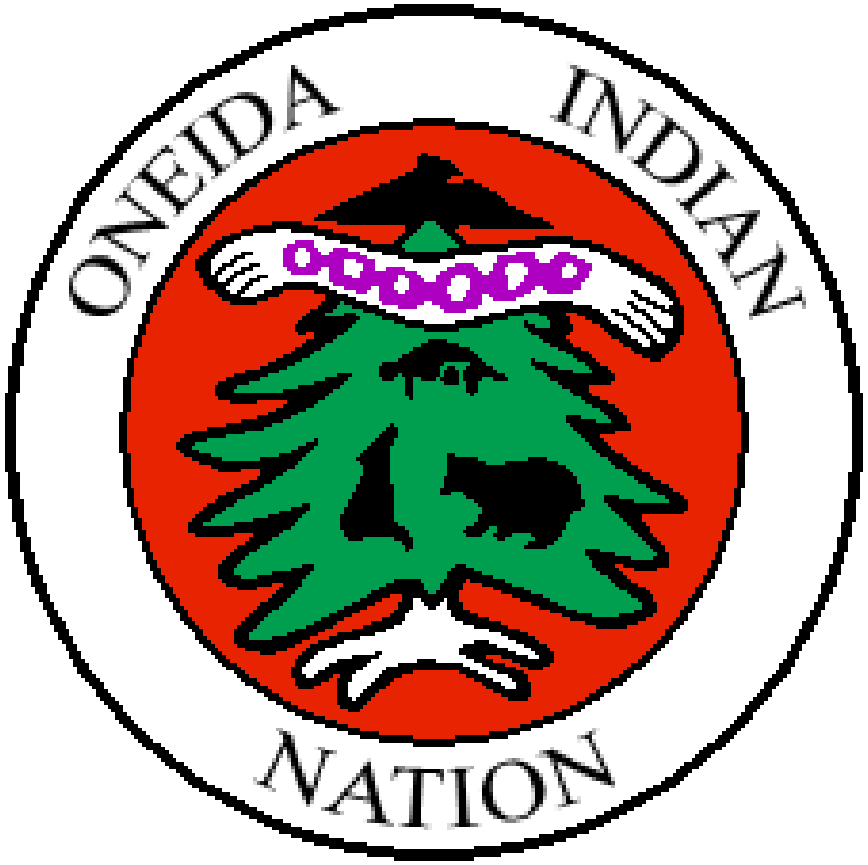
# Oneida Indian Nation




## U.S. Department of Energy

Community Scale Clean Energy Deployment Combined Heat and Power Project

# Who We Are

- Federally recognized, self-governing sovereign Indian tribe with approximately 1,000 enrolled members.
- The Oneida Indian Nation is Governed by Council and is comprised of up to three members from each of the Nation's clans (Wolf, Turtle, and Bear). Council selects one or more Nation Representatives to represent the Nation in governmental and business affairs. Ray Halbritter has served as Nation Representative since 1975 and is currently the sole Nation Representative.

**The Nation's three long-range goals to guide the social and economic development of its community;**

1. Help the Nation's members achieve their highest potential in education, physical and mental health, and economic development;

2. Implement the legal and administrative structure necessary for the stability and protection of Nation sovereignty, treaty rights, and government-to-government relationships; and

