Oneida Nation of New York

U.S. Department of Energy

Community Scale Clean Energy Deployment Combined Heat and Power Project

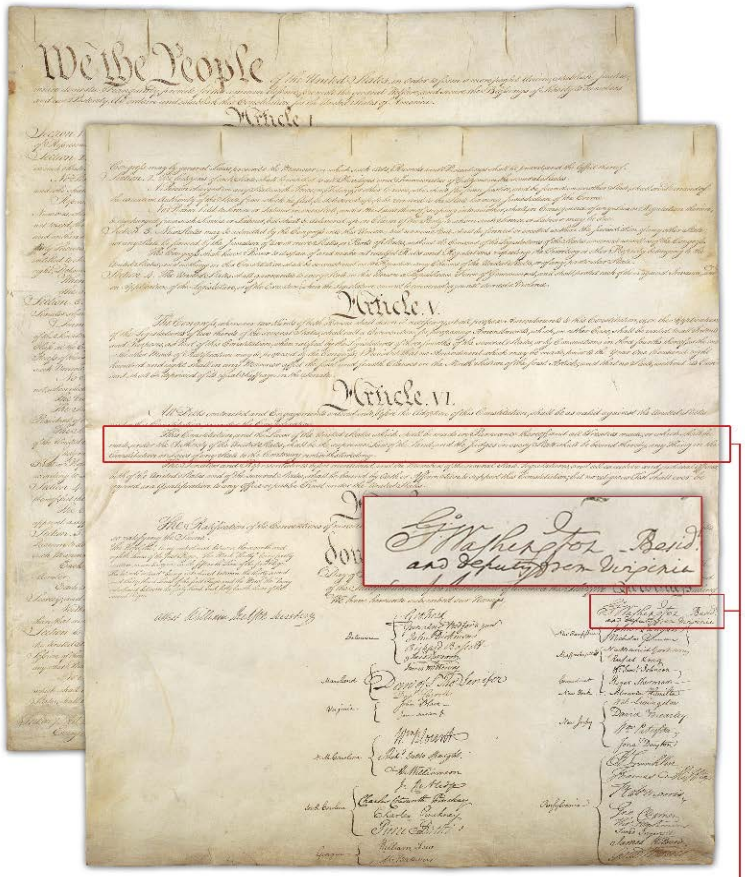
Who We Are

Federally recognized, self-governing sovereign Indian tribe with approximately 1,000 enrolled members.

The Tribe is governed by Council which 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.

