
Long Island Solar Farm

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Project Overview

The Long Island Solar Farm (LISF) is a 32-megawatt solar photovoltaic power plant built through a collaboration including BP Solar, the Long Island Power Authority (LIPA), and the Department of Energy. The LISF, located on the Brookhaven National Laboratory site, began delivering power to the LIPA grid in November 2011, and is currently the largest solar photovoltaic power plant in the Eastern United States. It is generating enough renewable energy to power approximately 4,500 homes, and is helping New York State meet its clean energy and carbon reduction goals.

Project Developer/Owner/Operator: Long Island Solar Farm, LLC (BP Solar & MetLife)

Purchaser of Power: Long Island Power Authority (LIPA) purchases 100 percent of the LISF project output

Destination of Power: LIPA system for its customers

Project Host: The Department of Energy (DOE) provided a 20-year easement to LISF, LLC at The Brookhaven National Laboratory (BNL) for the LISF project

Peak Capacity: 32 megawatts (AC)

Annual Energy Output: 44,000,000 kilowatt-hours (estimated annual average), equivalent to the annual usage of ~ 4,500 homes

LISF Power Purchase Agreement (PPA) Term with LIPA: 20 years

Estimated Project Life: 40 years

Land Area: Approximately 200 acres

Technology: Crystalline solar photovoltaic (PV) modules, ground mounted (164,312 panels)

Construction schedule: Fall 2010 - Fall 2011

Workforce: 200 + FTE during construction, two during operation

Project Location: U.S. Department of Energy's Brookhaven National Laboratory, Upton, Long Island, New York

Climate Change Impacts

CO2 Avoided: 30,950 metric tons/year (1.2 million metric tons over 40 years) Compared to conventional electric generating facilities on Long Island

CO2 Sequestration Lost: 842 metric tons/year lost due to removal of trees (33,680 metric tons over 40 years)

Methane Avoided: 80 metric tons over 40 years

Note: Energy required to produce and construct arrays ~ 2 years of output (88,000 MWh equivalent)

Other Pollutants Avoided

- 1,320 metric tons of Nitrogen Oxides (NOx) avoided over 40 years
- 1,200 metric tons of Ozone Season NOx avoided over 40 years
- 3,040 metric tons of Sulfur Dioxide avoided over 40 years

Environmental Benefit Contributions

- BNL formally protecting 89 acres (51 + 38) in site master plan
- LIPA formally protecting 45 acres
- LISF contributing $75,000 to LI Native Plant Initiative for environmental restoration
- $2 million of forgone consideration to preserve additional property

Research Opportunities

- First utility-scale PV System in NE – information used to improve future facility siting and design
- Impacts to local power grid – cloud shadow, snow, climate
- Ecological studies
- Separate five-acre BNL research array to study
    - Inverter technologies
    - Energy storage
    - Power supplies

BNL/DOE Land Preservation History

- 2,943 acres preserved (56% of current footprint)
    - 2,339 acres donated to NY State Parks – 1973
    - 74 acres misc. land transfers
    - 530 acres dedicated as Upton Ecological & Research Reserve (10% of land area) – 2000

BNL Land Development over 60 year history

- 1,412 acres (27%) of current 5,265 acres
- Original WW II area – 500 acres (10%)
- Since 1947 – 912 acres (17%)
- Long Island Solar Farm – 200 acres (<4%)
- 30.6 % developed by 2011

Project Siting Information and Background

- Considerations for selecting location
  - Avoided Core Preservation Area of Pine Barrens
  - Proximity to LIPA substation
  - Avoid or reduce environmental & cultural resource impacts
  - Utilize cleared or previously disturbed areas
  - Limit impacts on BNL operations (utilities, traffic, future science)
- Total Area – Approximately 200 Acres
  - 35 Acres existing cleared area
  - 5 Acres Former Tree Nursery
  - 98 Acres Former WW I areas – variously restored
  - 62 Acres historically disturbed prior to WW I
- Portion of project area moved to avoid 14 acres of higher quality pine barrens habitat in Compatible Growth Area (CGA) of Pine Barrens
- Irregular layout designed to minimize environmental issues
- Project totally avoids development within Core Preservation Area (CPA)
- Avoids wetlands and tiger salamander habitat and improves a small tiger salamander pond
- Maximizes tiger salamander buffers
- Native grasses planted
- Removes invasive plants and will manage for invasives preventing establishment and spread into Core Preservation Area (CPA)
- Will not impact groundwater
  - Total annual water use for maintenance less than 500,000 gallons
  - Native vegetation below arrays will filter precipitation as it infiltrates ground
- Project not expected to impact surface water – current flow patterns will be unchanged - Impervious surfaces increase by 10,890 sq. ft.
- Creates a deer-free area – enhancing habitat for other wildlife
- Fencing is wildlife friendly
- Construction activities timed to reduce disturbance to birds and wildlife
- Array connections to step-up transformer will follow existing roadway avoiding wetlands

Site Development Planning Process

- Use of 10 year development plans
- Focus on replacing and upgrading within central part of Lab
- Avoiding pine barrens CPA
- Avoiding wetlands areas
- Protecting the Peconic River
- Protecting threatened and endangered species
- Protecting cultural resources

LIPA Long Island Power Authority bp solar MetLife U.S. DEPARTMENT OF ENERGY