3. Acquire, develop, and secure resources to achieve economic and social empowerment and self-sufficiency.

# Who We Are (Cont.)

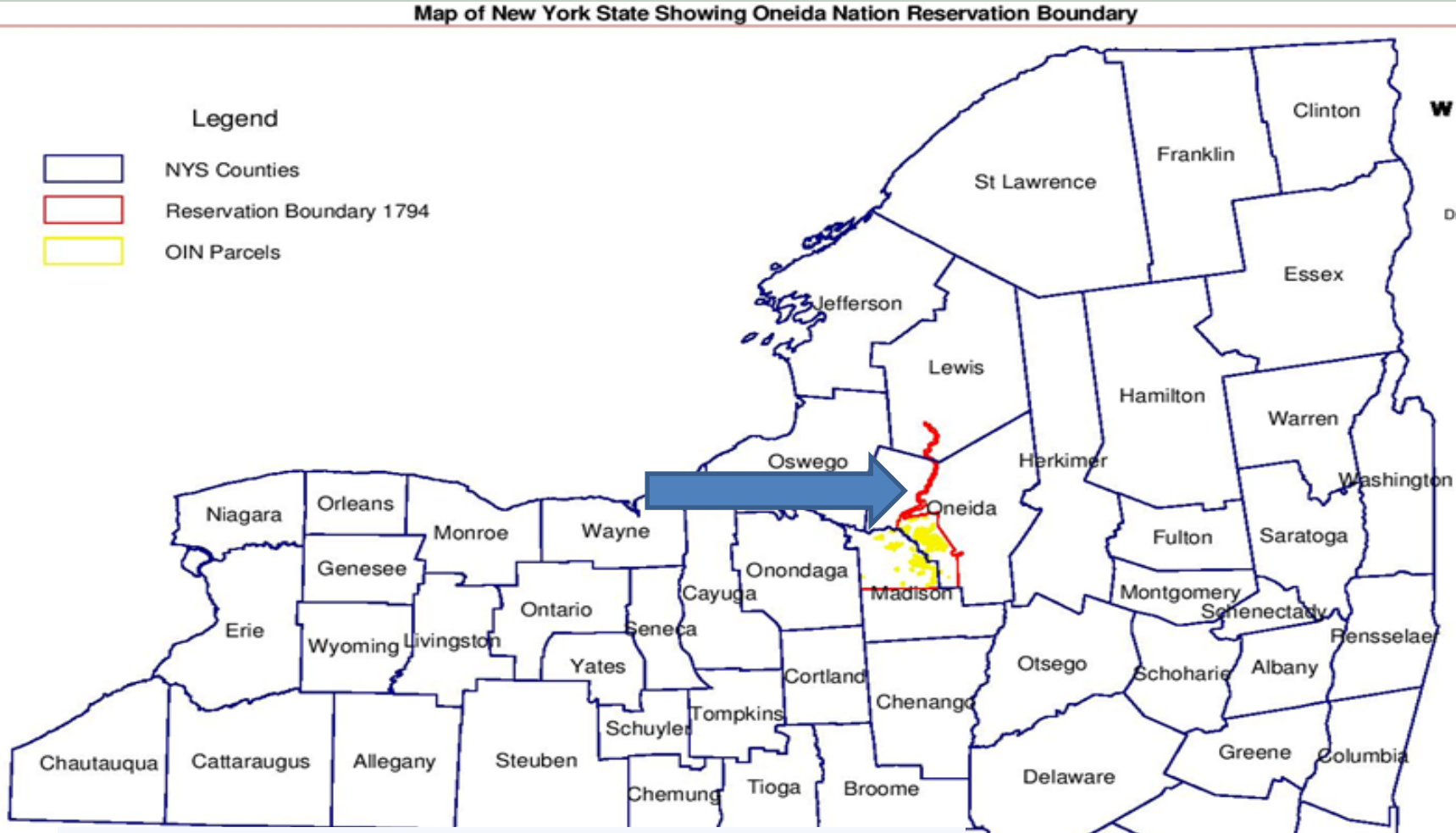
- Approximately 6,475 acres in Madison County and Oneida County, which are the location of Nation government, health, education, and cultural facilities and activities;

- Member housing; hunting lands; and numerous non-gaming Nation enterprises, including 13 gas stations and convenience stores, three marinas, and agricultural operations;

- Approximately 7,467 acres in Madison County and Oneida County containing undeveloped, active and inactive agricultural lands; and

- The Nation's **3,200,000** square foot Turning Stone Resort campus.

# Where We Are




Approximately 300,000–acre reservation that was created and recognized by the 1794 Treaty of Canandaigua.

The Nation reacquired approximately 17,949 non-contiguous acres of its reservation land located within a 350.6 square mile area of Oneida (137.5 sq. miles) and Madison (213.1 sq. miles) counties located in central New York.

