

BATTERIES FOR BUILDINGS

A Guide for New York City



Why “Batteries for Buildings”?

Battery energy storage systems (BESS) can be an effective tool to support **building decarbonization and electrification** while **offering financial benefits**. In addition to helping reduce or eliminate Local Law 97 fines, energy storage can provide property tax benefits as well as savings on electricity bills, such as reducing demand charges.

We invite property owners and managers to consider **three pathways** for batteries to support your buildings, presented on the following pages.



3 MW community battery project built by NineDot Energy, providing grid services to the Pelham Gardens neighborhood of the Bronx. Courtesy of NineDot Energy.

What Is Energy Storage?

Energy storage is a technology that allows us to capture electricity at one time and save it for use at a later time.

Not only can energy storage provide **backup power and resiliency services**, it also can **help lower emissions and save money**.

That’s because energy storage can charge up when electricity is cleanest and cheapest, and provide that power back to buildings or to the grid at times when electricity is more polluting and expensive. Energy storage can also enhance the benefits of on-site solar by storing excess power for use when energy demand peaks.

While not all energy storage systems are battery-based, the most common energy storage systems use **Lithium-ion battery technology**, similar to that found in your phone or laptop. When designed to support buildings, battery energy storage systems (BESS) are typically composed of battery cells housed in an enclosure with monitoring and safety controls. BESS are available in a variety of sizes and configurations to best fit the desired use case.

About Local Law 97

Local Law 97 of 2019 (LL97) **sets a cap on greenhouse gas (GHG) emissions** for most buildings in NYC over 25,000 square feet starting in 2024. This law will affect 60% of NYC’s building area and roughly 40,000 buildings.

Buildings that are subject to LL97 that exceed their designated emissions limits will face **significant financial penalties**, which will increase over the four compliance periods between 2024 to 2050. The goal of these compliance periods is to reach **net zero emissions from NYC’s large buildings by 2050**.

Buildings subject to LL97 must report emissions associated with electricity and on-site fuel consumption by May 1 every year, beginning in 2025.

Included in the LL97 Rule are explicit provisions encouraging buildings to **use energy storage to reduce their reported electricity emissions**, thereby reducing potential fines associated with exceeding the designated emissions cap.

1. SUBSCRIBE TO OFF-SITE NYC BATTERIES

Building owners can subscribe to an off-site NYC battery project to reduce LL97 fines with no on-site construction.

How does it work?

- Grid-scale battery energy storage systems (BESS) are generally large, shipping-container sized systems (3-5 MW), connected directly to the electricity grid.
- Building owners can choose to subscribe to a BESS project located anywhere within the five NYC boroughs ([NYISO Zone J](#)). This typically involves paying a subscription fee and signing a contract with an energy storage developer.
- To claim the benefit, the building owner must provide the BESS project's Building Identification Number (BIN), and either the total energy (kWh) imported to the BESS or annual electricity meter data, into the BEAM reporting platform.

What are the benefits?

- **Support clean electricity for NYC:** Grid-scale BESS can reduce greenhouse gas emissions by charging when the grid is cleanest and discharging when the grid is dirtiest, thus reducing reliance on NYC's dirtiest power plants.
- **LL97 Emissions Reduction:** By subscribing to an off-site BESS, building owners can attribute a portion of that system's emissions savings to their own reported electricity emissions, thereby reducing LL97 fines (see p5).
- **Easy to do:** Subscribing to an off-site BESS project does not require upfront investments or on-site construction, making it the simplest way for building owners to incorporate batteries into their LL97 compliance strategy.

What are the challenges?

- There are currently a relatively small number of off-site BESS installations in NYC, so subscription options may be limited in the near-term. This will likely change as more grid-scale projects are built in NYC in the coming years.
- This pathway does not offer opportunities to reduce electricity bills or participate in demand response programs, potentially limiting the financial savings as compared to installing energy storage on-site.