Where We Are

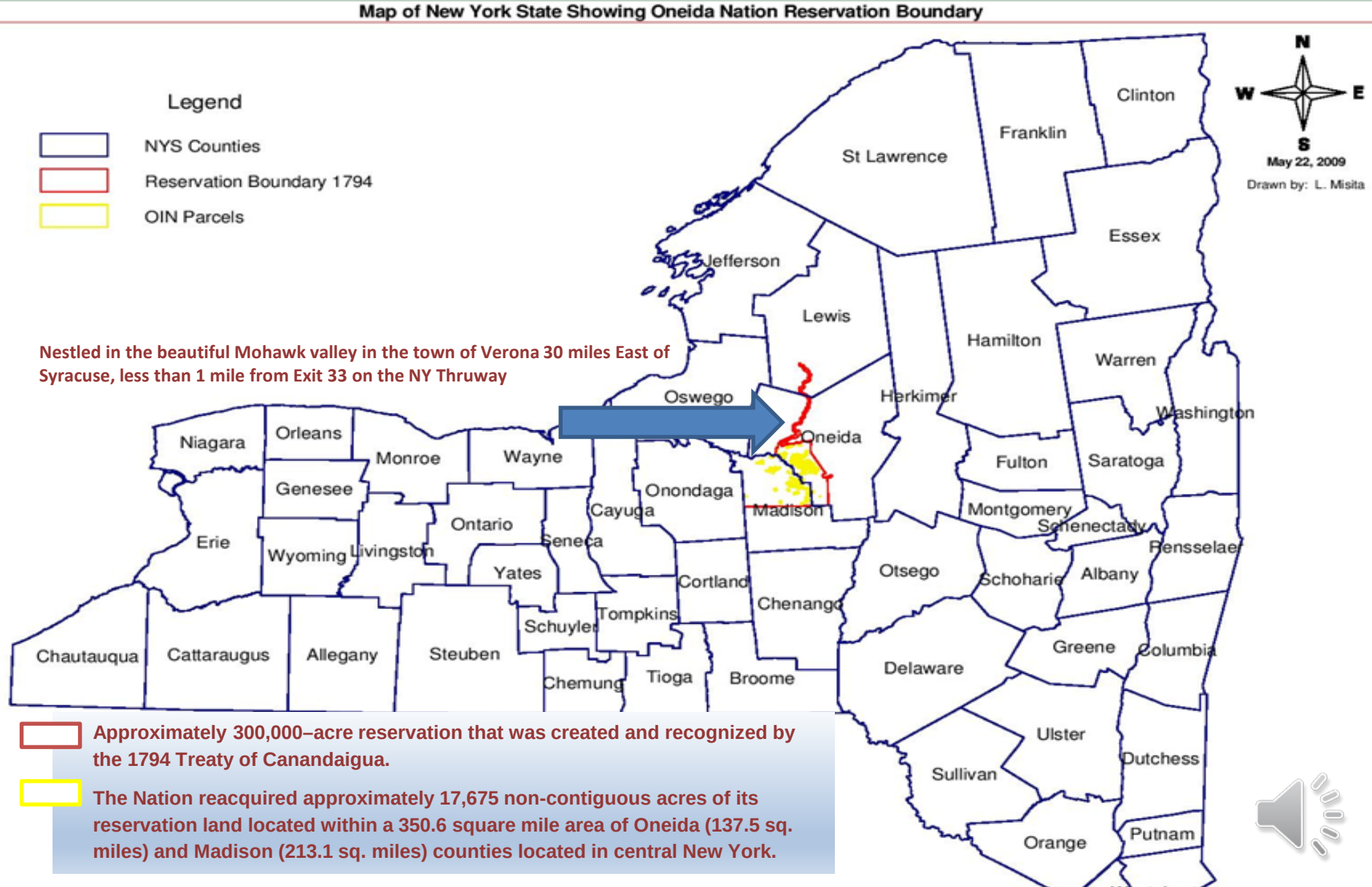
The Oneida Nation is located in Central New York State. The Nation has an approximately 300,000–acre reservation that was created and recognized by the 1794 Treaty of Canandaigua, which was entered into between the Nation and the newly formed United States of America. Over the course of the past decades, the Nation reacquired approximately 17,675 non-contiguous acres of its reservation land located within a 350.6-square-mile area of Oneida and Madison counties located in central New York. Currently approximately 13,000 acres of Nation lands are held in trust by the U.S. government for the benefit of the Nation.



... and all Treaties made, or which shall be made, under the authority of the United States, shall be the supreme Law of the Land; ...

~ U.S. Constitution, 1787, Article VI
Signed by President George Washington and the other Founding Fathers

Where We Are (Cont.)



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

The Nation reacquired approximately 17,675 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.

Nation Properties

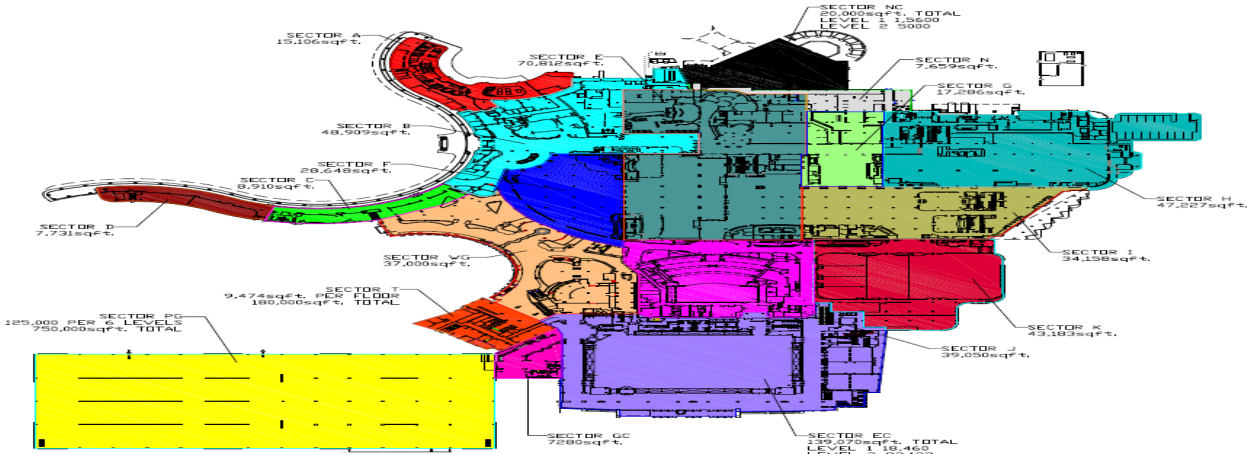
- Approximately 6,597 acres in Madison County and Oneida County, which are the location of Nation government, health, education, and cultural facilities and activities;

