

# 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 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.





# 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

13 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 is a hospitality destination with over 700 hotel rooms





# A wide variety of dining experiences



Turning Stone is home to 5 golf courses and has hosted several PGA tournaments



# Turning Stone facilities host world class entertainment and special events



# Turning Stone offers a variety of amenities to our guests



# And.....Turning Stone is a world class casino



SLOT MACHINES



BINGO



KENO

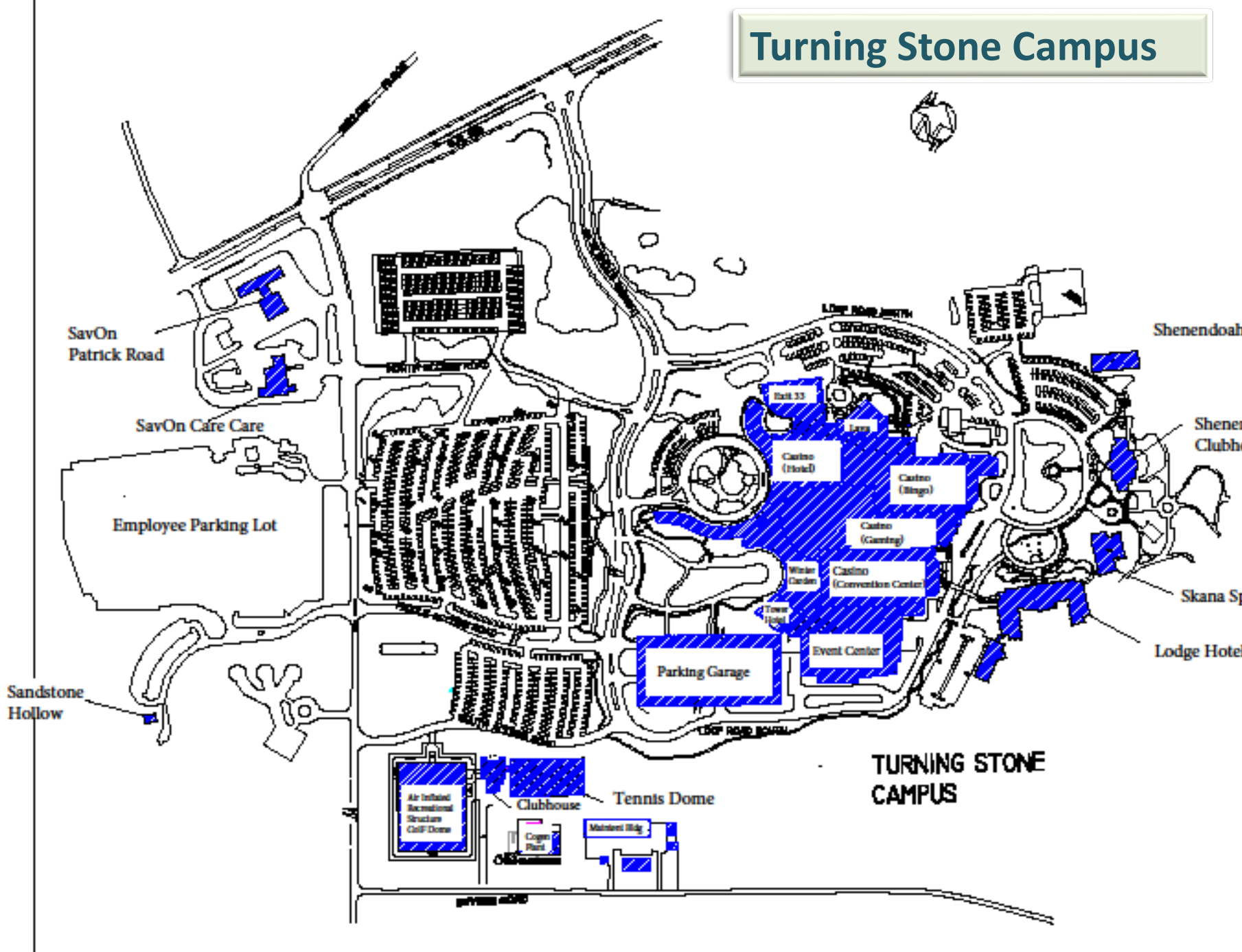


TABLE GAMES



POKER

# Turning Stone Campus



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



- We have our own electrical sub-station - bring in power from the public utility at 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
- Natural gas fired, 5 mega watt CHP 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.
- Currently we are not able to use all of the steam being generated which is inefficient.

