PEAK COALITION

Replacing New York City’s Dirty Peaker Power Plants with Renewables and Battery Storage

May 2020
ABOUT THE PEAK COALITION

● The PEAK coalition—UPROSE, THE POINT CDC, New York City Environmental Justice Alliance (NYC-EJA), New York Lawyers for the Public Interest (NYLPI), and Clean Energy Group (CEG)—has come together to end the long-standing pollution burden from power plants on the city’s most climate-vulnerable people.

● Our collaboration brings technical, legal, public health, and planning expertise to support organizing and advocacy led by communities harmed by peaker plant emissions.

● Together with communities, we are advocating for a system of localized renewable energy generation and battery storage to replace peaker plants, reduce GHG emissions, lower energy bills and make the electricity system more resilient in the face of increased storms and climate impacts.
NEW YORK STATE CLIMATE LEADERSHIP & COMMUNITY PROTECTION ACT

Protects our planet
The Climate Leadership and Community Protection Act (CLCPA) states that New York must reduce its greenhouse gas emissions by 85%, and be completely carbon-neutral, by 2050. It also sets interim benchmarks for these goals.

Invests in marginalized communities
The bill states that 35% of the benefits of clean energy and energy efficiency funding must go to "disadvantaged" communities: typically low-income communities and communities of color hit first and worst by the climate crisis.

Sets renewable energy targets for NY State
Under the CLCPA, 70% of our electricity must come from renewable sources by 2030. By 2025, we must increase our solar capacity by 250%, and by 2035, we must build enough offshore wind to power 6 million homes.
ABOUT NYC-EJA

- NYC-EJA is citywide membership network linking grassroots organizations from low-income neighborhoods and communities of color in their struggle for environmental justice.

- NYC-EJA consists of eleven member organizations representing communities in Brooklyn, Queens, Manhattan, and the Bronx.

- We have been fighting the siting of peaker plants with our members and allies for twenty years!
● Peaker plants do not run much, but their limited operation contributes significantly to local air pollution in the city’s communities of color.

● Combustion of fossil fuels at peaker plants emits localized pollutants such as NOx and SO2, which are both directly harmful and can contribute to the secondary formation of ozone and PM2.5.

● Emission reductions may be particularly valuable in neighborhoods such as the South Bronx, where childhood asthma hospitalization rates of 432 per 10,000 are nearly double the average NYC rates.
In addition to air pollution impacts, climate change is projected to increase the morbidity and mortality due to increases in the average daily maximum temperature.

In NYC, extreme heat and the urban heat island-effects will continue to exacerbate health and energy inequities.

By the 2050’s, NYC can expect to see the number of 90 degree days to double, and the number of heatwaves to triple or quadruple.

New Yorkers who are currently suffering from higher rates of asthma and respiratory issues – whose best defense against COVID-19 is to stay home – will have to deal with skyrocketing electricity costs.
Owner: New York Power Authority
Online Date: 2001
Size: 94 MW
Annual Average Emissions: 25,751 tons CO2
Capacity Payments 2010-2019: $79,400,000
Overview of Peakers

Why Peakers Were Necessary

The New Role of Renewables and Storage

PEAK's Role In Re-Envisioning Our Energy System
OVERVIEW OF PEAKERS

Old
The oldest operating peaker in New York City was built in 1954. The average age of peaker plants in New York City is 39.

Inefficient
Peaker plants are generally GT or JE that burn natural gas and fuel oil. Many gas turbines efficiency can be as low as 30 to 35%.

Costly
Because peakers only operate during times of high energy demand, they have an exceptionally high $/kWh.

Dirty
Peaker emit a high level of pollutants relative to the electricity they generate. When New York’s gas-fired peaker plants are operating, “they can account for over 33% of New York’s daily power plant NOx emissions.”
Why Peakers Were Necessary

FIGURE 4: What Is Peak Demand?

- **Intermediate Generation**
  - Natural-Gas Power Plants, Solar Arrays, Wind Turbines, Dual Fuel Power Plants

- **Baseload Generation**
  - Coal-Fired Power Plants, Nuclear Power Plants, Hydro Power Plants, Geothermal Plant

Source: Clean Energy Group
Why Peakers Were Necessary
Why Peakers Were Necessary

Peak Load Day 2019 (July 20, 2019)

Data Source: NYISO
The New Roles Of Renewables + Storage

Discharge Time at Rated Power

- Response & Reserve Services
  - High-Energy Supercapacitors
  - Advanced Lead-Acid Batteries
  - Lead-Acid Batteries
  - Nickel Cadmium Batteries
  - Nickel Metal Batteries
  - Flywheels
  - High-Power Supercapacitors
- Transmission & Distribution Grid Support
  - Flow Batteries
  - Li-ion Batteries
- Bulk Power Management
  - PHS
  - CAES