- 3,538 acres in Madison County and Oneida County, which are generally associated with the Yellow Brick Road Casino, SavOn Patrick Road and Turning Stone Resort Casino, its associated lodging and restaurants, five golf courses and related resort support facilities;

- Member housing; hunting lands; and numerous non-gaming Nation enterprises, including 13 SavOn 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

- 3,200,000 square feet of space associated with the Turning Stone Campus.



Nation Goals

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.

Nation Government Programs & Services




- In furtherance of these goals, health and social services programs are provided for Nation members, including an accredited Early Learning Center, student scholarships, and an Elders Program with daily meals, trips, and activities.

- In order to provide for the safety and security of Nation members, more than 4,500 year-round employees, and an estimated 12,000 daily visitors, the Nation administers fire and emergency services, code enforcement, a tribal court system, and a federally recognized police department that is accredited by the Commission on Accreditation of Law Enforcement Agencies (CALEA).

- To support these programs and services, the Nation owns and operates a number of business enterprises, including Turning Stone Resort Casino, the newly opened Yellow Brick Road Casino, a chain of gas stations and convenience stores, full-service marinas, a 3,000-acre hunting game preserve, and other enterprises.

- The Nation uses revenues from its enterprises to support these programs and services for its members in order to enhance tribal and individual self-sufficiency and independence.

ONEIDA 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
- **11 Restaurants-** 3 – AAA 4 Diamond Awards
- **2 Spas**
- **Golf Dome and Sports Complex**
- **World Class Entertainment and Venues**
- **RV Park**

Yellow Brick Road Casino

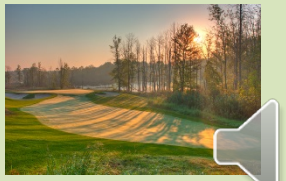
13 SavOn gas stations and convenience stores