# ONEIDA INDIAN NATION GOVERNMENT PROGRAMS AND SERVICES

Oneida Indian Nation Government Programs and Services Include:

- Health Services- Providing top medical, dental and behavioral health care for all generations is the number one priority for Oneida Indian Nation Health Services, which serves nearly 3,500 clients.
- Elders Program- Oneida Elders and American Indian clients participate in educational, nutritional and social programming at the Ray Elm Children and Elders Center
- Recreation & Youth Development
- Education, including early education programs and language learning
- Housing programs
- Oneida Indian Nation court system
- Oneida Indian Nation police
- Oneida Indian Nation Codes/Environmental management

# ONEIDA INDIAN NATION ENTERPRISES

## Turning Stone Resort Casino- Award Winning

- **700 Hotel Rooms –** Over 4.5 million guests per year
- **5 Golf Courses-** Many PGA Championship Tournaments
- **15 Restaurants-** 3 – AAA 4 Diamond Awards
- **2 Spas**
- **Golf Dome and Sports Complex**
- **World Class Entertainment and Venues**
- **RV Park**

## Yellow Brick Road Casino – Chittenango NY

## Point Place Casino – Bridgeport NY

## 12 gas stations and convenience stores

## 3 full service marinas

## 3,000-acre hunting game preserve

## Salmon Acres Fishing Lodge

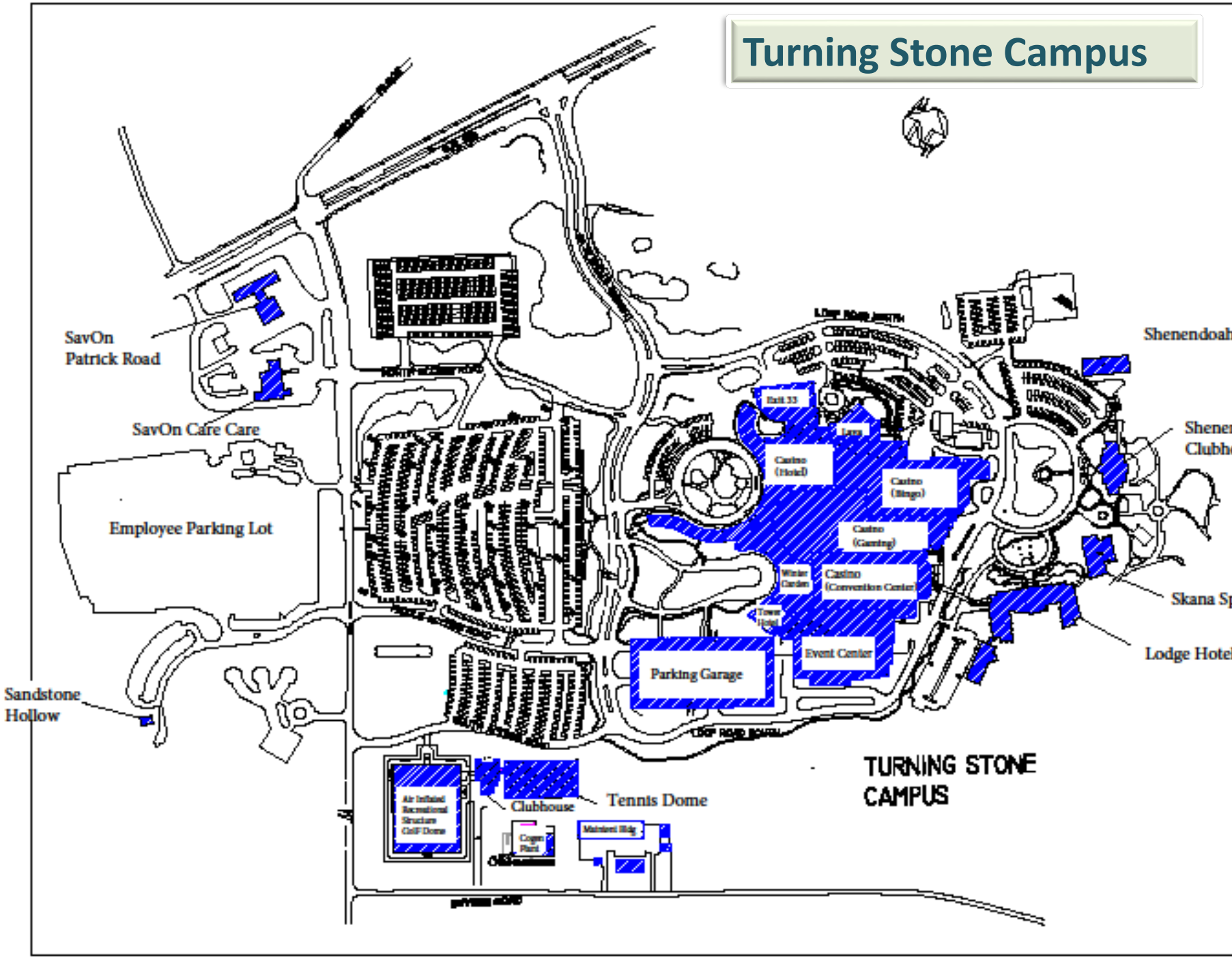
***Largest employer in Oneida and Madison counties and the fourth-largest employer in the 16 counties of Central New York. Overall, the Nation employs approximately 4,000 Native and non-Native people across all of its governmental programs and commercial enterprises.***