5 MW energy storage system installed by Microgrid Networks, providing grid services to Williamsburg, Brooklyn. Courtesy of Microgrid Networks.

2. INSTALL BATTERIES BEHIND-THE-METER

Building owners can install batteries Behind-The-Meter (BTM) to maximize savings.

How does it work?

- Building owners may opt to install a behind-the-meter (BTM) battery to support the building's operations. BTM batteries generally range from the size of a kitchen cabinet to the size of multiple refrigerators, depending on the need.
- Building owners can contract a service provider to evaluate the costs, benefits, and siting and interconnection options. Permitting is simplest for systems installed outdoors or on the roof, but the NYC Fire Code allows indoor installations as well, with additional safety requirements.
- Building owners can claim reductions to LL97 emissions in the BEAM platform, based on the size of the battery.



This 19 kWh Simpliphi battery was installed alongside solar panels on the rooftop of the Kings Highway branch of the Brooklyn Public Library. The system provides energy bill savings and backup power. The project was a collaboration between Accord Power, Solar One, the New York City Department of Citywide Administrative Services (DCAS), and the Governor's Office of Storm Recovery (GOSR). Courtesy of Accord Power.

What are the benefits?

- **LL97 Emissions Reduction:** By using a Time Of Use (TOU) rate, buildings can accurately track the emissions savings generated by the strategic hourly charging and discharging of a BTM battery. This can reduce reported emissions from electricity, thereby reducing LL97 fines. Buildings can opt to use TOU rates for all electricity consumption, or just for a submetered BTM battery. Alternatively, instead of using TOU, buildings can also estimate emissions savings using the Total Emissions Spread (TES) formula (see p5).
- **LL97 Hosting Deduction:** *In addition to* the Emissions Reduction above, building owners that have energy storage anywhere on-site can take a Hosting Deduction based on the size of the system, using the TES formula (see p5).
- **Reduced electricity bills:** BTM batteries can reduce electricity bills by reducing peak demand, thereby lowering contract demand charges. Batteries also provide opportunities to participate in Demand Response programs, and buildings on a TOU rate can enjoy additional savings by avoiding grid power when it is most expensive.
- **Property tax savings:** Buildings that install BESS on-site can benefit from a property tax abatement ([RPTL 499](#)), which covers 30% of system costs up to \$250,000, spread over 4 tax years (7.5% or \$62,500 per year).

What are the challenges?

- BTM batteries can be challenging to install for buildings with limited space or outdated electrical infrastructure.
- To date, the FDNY has only approved a few battery products for use in NYC, restricting options for buildings (see the [Certificate of Approval](#) list). We anticipate more approvals in the coming years.

3. HOST BATTERIES FRONT-OF-THE-METER

Properties with significant outdoor space can host Front-of-the-Meter (FTM) batteries for additional benefits.

How does it work?

- Buildings that have significant outdoor space, such as between buildings on the same campus or on an underused parking lot, may consider hosting a Front-of-the-Meter (FTM) BESS project. This means the BESS would connect directly to the electricity grid, rather than interconnect to the building itself.
- FTM BESS projects are typically at least 1 MW and are comprised of several shipping container-sized enclosures that store batteries, transformers, and other electrical equipment and safety systems. Generally, at least 2,000 square feet of space would be needed to consider hosting a FTM BESS.
- In most cases, the project would be developed, permitted, owned, operated and maintained by a third party developer.



Birds-eye view of a 5 MW energy storage system installed by Soltage, providing grid services to Maspeth, Queens. Courtesy of Soltage.

What are the benefits?