3 full service marinas

3,000-acre hunting game preserve

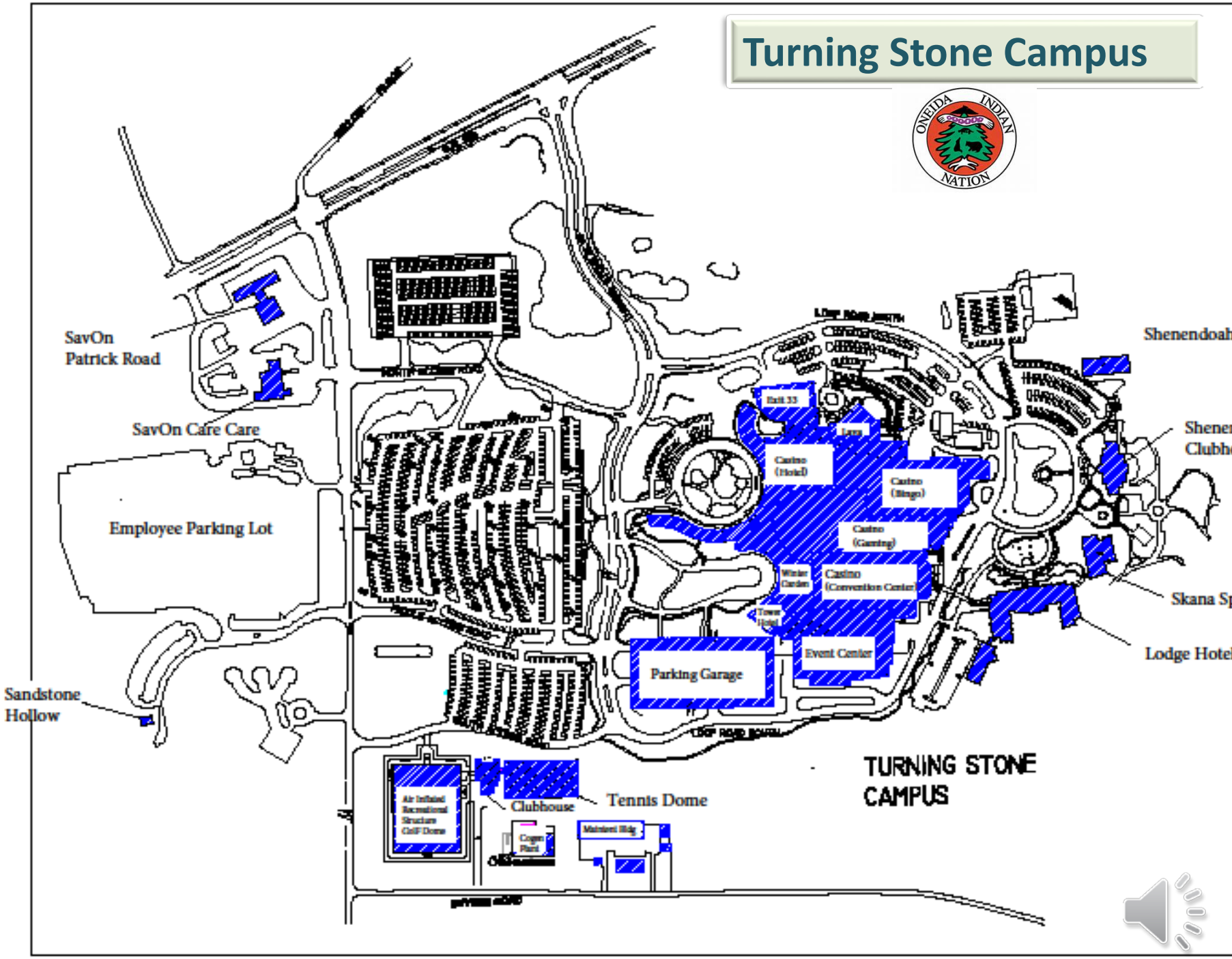
Salmon Acres Fishing Lodge

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 4,500 Native and non-Native people across all of its governmental programs and commercial enterprises.



**** Turning Stone currently represents the Nation's most significant enterprise.***

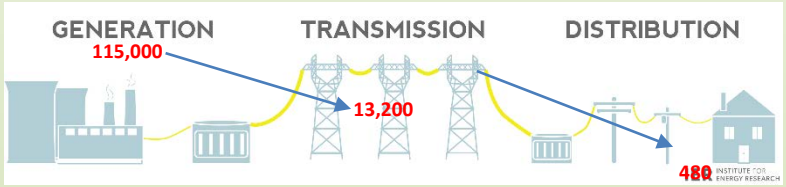
Turning Stone Campus



Turning Stone is the area's largest consumer of energy

Our Current System

- We have our own electrical sub-station - bringing in power at 115,000 volts
  - Voltage is decreased from 115,000 volts to 13,200 volts where it is distributed around the Turning Stone 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 contains mechanical chillers capable of producing 6000 tons of chilled water, 2- 800 HP natural gas fired boilers and a natural gas fired, 5 mega watt combined heat and power (CHP) turbine that can also generate 28,000 lbs/hr of 350 deg F, 125 PSI steam which is currently used for heat and domestic hot water.

Currently we are not able to use all of the steam being generated- highly inefficient.

Over the last twelve months Turning Stone purchased 17,820,000 kWh of electricity from the local utility and we generated 39,420,000 kWh of electricity and we consumed 7,833,000 therms of natural gas. In a given year, the amount of electricity and natural gas purchased and used by Turning Stone could light over 95,080 homes and heat over 9,100 homes in New York State .

Ongoing Energy Reduction Efforts

Over the past five years the Nation has undertaken several energy initiatives to further its energy savings goals. In 2010 the Nation contracted with a consulting firm to conduct an energy assessment limited to the Turning Stone Resort. The energy assessment did provide valuable information used in implementing several energy-related projects at Turning Stone. As of FY2016, 36 energy projects were completed for a total annual savings of 3,646,424 kWh and $495,676.

