Facility Energy Efficiency Project

US DEPARTMENT OF ENERGY OFFICE OF INDIAN ENERGY

ENERGY INFRASTRUCTURE DEPLOYMENT ON TRIBAL LANDS

Oneida Indian Nation

FACILITY ENERGY EFFICIENCY PROJECT

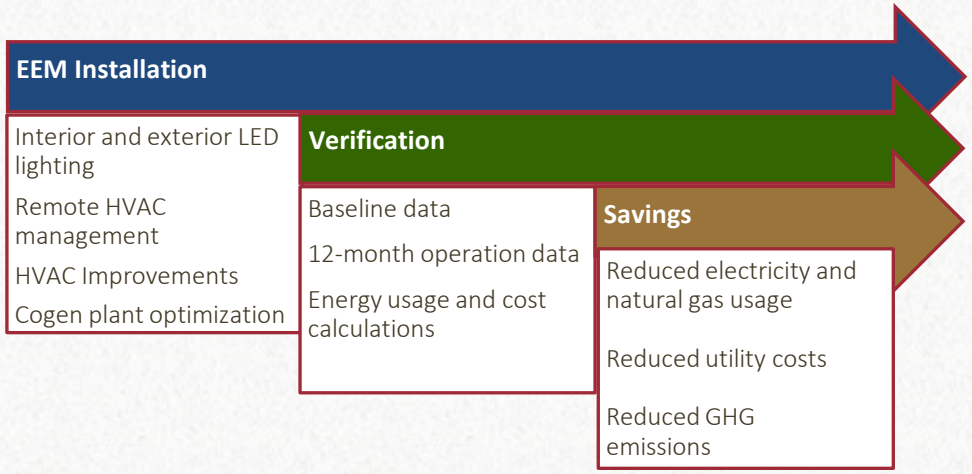
MULTIPLE ENERGY EFFICIENCY MEASURES

Oneida Indian Nation's building energy efficiency upgrades will generate substantial financial and environmental benefits

Oneida Indian Nation's *Facility Energy Efficiency* project aims to reduce energy usage by installing energy efficiency upgrades throughout ***27 Oneida-owned buildings*** (office space, warehouses, police facilities, convenience stores, and entertainment venues), covering over ***3.8 million square feet*** of facility space:

- Interior and exterior lighting upgrades with LED technology
- Remote HVAC management
- Improvements to kitchen hoods, HVAC units, and central utility plant

This project furthers the Oneida goal to preserve and protect its natural resources to ensure a safe, healthful, and productive environment for current residents and visitors on its lands, as well as for the seventh generation to come.



Key Personnel

Key Oneida Indian Nation personnel include:

- Ray Halbritter, Nation Representative & Chief Executive Officer
- Peter Carmen, Chief Operating Officer, Business Contact
- David Weed, VP of Engineering and Physical Plant
- Bryan Mignone, Deputy General Counsel, Technical Contact
- Paul Gwilt, Director of Oneida Indian Nation Facilities

Budget

Federal funds requested: $1,523,946

Cost-share: $512,768

Total Project Costs: $2,036,714

Project Outcomes

(1) over ***$450,000*** saved annually
(2) decrease of more than ***4 million kWh*** and ***50,000 therms*** of energy usage annually
(3) reduction of more than ***3,000 metric tons of greenhouse gas emissions*** annually

The payback period for this project is ***4 years***.

Realization of these impacts will help the Oneida Indian Nation achieve its goal of effective environmental stewardship.

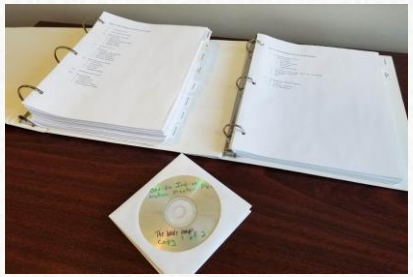
Project Goal

The Oneida Indian Nation recognizes the need to be a responsible steward of its resources—including energy resources—while encouraging economic development to support the needs of its operations, programs, and members. The ***goal*** of the Oneida Indian Nation *Facility Energy Efficiency Project* is to build upon a previously conducted energy audit of Oneida buildings to implement energy efficiency measures across 27 facilities.

As part of a US Department of Energy *First Steps toward Developing Renewable Energy and Energy Efficiency on Tribal Lands* grant awarded in 2017, the Nation contracted with an energy consultant to provide a comprehensive analysis of energy consumption for approximately 40 buildings (~3.8 million square feet of building space).

The resulting audit, consistent with ASHRAE Level II requirements, provided dozens of recommended efficiency measures for the facilities studied.

Energy Master Planning deliverables



- A full energy audit of all Oneida facilities was conducted by a highly qualified consultant group in 2018.
- The consultant made recommendations for specific technologies that would boost energy efficiency in each building.
- The recommendations included cost estimates, savings projections, and a Savings-to-Investment Ratio for each measure.
- Oneida leadership reviewed the audit results and energy efficiency recommendations and selected project components with reasonable returns on investment and significant impact in terms of energy and cost savings.

Energy Efficiency Measures

Interior / Exterior LED Lighting (28 buildings)

Replacing the existing incandescent, fluorescent, and high intensity discharge fixtures with new LED fixtures and occupancy sensors.

Exterior lighting (primarily parking lots, including those at Turning Stone) are being updated to LED fixtures, some with photocell sensors.