Power Rating (MW)
New York ISO
Independent System Operator

INSTALLED CAPACITY (ICAP) WORKING GROUP
LOAD FORECASTING TASK FORCE
MARKET ISSUES WORKING GROUP
ELECTRIC SYSTEM PLANNING WORKING GROUP
MANAGEMENT COMMITTEE

Public Service Commission

Case 18-E-0071 – In the Matter of Offshore Wind Energy

Case 18-M-0084: In the Matter of a Comprehensive Energy Efficiency Initiative

Case 19-E-0735 - Proceeding on Motion of New York State Energy Research and Development Authority Requesting Additional NY-Sun Program Funding and Extension of Program Through 2025.

Case 19-E-0530 – Proceeding on Motion of the Commission to Consider Resource Adequacy Matters.

NYSERDA
Advanced Buildings Program

NY-Sun
(Solar Initiative)

Distributed Energy Resources
Capacity markets were developed as a way to compensate energy providers (power plants) for the power (MW) they can deliver to the energy system.

They are a means for utilities to ensure enough generation capacity is available to meet expected levels of future demand (plus a reserve margin).

Capacity payment compensation levels are determined by periodic auctions and all energy providers receive the clearing price, though capacity can also be secured through bilateral contracts between the utility and energy provider.

Capacity prices are typically higher in constrained areas like NYC.
# NYC Capacity Payments

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IMPACT ON UTILITY CUSTOMERS

New York City has some of the highest capacity costs in the country, costs that are passed on directly to consumers.

- Capacity payments expenses represent up to 5% of a customer’s electricity bill
- Average NYC residential customer has paid $530 to support dirty fossil-fuel peakers in the city
PEAKERS: A NATIONWIDE PROBLEM

Based on US EIA Form 923 Schedule 3B (2016)
## Top 10 Metropolitan Regions Burdened by Fossil Fuel Peaker Plants

<table>
<thead>
<tr>
<th>Metro Region</th>
<th># of Peaker Plants</th>
<th>Total Capacity (MW)</th>
<th>Average Age (Years)</th>
<th>Average Annual Operation (Hours)</th>
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</thead>
<tbody>
<tr>
<td>Baltimore-Washington DC</td>
<td>9</td>
<td>3,400</td>
<td>55</td>
<td>300</td>
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<tr>
<td>Boston</td>
<td>12</td>
<td>2,300</td>
<td>40</td>
<td>150</td>
</tr>
<tr>
<td>Chicago</td>
<td>17</td>
<td>8,400</td>
<td>30</td>
<td>350</td>
</tr>
<tr>
<td>Dallas</td>
<td>9</td>
<td>4,100</td>
<td>40</td>
<td>400</td>
</tr>
<tr>
<td>Detroit</td>
<td>7</td>
<td>1,000</td>
<td>45</td>
<td>200</td>
</tr>
<tr>
<td>Hartford-Middletown-New Haven CT</td>
<td>21</td>
<td>3,700</td>
<td>40</td>
<td>100</td>
</tr>
<tr>
<td>Los Angeles</td>
<td>29</td>
<td>7,500</td>
<td>30</td>
<td>400</td>
</tr>
<tr>
<td>New York City-Long Island-Newark NJ</td>
<td>46</td>
<td>12,100</td>
<td>40</td>
<td>400</td>
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<tr>
<td>Philadelphia</td>
<td>19</td>
<td>2,900</td>
<td>50</td>
<td>100</td>
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<tr>
<td>Tampa</td>
<td>8</td>
<td>2,500</td>
<td>40</td>
<td>200</td>
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Source: Strategen Consulting (based on 2018 operational data)
NYLPI has fought for over 40 years to protect civil rights and achieve lived equality in NYC.

The Environmental Justice Program works to eliminate the unfair burden of environmental hazards borne by low-income communities and communities of color, and to create a more equitable and sustainable city.
NY Climate Leadership and Community Protection Act (CLCPA)

- Climate Action Council plan and regulations should **maximize reductions of GHG emissions and co-pollutants** in “disadvantaged communities”

- Goal of 40%, and mandate of **35%, of benefits of clean energy and energy efficiency spending** accrue to disadvantaged communities

- New §66-p of Public Service Law, implementing 3 GW energy storage by 2030, directs Commission to design program so that **energy storage projects reduce use of peaker plants in disadvantaged communities**

- Key provisions incorporated into State Energy Plan
Section 7 of CLCPA: state entities must consider whether all permits, licenses, administrative approvals, contracts, etc. are consistent with GHG emissions limits; if not, must issue a detailed statement justifying approval and identifying alternatives and/or mitigation.