- **LL97 Emissions Reduction:** While the building owner cannot *automatically* claim an LL97 Emissions Reduction from a FTM battery, they can *subscribe* to that project and receive benefits as if it were off-site (see p2).
- **LL97 Hosting Deduction:** Building owners can claim a Hosting Deduction based on system size, using the TES formula (see p5).
- **Lease Payments:** Building owners that hosting FTM BESS on their property can receive fixed long-term (25 year) lease payments from the BESS developer, providing steady revenue to support other investments.
- **Property tax savings:** Buildings that host BESS receive a property tax abatement ([RPTL 499](#)), which covers 30% of system costs up to \$250,000, spread over 4 tax years (7.5% or \$62,500 per year).
- **Grid resiliency:** FTM BESS strengthens the resiliency of your local utility network by providing electricity during peak demand, helping prevent blackouts and brownouts.
- **Easy to do:** Third party developers handle all permitting and maintenance, simplifying the process for the property manager.

What are the challenges?

- Not all buildings have at least 2,000 square feet of ground-floor or rooftop space to consider hosting a FTM BESS!
- Not all properties are in an ideal location for grid interconnection. This would need to be evaluated by the developer.
- Some residents may have aesthetic or land-use concerns (e.g. eliminating parking spots in favor of BESS).

In the Building Energy Analysis Manager (BEAM) platform, which serves as the reporting portal for LL97, building owners can choose to claim the benefits of energy storage *either* as an “Alternative Coefficient” using a Time-of-Use (TOU) calculation, *OR* as a “Deduction” using the Total Emissions Spread (TES) calculation, as further described below.

LL97 Alternative Coefficients: Time-of-Use (TOU)

Eligibility: Any BESS that can provide hourly electricity consumption utility data can use Time-of-Use (TOU). For on-site BESS, building owners can choose TOU rates with their electric utility for the entire building or just for a separately metered BESS. For off-site BESS, building owners would receive the hourly TOU data from the third-party developer.

Calculation: Building owners upload utility-provided hourly electricity consumption data for all 8,760 hours in the year into the DOB [template](#). The template automatically performs the following calculation:

$$Coeff = \frac{\sum_{n=1}^{8760} (TOU_n \times electricity_n)}{\sum_{n=1}^{8760} (electricity_n)}$$

- Coeff = Alternative emissions coefficient of electricity, based on TOU data, in tCO2e/kWh.
- TOU_n = electricity emissions coefficient for a given hour, n, in tCO2e/kWh (provided by DOB in their template).
- electricity_n = electricity imported into the BESS (positive value) or exported from the BESS (negative value) for a given hour, n, in kWh.

Building owners enter the resulting value under the “Alternative Coefficient” section of the BEAM portal and upload the completed template and hourly data from the utility.

Benefits: The TOU calculation will provide the most accurate assessment of emissions savings provided by the BESS.



A 50kW / 250kWh Cadenza Innovation battery that provides peak-shaving services and bill reductions for the New York Power Authority (NYPA) headquarters in White Plains, New York. The project was partially funded by a grant from the New York State Energy Research and Development Authority (NYSERDA). Courtesy of Cadenza Innovation.

LL97 Deductions: Total Emissions Spread (TES)

Eligibility: If hourly energy data is not available, building owners can choose to instead estimate emissions savings through the Total Emissions Spread (TES) calculation, inputted into BEAM in the “Deductions” section. On-site BESS receive **double** the deduction as off-site BESS because they can claim both the Emissions Reduction and the Hosting Deduction.

Definitions:

- ESS = The amount of GHG emissions that may be deducted from the annual emissions resulting from electricity consumption in tCO₂e.
- TES = The total emissions spread, as determined by the Department of Buildings (DOB), for the year preceding the reporting year. The TES represents the difference in GHG emissions from electricity generation between the dirtiest and cleanest hours of the year. For 2024 reporting, DOB assigned TES a preliminary value of 0.13727 tCO₂e/kWh/day.
- Con_{daily} = Total electricity consumed from off-site storage in the reporting year, divided by 365 days (kWh/day). *Used for off-site subscriptions.*
- CAP = The rated capacity (e.g. size) of the energy storage system in kWh. *Used for on-site subscriptions.*
- Eff = Roundtrip efficiency, defined as 85% for calendar years 2024-2029. This represents how much electricity is lost (e.g. as heat) between the charging and discharging of the system.