# Oneida Nation's 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 Nation 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 are:**
  - 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 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)**

# Oneida Nation of New York 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 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
- 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.

# 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 results 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 applied.

# Barriers and Lessons Learned



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

- April 20, 2016 National Grid indicated an error in our application, as the TSRC on-site generation is above the SIR (Standardized Interconnection Requirements) limit of 5MW. They advised that this project needed to follow the FERC SGIP ( Small Generator Interconnection Procedures) process (NYISO Attachment Z) instead of the Form G process, requiring a transmission study.
- On May 11, 2016 National Grid advised us that since the project involves the 115 kV transmission line, the study has 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. However, it was determined that additional SCADA (Supervisory Control and Data Acquisition) equipment will be necessary to upgrade to the existing RTU (Remote Terminal Unit). This additional equipment was estimated by National Grid to cost \$125,000.00.

# Key Project Participants



## U.S. Department of Energy

### Oneida Indian Nation

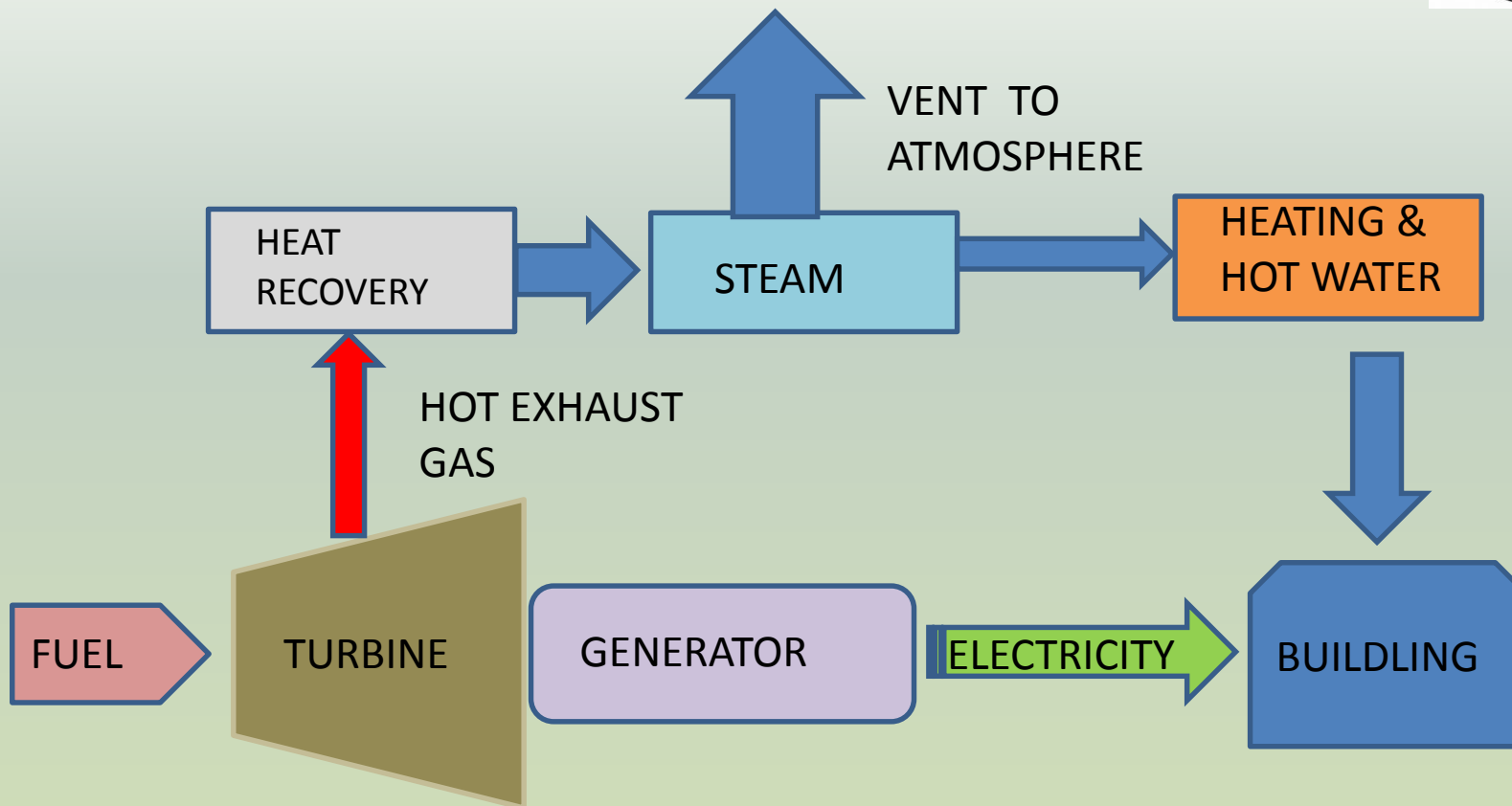
- Nation Representative & Chief Executive Officer – Ray Halbritter
- Chief Operating Officer – Peter D. Carmen
- *Project Manager* – Michael Vaccaro P.E. , Director of Engineering;
- *Project Coordinator* – William Hollenbeck, Senior Facilities Specialist;
- *Project Analyst/ Evaluator* – Timothy Lillis, Financial Support Manager/Manager of Financial Analysis;
- *HVAC Specialist* – Bob Crouse, Senior Facility Supervisor;

