

# APPENDIX E

## BNL Site Sustainability Plan: Status Summary for Fiscal Year 2023

DOE Goal	Current Performance Status	Planned Actions & Contributions
<b>Energy Management</b>		
Reduce energy intensity (Btu per gross square foot) in goal-subject buildings by 50% by the end of FY 2030.	Energy Utilization Index (EUI) in goal subject buildings has increased 87% compared to the 2008 benchmark. FY23 goal subject Btus are 668,956 MMBtu. 50% from 2008 would be 184,509 MMBtu, a 72.4% reduction.	Btus for heating up 363% compared to FY08. Maintenance of larger steam distribution leaks is not classified as maintenance. Staff limitations on leak repair are a key contributor to the increase.
Achieve a net-zero emissions building portfolio by 2045 through building electrification and other efforts.	Plan in development.	Plan for building electrification projects in development.
EISA Section 432 continuous (4-year cycle) energy and water evaluations.	Compliant.	Continue reviews.
Meter individual buildings for electricity, natural gas, steam, and water to adhere to Federal metering guidance.	Significant progress required for steam and water metering.	\$93,000 allocated for condensate and water metering in FY24.
<b>Water Management</b>		
Reduce potable water use intensity (Gal per gross square foot).	FY23 water use intensity was 72.31 G/GSF sq.ft. vs. FY07 benchmark of 101.16 G/GSF.	Perform Comprehensive Site Water Assessment in accordance with DOE guidance by March 29, 2024. Initiate CURP Steam/Condensate distribution repairs. Perform Single Pass Cooling Assessment.
Reduce non-potable freshwater consumption (Gal) for industrial, landscaping, and agricultural.	BNL water management plan does not allow for irrigation outside of establishment period for native species.	No further action necessary.
Reduce non-hazardous solid waste sent to treatment and disposal facilities.	BNL's overall recycling rate for FY23 is 76%. BNL contracted to have its solid waste sent to a Waste-to-Energy facility for disposal instead of landfilling when available and has subsequently sent 75% of its MSW to that facility. If accounted for, BNL then is diverting 99% of its MSW from a landfill. BNL initiated a successful wood pallet recycling program collecting 5 tons of pallets for recycling during FY23.	BNL will continue to identify opportunities for expanding the current recycling program starting with evaluating whether the wood pallet recycling program can be expanded to include plastic pallets.

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<b>Waste Management</b>		
Reduce non-hazardous solid waste sent to treatment and disposal facilities.	<p>BNL's overall recycling rate for FY23 is 76%.</p> <p>BNL contracted to have its solid waste sent to a Waste-to-Energy facility for disposal instead of landfilling when available and has subsequently sent 75% of its MSW to that facility. If accounted for, BNL then is diverting 99% of its MSW from a landfill.</p> <p>BNL initiated a successful wood pallet recycling program collecting 5 tons of pallets for recycling during FY23.</p>	BNL will continue to identify opportunities for expanding the current recycling program starting with evaluating whether the wood pallet recycling program can be expanded to include plastic pallets.
Reduce construction and demolition materials and debris sent to treatment and disposal facilities.	No demolition Construction & Demolition (C&D) debris was generated during FY23. C&D debris generated during routine Operation and Maintenance (O&M) activities across site have recyclables segregated out before disposal into a C&D dumpster making further reduction difficult.	No demolition C&D debris was generated during FY23. C&D debris generated during routine O&M activities across site have recyclables segregated out before disposal into a C&D dumpster making further reduction difficult.
<b>Fleet Management</b>		
Reduce petroleum consumption.		<p>Continue to expand ChargePoint station access to guests and employees. BNL installed 10 additional ChargePoint stations onsite to support increased government electric vehicle (EV) fleet bringing the total to 14 Level 2 charging stations (28 ports) and six Level 2 charging stations onsite. Funding has been requested to install ten more ChargePoint stations (20 ports) onsite in FY24.</p> <p>Train all employees that drive government EVs on how to charge plug-in hybrid electric vehicles (PHEV) to reduce fuel consumption.</p>
Increase alternative fuel consumption.		<p>Flex Fuel vehicles will only have access to E-85 fuel pumps.</p> <p>Purchase more electric vehicles as they become available to meet the Lab's mission.</p> <p>Geotab Telematics will provide reports on the vehicles capable of transferring to electric based upon usage.</p>
Acquire alternative fuel and electric vehicles.		BNL received 14 additional electric vehicles for FY23. We will continue to purchase EVs as they become available through the General Services Administration (GSA).