# The Oneida Indian Nation's Turning Stone Resort & Casino

(Project Location)

# Turning Stone offers world class gaming, lodging, gaming, entertainment, golf, etc.

# Turning Stone Campus



# Turning Stone is the area's largest consumer of energy

- It has its own electrical sub-station - bring in power from the public utility 115,000 volts
- Voltage decreased from 115,000 volts to 13,200 volts where it is distributed around the campus
- The voltage is then reduced again from 13,200 volts to 480 volts before it enters the building
- Multiple stand-by generators with UPS systems and a central utility plant that can supply 6000 tons of chilled water
- Pre-project Natural gas fired, 5 mega watt CHP (combined heat & power) turbine that can also generate 28,000 lbs/hr of 350 deg F, 125 PSI steam which is used for heat and domestic hot water.
- Prior to this project Turning Stone was not able to use all of the steam being generated from the CHP turbine, which was inefficient.

# Long Term Energy Goals

- ***Goal*: One of the primary sources of the Turning Stone Resort campus' energy comes from the CUP (Central Utility Plant), which runs on natural gas. The goal of the project is to upgrade the existing CUP to make it more efficient and environmentally sound. This will enable Turning Stone Resort to function in a more fiscally efficient manner by reducing energy expenses.**

- **The specific objectives of the Nation for this project:**

  - Leverage the existing CUP system to generate significant energy from a clean energy source, reduce dependence on fossil fuels and recognize significant cost savings;

  - Utilize 100% of the thermal energy produced by the current 5.2 MW Solar Gas Turbine with a Heat Recovery Steam Generator (HRSG) for additional energy usage and production; and

  - Reduce peak electrical usage by the facilities on the Turning Stone Resort campus and achieve additional energy cost reduction.

# Long Term Energy Goals

- This project was on the back burner for the Nation for many years due to competing priorities and cost considerations.

- The $1 MM US Department of Energy Grant awarded in 2015 pushed this project across the line to make it a priority for the Nation.

# Oneida Indian Nation
# Community Scale Clean Energy Deployment
# Combined Heat and Power (CHP) Project

***Project Goal**: **Upgrade and improve the energy efficiency of the Nation's Central Utility Plant (CUP) that supplies energy to the Nation's Turning Stone Resort campus by increasing the Nation's self-sustaining use of clean energy (natural gas) and reducing dependency on fossil fuels.***

***Project Summary:*** Add a Steam Condensing Turbine Generator (SCTG) to the CUP;

- Direct the 125 psi steam, currently emitted as waste from the CUP to the SCTG where it will pass over the turbine's blades, causing rotation of the connected generator producing electricity; and then
- Feed resulting electricity from the turbines into Turning Stone's electrical distribution system, reducing the amount of electricity imported from the local utility company.

***Project Impact:*** An increase in overall operation efficiencies from 35% to 60% via an estimated additional electrical production of 1,390KW from waste steam, which assuming an 85% uptime, equates to over 10.34 Million kWh/year, with no greenhouse gas emissions and considerable energy cost savings.