### Primary Contractor/Consultant

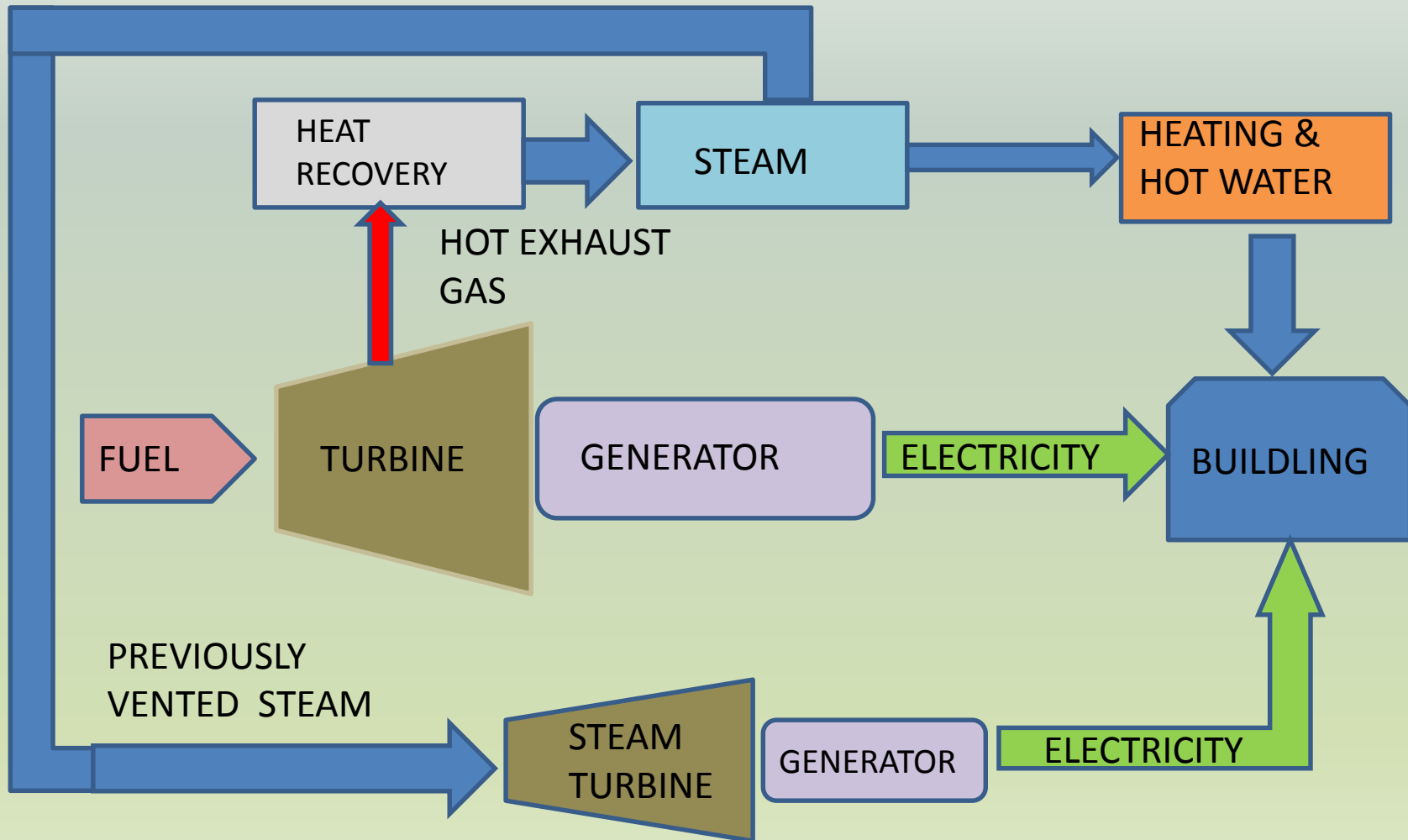
- CHA Consulting, Inc.
- JW Danforth - Contractor