Remote HVAC Management – most facilities

Installation of programmable, remote thermostats with demand control ventilation system, CO_2 sensors, and Remote Terminal Unit Distributed Control System (RTU DCS) controllers.

Other EEMs include

- Kitchen exhaust hood controls
- Snow melt boiler replacement
- HVAC replacements
- Central Utility Plant chilled water upgrades – VSD pump and controls

Turning Stone is the area's largest consumer of energy

The Turning Stone Resort Casino is comprised of 3.4 million square feet of facility space across multiple buildings on an 812-acre campus. Turning Stone is the largest Oneida facility and includes gaming space, lodging facilities, spas, entertainment complexes, dining and banquet facilities, and administrative offices.

In a given year, the amount of electricity and natural gas purchased and used by Turning Stone could light over 104,100 homes and heat over 7,600 homes in New York State.

The EEMs for Turning Stone include exterior LED lighting replacement; a chiller system upgrade at the Cogen plant which includes the installation of water pump controls to balance water temperature and volume for maximum efficiency; and, installation of energy efficient kitchen exhaust hoods with sensors that allow operation to be adjusted based on cooking intensity.

Turning Stone EEMs represent 44% of the projected savings over 4 years.

How it started . . .

Project staff completed initial project steps:

- Complete list of all equipment and supplies with model numbers and brands, where applicable, and identification information for each item.
- Developed detailed scopes of work that could be provided to potential vendors.
- Prepared requests for proposals (RFPs) for each element of every project component. Some components require materials, installation, mechanical work, and electrical work – four RFPs for one project component.
- Found vendors that were available to bid on project components.
- Scheduled and conducted walk-throughs to familiarize vendors on the details of the project components and to answer vendor questions.
- Accepted and reviewed bids and selected the most appropriate vendors; sent bids to DOE for approval.
- Negotiated contracts with the selected vendors.

How it's going . . .

Completed project components:

- Kitchen exhaust hood controls installed so they don't run constantly.
- Central Utility Plant (CUP) chilled water optimization upgrade.
- CUP chilled water pump upgrade to VSDs.
- Parking lot lights replaced with LED units.
- Snow melt boiler put into service.
- 67 Remote thermostats (20 more to come) placed.
- LED replacement light fixtures in 24 buildings – only 4 left!

Still working to complete light fixture replacements, HVAC upgrades, and the last remote thermostats.

Started measuring verification of savings on January 1, 2023, which will continue until all components are installed and savings verification is complete.

Challenges

COVID-19 Pandemic

- Production of parts was delayed, and there were repeated changes to delivery dates.
- Delivery transportation was delayed everywhere for all materials during and immediately after the pandemic.
- Vendors were working with fewer staff members or closed permanently, while other were so busy they did not have the time to bid or complete the project work.
- Oneida lost some key staff who had to be replaced.

Running a 24/7 Operation

- Oneida is working with input from facilities staff and building occupants to minimize disruption to daily operations.

Inflation

- To offset the higher cost of light fixtures, staff reevaluated the need for new poles and determined that it could reuse most of them.

Quantity

- The sheer number of light fixtures required to replace all of the existing light fixtures – 7 tractor trailer loads! - required a phased delivery process.

Verification: Turning Stone Deemed Savings Approach

Challenge: Verification of savings at Turning Stone presents a unique challenge.

- EEMs will not be individually metered, making isolation of each EEM difficult.
- Turning Stone is a large, multi-use facility with multiple maintenance and expansion projects potentially occurring each year with timetables that overlap this EEM project.

Solution: At Turning Stone, savings are based on data from the 2018 energy audit for each EEM. This method assumes that the stipulated monthly savings for each EEM will be held constant and that EEMs are successfully installed and operating properly. Annual energy savings, in kWh and therms as applicable, are calculated and projected now that all Turning Stone EEMs are installed and functioning. Monetary savings are calculated using the resulting energy savings and the current utility rates for Turning Stone.

Verification: Other Oneida Buildings
Whole Building Verification

The Oneida Indian Nation uses a B3 Benchmarking system to track energy use in its facilities.

- The software provides the ability for the user to flag a point in time where a change was made, allowing staff to note the implementation date of any EEMs made at a building.
- Staff uses the program to compare a baseline year to a 12-month period after installation of EEMs. The analysis takes into account when each event occurred, which helps to explain fluctuations.

BENCHMARKING

Dreamcatcher Plaza

Period 1: April 2023 - June 2023

Period 2: April 2022 - June 2022

				Electric								Natural Gas									
				Usage				Cost				Usage				Cost					
Site Name	Building Type	Avg. SF During Period 1**	Avg. SF During Period 2**	Period 1 (kWh)*	Period 2 (kWh)*	Change From Period 2	% Change From Period 2	Period 1 (Cost)*	Period 2 (Cost)*	Change From Period 2	% Change From Period 2	Period 1 (Therms)*	Period 2 (Therms)*	Change From Period 2	% Change From Period 2	Period 1 (Cost)*	Period 2 (Cost)*	Change From Period 2	% Change From Period 2	Organization ID	Site ID
Dreamcatcher Plaza	Office	100,130.00	100,130.00	143,933	199,503	-55,570	-27.85%	12,829	20,403	-7,575	-37.12%	9,006	13,002	-3,995	-30.73%	5,247	12,192	-6,945	-56.96%	2044	16060

Thank You!

Questions?