Project Description	Annual Savings	
	kWh	Dollars
Philips Energy Solutions – Lighting Replacements	940,669	$114,506
Phase I Resort Conversion	584,396	$76,650
ECM B-6 Controls Upgrades	297,262	$61,572
Eastern Energy Solutions – Lighting Replacements	262,335	$31,934
Installation of Variable Frequency Drives in pumps for Waterfalls	176,602	$22,559
EMC LDC-5 Lighting Replacement and Scheduling	154,640	$18,824
EMC SK-4 Night Setback and Shutdown for ERV Units	103,921	$12,098
TOTALS	2,519,825	$338,143

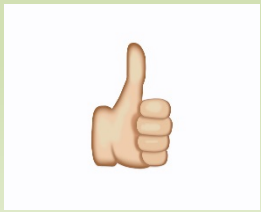
Project Goals

- **One of the primary sources of the Turning Stone Resort campus' energy comes from the combined utility plant (CUP), which runs on natural gas. The goal of the proposed project is to upgrade the existing CUP to make it more efficient and environmentally sound. The specific objectives of the project are:**

  - Leverage the existing central utility plant (CUP) system located at the Turning Stone Resort campus 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 the existing Heat Recovery Steam Generator or HRSG currently located at the CUP 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.




Since the culture of the Oneida people is centered around respect for the environment and the proper stewardship of the resources given to us by Mother Nature, we are constantly looking for ways to reduce our carbon footprint, which brings us to our project of
Community Scale Clean Energy Deployment using Combined Heat & Power (CHP)

Key Project Participants

U.S. Department of Energy

Oneida Indian Nation

- *Project Manager* – Michael Vaccaro, Director of Engineering;
- *Project Coordinator* – William Hollenbeck, Senior Facilities Specialist;
- *Project Analyst/ Evaluator* – Timothy Lillis, Financial Support Manager/Manager of Financial Analysis;
- *HVAC Specialist* – Bob Crouse, Senior Facility Supervisor;