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<b>Clean &amp; Renewable Energy</b>		
Achieve 100 percent carbon pollution-free electricity on a net annual basis by 2030, including 50 percent 24/7 carbon pollution-free electricity.	Will not comply. Current projections are in FY30 BNL will have 38% carbon-pollution free energy (CFE) on a net annual basis. In FY23, 47% of electricity delivered to BNL was from carbon pollution-free sources of electricity, namely conventional hydro power.	Electric procurement will require negotiation with NYPA to increase CFE allocations to site. Federal Energy Management Program (FEMP) Assisting Federal Facilities with Energy Conservation Technologies (AFECT) grant proposal was submitted to perform an investment grade audit to assess solar feasibility on campus fields, parking lots, and roadways. A science line-item (SLI) proposal was submitted to develop a 30MW solar array on campus.
Increase consumption of clean and renewable non-electric thermal energy.	There is currently no consumption of thermal energy that is non-electric, clean, and renewable.	No current plans to consume clean, renewable, and non-electric thermal energy. Thermal energy (steam) on-site is generated using fossil fuels, significant investment is required to change this, funding to date has not been allocated.
<b>Sustainable Buildings</b>		
Increase the number of owned buildings that are compliant with the Guiding Principles for Sustainable Buildings.	BNL currently has nine (9) buildings of greater than 25,000 in size that qualify as a Sustainable Federal Building.	As BNL constructs new buildings that are compliant with the Guiding Principles for Sustainable Buildings, the number of such buildings will increase. The Science User Support Center (SUSC) building, currently under construction and planned for completion in Summer 2024, was designed to meet the Guiding Principles for Sustainable Buildings.
<b>Acquisition &amp; Procurement</b>		
Promote sustainable acquisition and procurement to the maximum extent practicable, ensuring all sustainability clauses are included as appropriate.	Sustainable clauses are included in contract terms and conditions. BNL received its eight Green Buy Gold award and third Green Buy Superior Award and Electronic Product Environmental Assessment Tool (EPEAT) Award for electronics purchases.	Make the Sustainable Facilities Purchasing Database tool available to requisitioners via Lab webpages and communicate its availability.
<b>Efficiency &amp; Conservation Measure Investments</b>		
Implement life-cycle cost effective efficiency and conservation measures with appropriated funds and/or performance contracts.	No current active performance contracts.	No planned performance contracts.
<b>Electronic Stewardship</b>		
Electronics stewardship from acquisition, operations, to end of life.	BNL received an EPEAT Award from the Green Electronics Council for its purchases of environmentally sustainable electronics.	BNL will continue to provide the highest rated EPEAT products to BNL staff for purchase via an on-line service portal. BNL will apply for the EPEAT Award.
Increase energy and water efficiency in high-performance computing and data centers.	At the time of update power utilization effectiveness (PUE) averages platinum level efficiency (1.3).	BNL will continue to monitor PUE to ensure platinum level performance.

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<b>Adaptation &amp; Resilience</b>		
Implement climate adaptation and resilience measures.	Progress was made on all proposed Resilience Solution projects in FY23 and BNL's Office of Emergency Management (OEM) continued to integrate climate resilience into its day-to-day risk management processes. Details are provided in the narrative section.	Continue making progress on executing the resilience solutions being tracked in the Dashboard module and evaluate if there are other projects that can be implemented to improve resiliency against identified climate change hazards.
<b>Multiple Categories</b>		
Reduce Scope 1 & 2 greenhouse gas emissions.	45% reduction from FY08 baseline owing to 15MW hydro allocation negotiated in 2011. (FY08 198,085 MtCO <sub>2</sub> e vs. FY23 107,299 MtCO <sub>2</sub> e)	Repair of condensate leaks to reduce Scope 1 emissions. SLI submitted for 30 MW on site solar array.* AFFECT grant for investment grade audit to study open field, parking lot, and roadway solar submitted to FEMP. New York State (NYS) Climate Leadership and Community Protection Act (CLCPA) targets grid supply of 70% CFE by FY30. *Attainment entirely dependent on NYS CLPA performance or DOE/Power Purchase Agreement (PPA)/Utility Energy Service Contract (UESC) funding for on-site solar projects.
Reduce Scope 3 greenhouse gas emissions.	33% reduction from FY08 baseline due to hydroelectric power use and employees embracing working from home.	Consider reintroducing staff to the benefits of ridesharing via a Monday Memo article. Continue to engage with NY State, the Metropolitan Transportation Authority (MTA), Long Island Railroad (LIRR), and Suffolk County/Brookhaven Town officials regarding plans for the relocation of the Yaphank rail station closer to BNL.