# EXISTING CHP SYSTEM



# MODIFIED CHP SYSTEM



# The Foundation





# Setting Equipment



# Piping and Electrical Connections

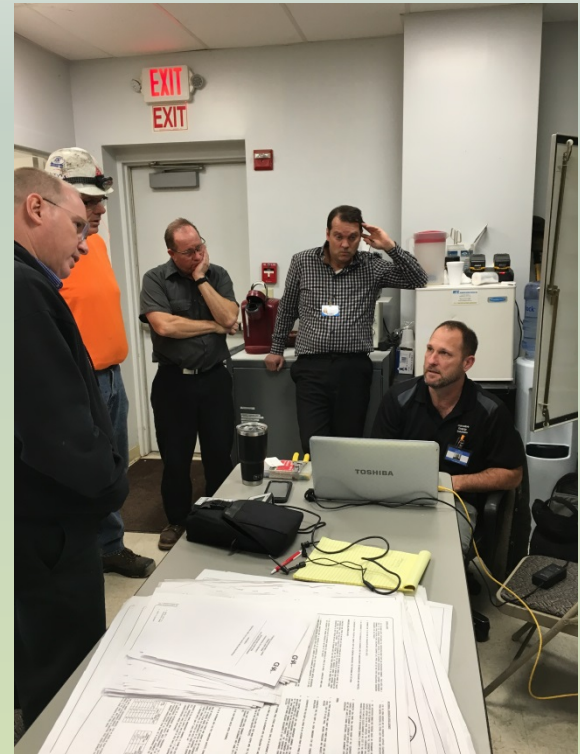


# Commissioning

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





# Anticipated Outcomes and Results

- **Outcomes:** [Total electrical usage for the one-year period of August 2013 – July 2014 for the Turning Stone Resort campus was 14,225,459.7 kWh and total gas usage for such one-year period was 7,824,206 Therms.]
  - The installation of the Steam Turbine Generator system will result in an increase in overall operation efficiencies, reduce dependency on grid supplied electricity, and reduce utility bills significantly.
  - 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
    - 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.

# Next and Final Steps

The Nation will spend the next year verifying the quantifiable impacts of the project (energy and cost savings)