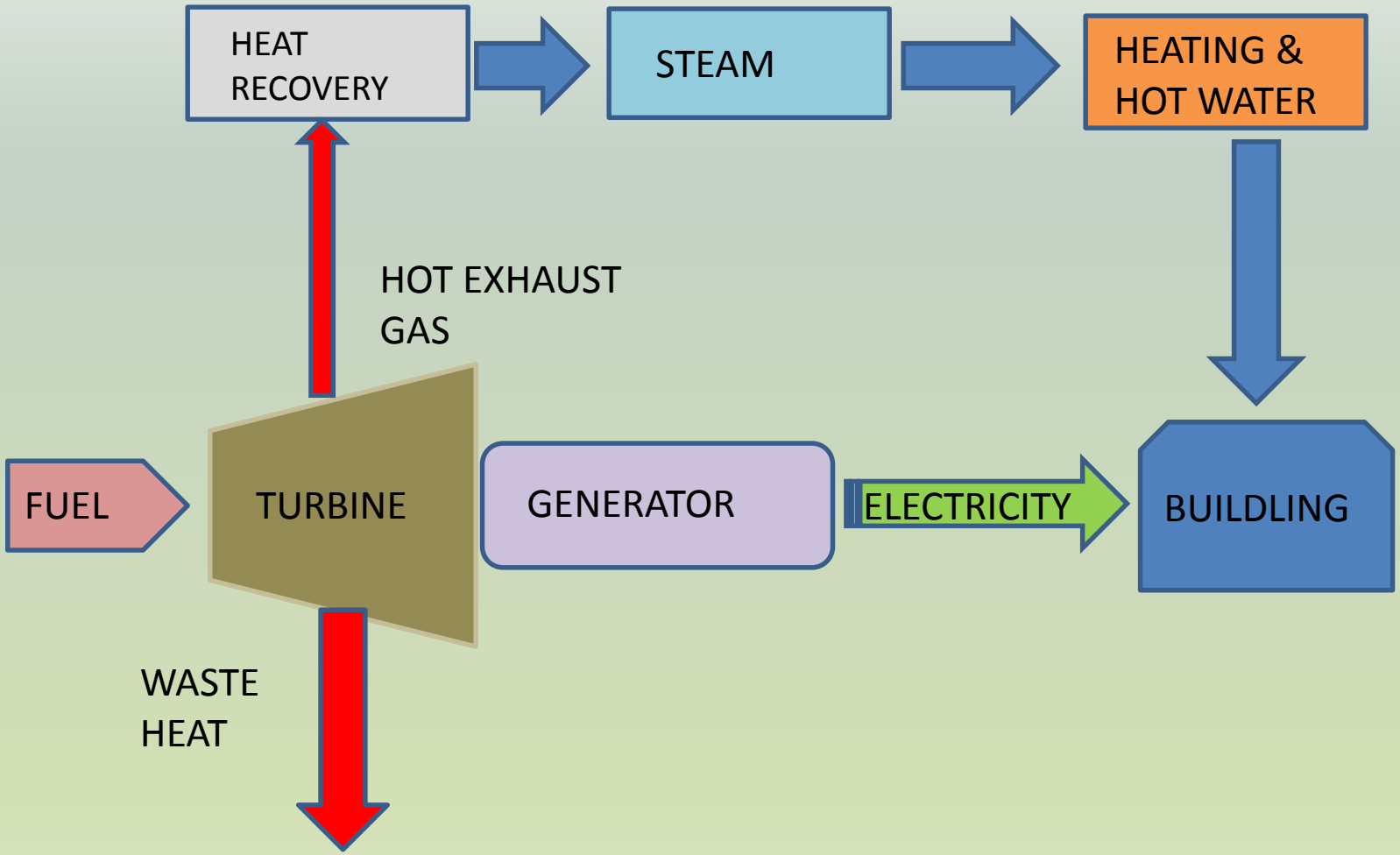
Contractor/Consultant

- Joe Thomson, VP & Senior Project Manager, CHA Consulting, Inc.