**Result***: Additional* in-house production of electricity utilizing waste steam as an energy source, thereby reducing dependence on fossil fuels and external energy sources to power the Nation's primary business center for the benefit of its tribal community.

# Who We Are (Cont.)

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- The Nation's **3,200,000** square foot Turning Stone Resort campus.

# Feasibility

***Overcoming Barriers***: The Nation faced and overcame three feasibility obstacles in the completion of this project:

- ***Cost*** – In the event the feasibility and engineering study resulted in a cost that was significantly higher than anticipated for this project, Nation leadership would need to review, discuss, and determine whether the increased expense is prohibitive given the many competing priorities of the Nation.

- ***Timing*** – If the feasibility study came back with a timeframe that was not within the parameters required by this grant for the project, the Nation would need to consider whether it was worth pursuing in the absence of funding.

- ***Modifications*** – If the scope of any infrastructure modifications recommended by the Nation's engineering partner to accommodate the turbine system would significantly increase the cost of the project or the timeframe for completion, the same considerations described above would apply.

# Status of Project

The project currently fully operational. As of October 2019, the project has produced approximately 2.2 Million kWh and continues to increase efficiency and capacity.

**Major Project Milestones:**

- September 1, 2015- Project Kickoff & Go/No-Go Decision
- November 2015- Nation, with assistance from a consulting firm, complete specifications for the main components- the Steam Turbine Generator (STG) and Surface Steam Condenser (SSC)
- December 2015- Nation issues STG and SSC RFQ
- March 2016- Nation selects the SSG and SSC vendors
- September 2016- National Grid Completes Interconnection Studies
- March 2017- Nation purchases the STG and SSC (delivery occurs in early 2018)
- March 2018- CHA and Nation complete MEP specifications; MEP RFP released
- June 2018- SSG and SSC installed at project site
- July 2018- Nation selects and engages the MEP contractor
- December 2018- MEP equipment installation complete
- January 2019- Testing and commissioning Complete; Verification begins

# Barriers and Lessons Learned

**Barrier**: **Interconnectivity with National Grid - Utility Provider Delays**

- April 20, 2016 National Grid (the utility) advised that this project needed to follow the FERC SGIP ( Small Generator Interconnection Procedures) process which required the utility to perform a transmission study.
- On May 11, 2016 National Grid advised us that since the project involves the 115 kV transmission line, the study also needed to be looked at by the transmission dept. for a total cost of $35,000 to the Nation.
- September 26, 2016- Transmission study was completed by National Grid. At this point it was determined that there were no significant issues with the interconnection between the Nation's CHP plant and National Grid, but additional SCADA (Supervisory Control and Data Acquisition) equipment was to upgrade to the existing RTU (Remote Terminal Unit), at a cost of $125,000.00.
- Trouble shooting during commission and testing resulted in delays of between 2-3 months before the system was fully functioning for verification purposes.
- Defective part caused system to be down for most of June and July 2019.

This resulted in delay to the project schedule. Project staff consulted with Nation leadership and with DOE throughout the project to navigate these delays and obtain time extensions as necessary for the project.

