewable energy sources in the coming years, as new wind and solar sources are built. The productivity of renewable energy sources is driven by availability of wind and sunlight, which does not always closely line up with the times of peak electricity demand on the grid. Additionally, some additional capacity for the grid to respond to shifting demand will be needed to maintain a resilient supply of electricity to consumers throughout Erie County. In anticipation of the incorporation of increased quantities of renewable energy production sources, the grid should incorporate more energy storage capacity while enabling demand management strategies. Storage and demand management will allow a zero-GHG-emissions grid to deliver electricity even in high-demand situations, such as during extreme heat events with high air-conditioning use. Overall, a grid with storage capacity is more resilient to climate change impacts. In addition, a grid with significant energy storage and managed demands requires the utility to invest less in new power plants to meet times of high demand. This averted cost may translate into lower costs to ratepayers as well.

Energy storage today includes both utility-scale battery and non-battery facilities, and battery systems installed within commercial and residential buildings. The world is experiencing a revolution in battery technology, with new, high-performance options becoming increasingly affordable. Soon, advanced EVs will allow vehicle owners to make their car battery available for grid energy storage. This gives the owner the option to use the power for their home or provide power to the grid when electricity is in high demand and charge up their vehicle when there is less demand. While energy storage systems are considered safe, battery systems will need to be carefully deployed and disposed of. In the case of utility-scale systems, energy storage systems will require careful siting and sensitivity to climate justice concerns.

Demand management strategies are the mechanisms that allow the grid to take full advantage of energy storage and allow consumers to make energy choices, which can reduce the peak

electricity demand on the grid. These strategies require a flow of information to consumers, indicating a need for a shift in how information is provided and received based on the forecasted demand. Today, this information may be sent by written communication to consumers via email or text alert warning them of an upcoming high demand day. As newer “smart” meters are deployed throughout the County, grid demand information can be sent in real time directly to consumers’ equipment and appliances, allowing for an automated response in accordance with the owner’s predetermined choices. For example, a building owner might set a building air conditioning system to raise the building thermostat a few degrees when the utility signals electricity is in high demand. Often smart metering is accompanied by demand pricing, which incentivizes the decision to shift loads by making electricity more expensive in times of peak usage. Thus, behaviors which make the grid resilient can also translate into lower costs for consumers.

The Erie County government has already begun promoting the use of battery storage technology by hosting training sessions to educate municipal staff on how to include battery storage in comprehensive plans and to inform local government code enforcement officers on how to permit battery storage projects. To help support New York State’s goals of 1,500 megawatts (MW) of energy storage by 2025 and 3,000 MW by 2030, the County will promote battery storage and load shifting technologies, provide building owners with educational resources, work with municipalities to formulate ordinances and codes for when battery storage is employed, and ensure equitable distribution of the benefits of these technologies.

ACTION ITEM	HORIZON	SPHERE OF INFLUENCE	LEAD COUNTY ENTITY	PARTNERS
4.1: Educate commercial, industrial, residential, and school building owners about battery storage and load shifting options.	Short-Term/ Medium-Term	Direct	DEP, DPW	BOMA, SBR, NYSERDA, NYPA, State Assembly / Senate, NYSAC
4.2: Educate municipal officials about battery storage for formulation of ordinances and codes protecting life and property, while valuing climate justice.	Short-term / Medium-Term	Direct	DEP	Department of State, NYSERDA, EMC
4.3: Incorporate battery storage and load shifting into the County's heat emergency plan and other resilience plans.	Medium-Term	Direct	DEP, Emergency Services, Department of Health	Libraries

Infographics/Call-Outs Boxes to Be Added Later:

- Renewable energy + batteries = saving for a rainy day
- Load shifting! Interconnectivity! Demand response! And Load Leveling!
- 2026 Advanced Metering Initiative
- Old grid vs. new grid
- Myth busting on battery safety concerns

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