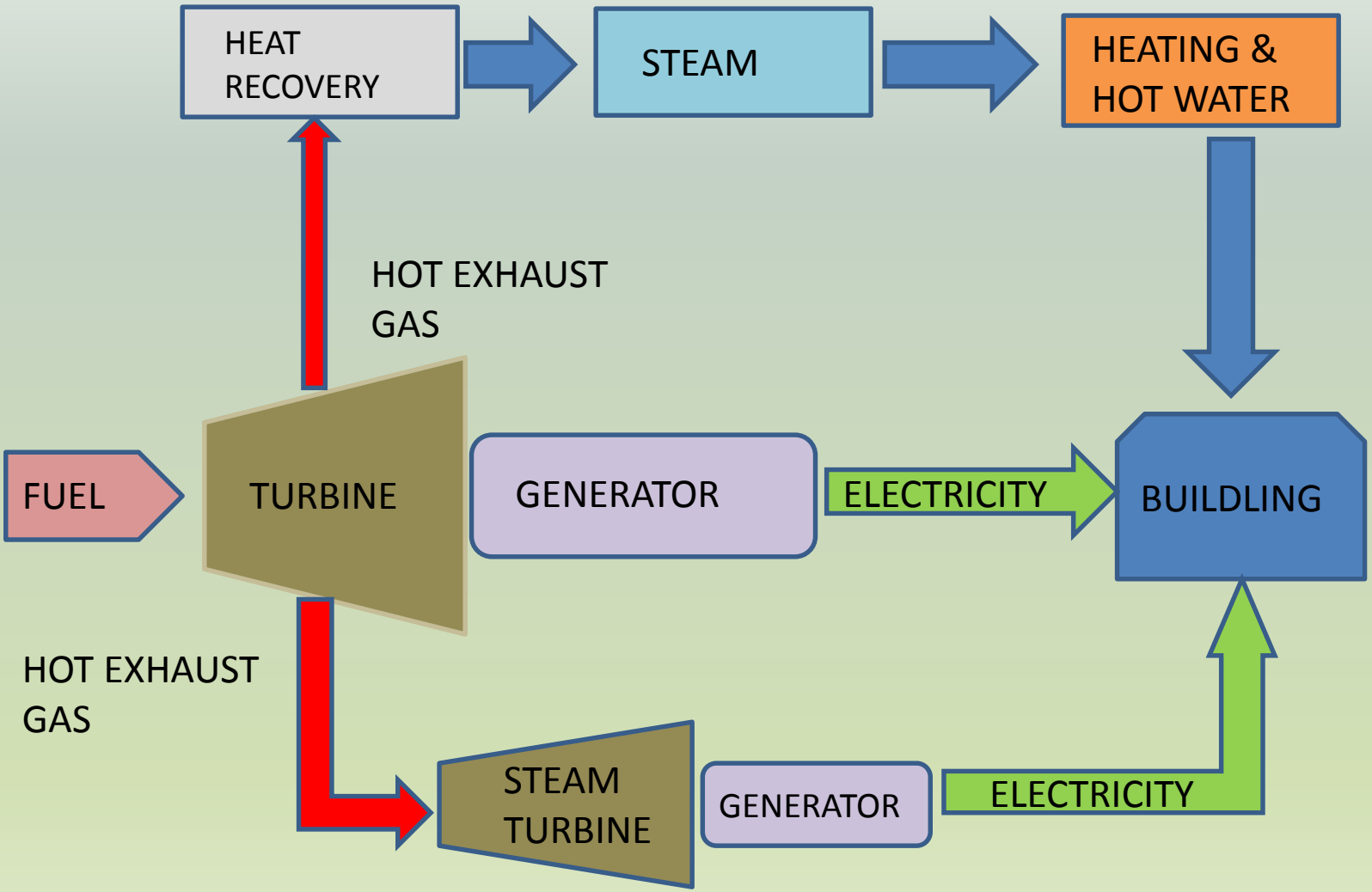
Project Process

- Consultant completes feasibility study
- Determination to proceed with project
- Consultant provides specifications and design for equipment
- Equipment purchases- Steam Turbine Generator and Condenser
- Engineering modifications to existing facility equipment
- Install new equipment
- Testing and verification

EXISTING CHP SYSTEM



MODIFIED CHP SYSTEM



Potential Barriers/Overcoming Barriers

The Nation identified three potential barriers to the completion of the proposed project:

- ***Cost*** – At the time of its proposal, completion of a feasibility study to determine the cost was not yet complete. Completion/review of the results would determine a go or no/go decision point.

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

- ***Modifications*** – The feasibility study needed to determine any infrastructure modifications recommended by the Nation's engineering partner, to accommodate the turbine system, and if it would significantly increase the cost of the project and the timeframe for completion, beyond what is acceptable to the Nation.

- ***Results*** - Upon completion and review of the feasibility study, the Nation and Department of Energy decided to proceed with the project.

Barriers and Lessons Learned

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

- Nation determined that an additional approval was required by our utility (National Grid). Study took utility over 6 months to complete.

- On September 26, 2016- Transmission study was completed by National Grid. At this point it was determined that there was no significant issue with the interconnection between the Nation's CHP plant and National Grid. However, it was determined that additional Supervisory Control and Data Acquisition (SCADA) equipment will be necessary to upgrade to the existing Remote Terminal Unit (RTU), which will require additional costs.

Current Status

- Completed feasibility study
- Made determination to proceed with project
- Engineering Consultant developed design specifications for equipment
- Through procurement process, vendors were selected for two major pieces of equipment
- Nation Grid completed its interconnectivity study
- Approved additional costs that were received in the interconnectivity study.

Anticipated Outcomes and Results

- The installation of the proposed system will result in an increase in overall operation efficiencies reduce dependency on utility electricity, fossil fuels, reduced greenhouse gas emissions and reduce 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. In particular:
- The Nation will generate electricity using a wasted thermal energy, instead of relying on local power suppliers to provide electricity.
- Electric demand will be reduced by Turning Stone Resort and free up much needed demand during peak times on the transmission grid, resulting in less stress and demand on the grid; and
- The Nation has been able to obtain a natural gas supply at very low prices due to activities at the nearby Marcellus Shale facility, making the cost to produce a kilowatt of electricity much cheaper than purchasing a kilowatt of electricity via the open market.

Verification of Energy Savings

To compute savings, we will track the kWh output of the generator to verify production and multiply that number by the cost per kWh to verify savings.