# Key Project Participants

## U.S. Department of Energy

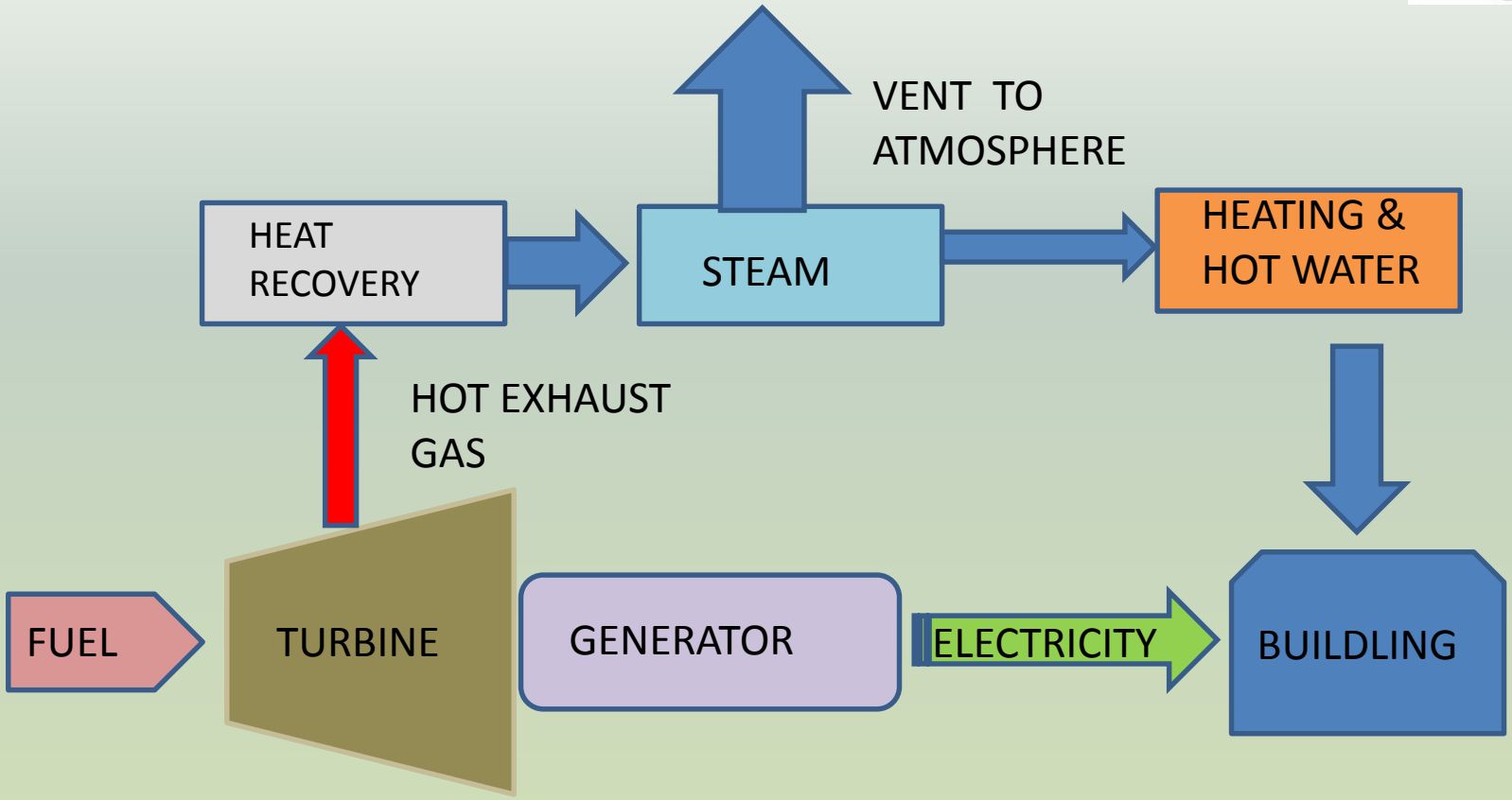
### Oneida Indian Nation

- Nation Representative & Chief Executive Officer – Ray Halbritter
- Chief Operating Officer – Peter D. Carmen
- P*roject Manager* – Michael Vaccaro P.E. , Director of Engineering (Retired);
- *Director of Facilities - Brad Miller*
- *Project Coordinator* – William Hollenbeck, Senior Facilities Specialist;
- *Project Analyst/ Evaluator* – Timothy Lillis, Financial Support Manager/Manager of Financial Analysis;