Calculation: In the DOB [template](#), building owners select whether they would like to input “Total Emissions Spread - Offsite” or “-Onsite.” Each will prompt a separate input section, which will automatically calculate the deductions according to the following equations. Building owners enter the resulting value under the “Deductions” section of the BEAM portal and upload supporting data as prompted.

Subscribing to Off-Site BESS: The size of the deduction is determined by the following equation, per the [March 2025 DOB webinar](#):

$$ESS = TES \times CON_{daily} \times Eff$$

Example: A 5 MW FTM BESS in Brooklyn imported 200,000kWh from the grid in a year. A building in Manhattan subscribed to 50% of the project.

$$Con_{daily} = (200,000kWh * 50\%) / 365 \text{ days} = 274kWh/day$$

$$\begin{aligned} \text{Emissions reduction} &= 274kWh/day \cdot 0.13727tCO_2e/kWh/day \cdot 0.85 \\ &= \mathbf{32 \text{ tCO}_2e} \end{aligned}$$

$$\text{Savings} = 32 \text{ tCO}_2e \cdot \$268/tCO_2e = \mathbf{\$8,568}$$

Hosting and consuming On-Site BESS: The size of the deduction is determined by RCNY 103-14: [Equation 103-14.17](#):

$$ESS = TES \times CAP \times Eff$$

Example: The Barclays Center installed a 2,000kWh BTM BESS on their roof. The deduction is doubled because the system receives the Emissions Reduction and the Hosting Deduction benefits:

$$\begin{aligned} \text{Emissions reduction} &= 2 * (ESS = 2000kWh \cdot 0.13727tCO_2e/kWh/day \cdot 0.85) \\ &= 2 * (233 \text{ tCO}_2e) = \mathbf{467 \text{ tCO}_2e} \end{aligned}$$

$$\text{Savings} = 467 \text{ tCO}_2e \cdot \$268/tCO_2e = \mathbf{\$125,080}$$

BENEFITTING FROM BATTERIES

	Pathway 1: Subscribe to off-site NYC batteries	Pathway 2: Install batteries Behind-The-Meter (BTM)	Pathway 3: Host batteries Front-of-the-Meter (FTM)
LL97 Emissions Reduction	✓	✓	With additional subscription
LL97 Hosting Deduction		✓	✓
Property Tax Abatement (RPTL 499) up to \$250,000		✓	✓
Opportunity to reduce electricity bills (e.g. reduce demand charges)		✓	
Opportunity to participate in demand response programs		✓	
Lease payments from third party developer			✓
Difficulty to implement	Easy; no upfront investment or construction required.	Difficult; upfront investment and on-site construction required, and limited number of products approved by FDNY to date.	Moderate; limited to buildings with significant outdoor space (e.g. courtyard, parking lot, large rooftop).

ADDITIONAL RESOURCES



NEW YORK BATTERY
AND ENERGY STORAGE
TECHNOLOGY CONSORTIUM

NYSERDA Incentives

NYSERDA recently released additional incentives for Residential and Retail energy storage projects. Residential projects must serve 1-4 family homes. Retail projects may be serving a building (BTM) or directly interconnected to the grid (FTM). Incentive levels vary based on geographic location and MW Block availability. NYSERDA is also in the process of releasing the Inclusive Storage Incentive (ISI), which provides additional incentives for projects serving low-income residents, located in Disadvantaged Communities, and/or serving a “Critical Facility.” Visit [NYSERDA’s website](#) for more information.

Scan here to access this document digitally, or learn more on our website, www.ny-best.org.



One of four battery systems installed by Peak Power in a commercial office complex in Westchester, New York. Collectively, the systems provide 1,334 kW / 5,336 kWh of energy storage capacity and represent one of the state’s first Virtual Power Plant demonstration projects. The project reduces electricity costs and participates in NYISO and ConEd demand response programs. Courtesy of Peak Power Battery Storage.