State entities also shall not disproportionately burden disadvantaged communities when issuing permits/approvals and shall prioritize reductions of co-pollutants in disadvantaged communities.

Many NYC peaker plants, including all owned by NYPA, must renew their Title V air permits within the next year.
NY AIR QUALITY REGULATIONS: NOx

- New limits on NOx emissions from peaker plants in NY during ozone season beginning in 2023, more stringent by 2025. 6 NYCRR 227-3.
- Compliance options: shut down, install storage and/or renewables, install emissions controls

<table>
<thead>
<tr>
<th>Fuel Type</th>
<th>Effective Daily Emission Limit (lb NOx/MWh)</th>
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<tbody>
<tr>
<td>Gaseous fuels</td>
<td>1.5</td>
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<tr>
<td>Distillate oil or other liquid fuel</td>
<td>2.0</td>
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</tbody>
</table>
Article 10 of NY Public Service Law requires a siting board to evaluate and issue Certificate of Environmental Compatibility and Public Need for major (>25 MW) electric generation facilities if:

- Consistent with State Energy Plan
- Any disproportionate impacts on environmental justice communities are identified and mitigated
- Facility serves the public interest and benefits overall electric generation
- Any adverse environmental impacts will be avoided or mitigated
- Facility will operate in accordance with local and state laws and regulations
SUNSET PARK NEIGHBORHOOD: CONTEXT

- 31% Below poverty line
- 50% Linguistically isolated
- High rates of respiratory diseases

Significant Maritime Industrial Area (SMIA)

ENVIRONMENTAL JUSTICE: POLLUTION IN SUNSET PARK

Gowanus Expressway

200,000 cars + 25,000 diesel trucks everyday

Waste Facilities

2 Solid waste transfer stations

Fossil Fuel Energy

3 Peaker power plants
ENVIRONMENTAL JUSTICE:
POLLUTION IN SUNSET PARK

PM 2.5 Pollution!

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PM 2.5 Pollution!
COVID-19
GREEN RESILIENT INDUSTRIAL DISTRICT (GRID)

- Community-based planning for holistic proposal
- Utilize the industrial sector as the economic engine to build for climate mitigation and resilience
- Local solution to meet regional climate needs: energy, food security, water, and sustainable manufacturing

Sunset Park
New York City
Northeast Region
GOWANUS RE-POWERING: FIGHTING FOSSIL FUEL INVESTMENT

- Astoria Generating Company is a private owner of 2 peaker power plants in Sunset Park
  - Gowanus: 640 MW
  - Narrows: 320 MW
- Proposal to re-power them with new natural gas fired peaker plants
- Engaging through Article X Process
- Promoting renewable energy alternatives
  - Climate Leadership and Community Protection Act compliance

640-Megawatt Gowanus Peaker Plant in Sunset Park
SUNSET PARK SOLAR: LOCAL IMPLEMENTATION

- NY’s first cooperatively-owned community solar project
- Innovative project team
- 685-kilowatt system on the Brooklyn Army Terminal building in Sunset Park
- Support 150-200 local households and small businesses
- Save 15% on monthly energy bills
- Local workforce development opportunity
Hunts Point
SOUTH BRONX
In Hunts Point, childhood asthma hospitalization rates of 432 per 10,000 are nearly double the average NYC rates.
ENVIRONMENTAL JUSTICE: HUNTS POINT

Bruckner Expressway
15,000 trucks everyday; ⅓ of which are garbage trucks.

15 waste transfer stations + 1 wastewater treatment facility

2 Peaker power plants
SOUTH BRONX COMMUNITY RESILIENCY AGENDA

Free Hunts Point Wifi

Be A Buddy

Renewable and Resilient Energy
HUNTS POINT RESILIENCY

US Dept of Housing and Urban Development (HUD) - Rebuild by Design

- Install solar panels + battery storage (total 600 kW) at PS 48 and MS 424
- Enable backup power at schools during emergency events
- Reduce the schools' overall energy use from the grid
HUNTS POINT COMMUNITY SOLAR

- 2 public schools is not enough!
- Commitment to community ownership of solar!
- Seeking opportunities for addressing energy/storage needs with community leadership and economic democracy as core principles.
- Utilizing our industrial waterfronts as a hub for renewable energy
RENEWABLE RIKERS

- Legacy of Mass Incarceration and its impact
- Hub for Just Transition - critical piece for Restorative Justice
- We are advocating for the Renewable Rikers Act to study the feasibility of large scale solar and storage
- One part of a larger collective vision for IMPACT
HEAT VULNERABILITY & POOR AIR QUALITY

One of the hottest communities in NYC

Has some of the worst air quality in NYC