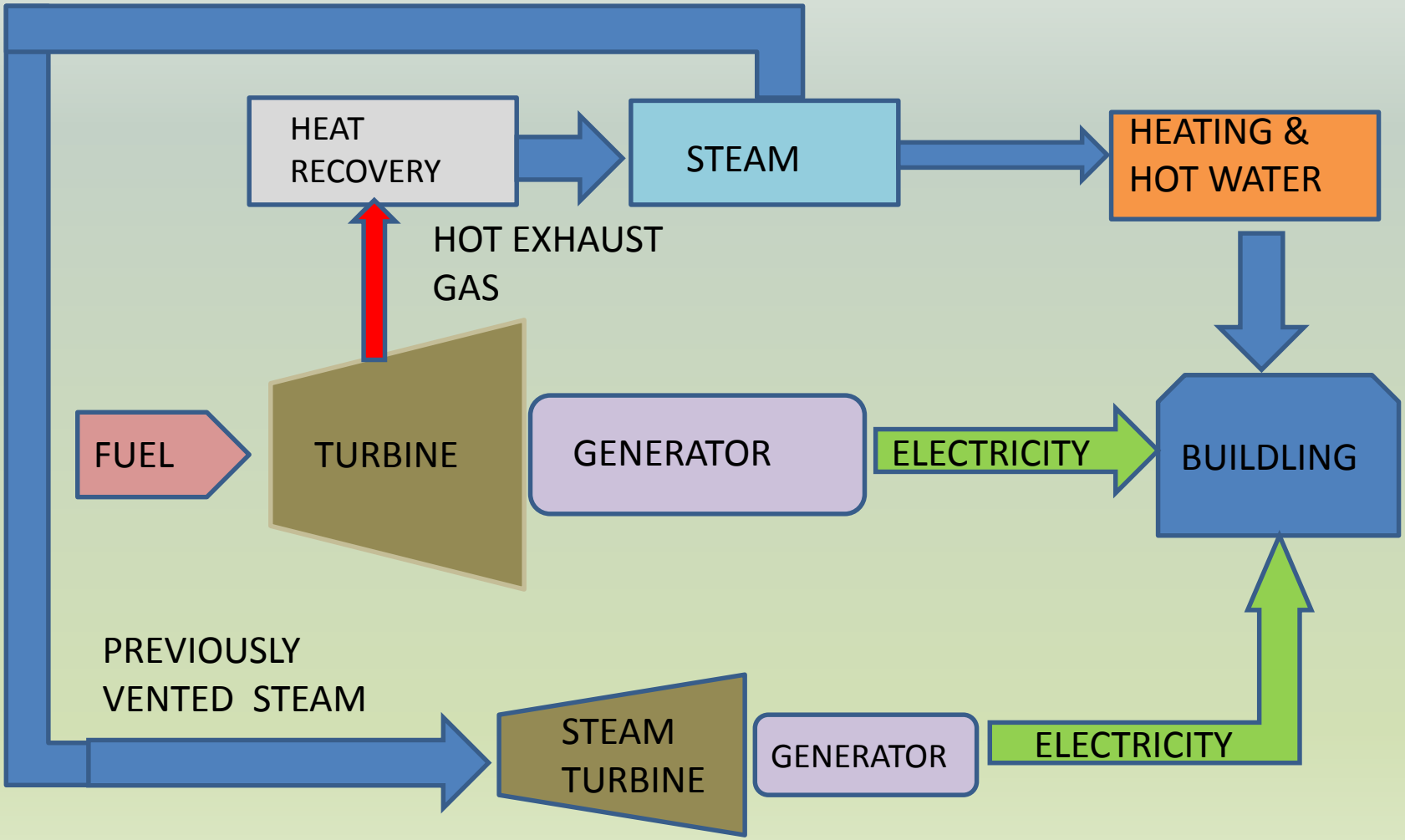
### Primary Contractor/Consultant

- CHA Consulting, Inc.
- JW Danforth - Contractor

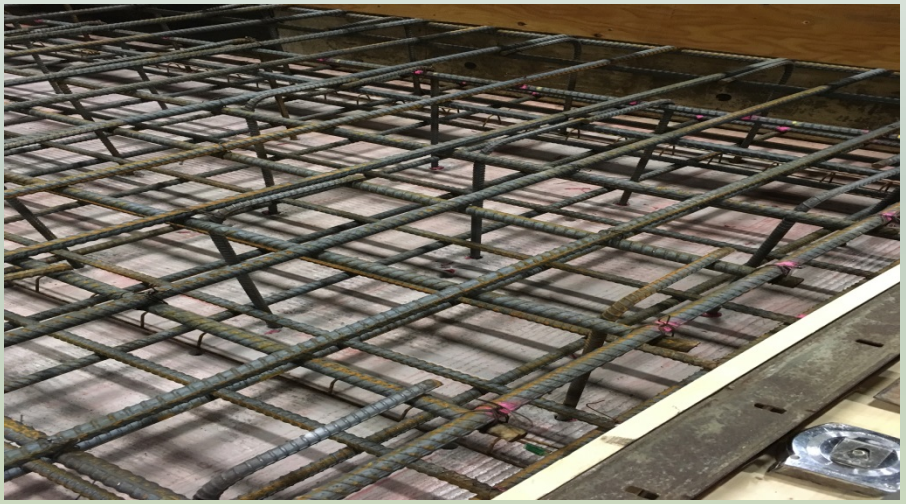
# PRE-PROJECT SYSTEM



# MODIFIED CHP SYSTEM

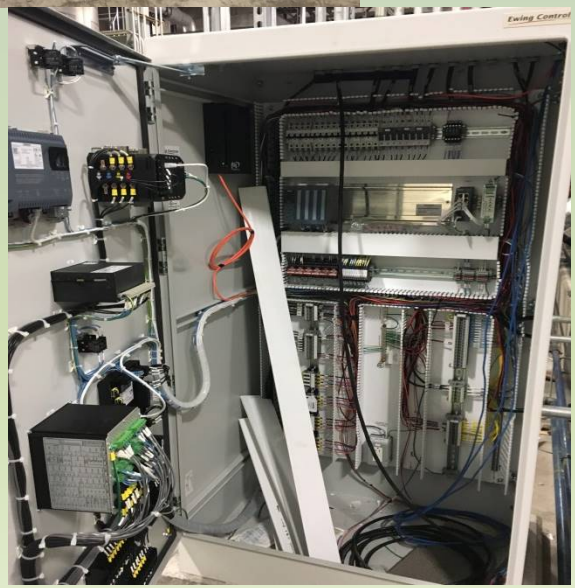


# The Foundation



# Setting Equipment

# Piping and Electrical Connections

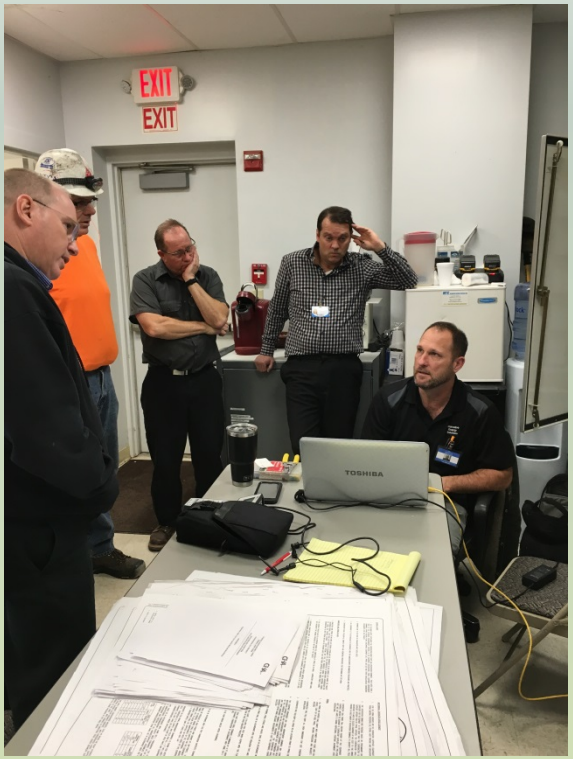


# Commissioning

Coordination meetings twice a day that involved status reports from:

- Electrical Contractor
- Mechanical Contractor
- Millwrights
- Steam Turbine Field Service Rep.
- Electrical Generator Field Service Rep.
- Controls Field Service Rep.
- Systems Integrator
- Utility Plant Operator(s)

# Commissioning

# Current Outcomes and Results

- ***Outcomes:***
  - The installation of the Steam Turbine Generator system has resulted in an increase in overall operation efficiencies, reduced dependency on grid supplied electricity, and reduced utility bills.
  - Another, non-quantifiable—but equally important—outcome of the proposed project is that it demonstrates the Nation's commitment to stewardship of the Nation's resources for the benefit of its members, now and to the seventh generation, by becoming more self-sufficient and less reliant on energy from the public grid.
    - The Nation is generating electricity using a wasted thermal energy; and
    - Electric demand by Turning Stone has been, resulting in less stress and demand on the grid.