

# Mohegan Tribe & MG&E Green Initiatives

## From 2002 through June 2022

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### **EMISSION REDUCTION PROJECTS**

All projects listed have been submitted to CTDEEP as Supplemental Energy Conservation projects in accordance with the Trading Agreement and Order 8143 as modified in 1999, 2000, 2003 where the tribe is allowed to mitigate the number of emission reduction credits that MTIC must purchase to offset nitrogen oxides (NOx) and volatile organic compounds (VOC) emissions from patron vehicle traffic with the cost of supplemental projects that promote air quality in the State of Connecticut. The current surplus balance is \$6,438,411 creditable toward mitigating future purchases of NOx and VOC emission reduction credits.

#### **1) Reforest the Tropics Sequestration Program – Cost: \$120,000**

The Tribe purchased two fifty-acre plots in Costa Rica for sequestration of the carbon dioxide (CO<sub>2</sub>) emissions given off from the two fuel cells through this local program with headquarters located in Mystic, CT. The two fifty-acre plots consist of five species of trees (klinki, mahogany, deglupta, chanco, almendro) to sequester up to 25 metric tons of carbon dioxide per hectare per year for a contract period of 25 years. Now that the fuel cells have reached end of life in the tenth year (2012) there are fifteen years left in CO<sub>2</sub> offsets for other combustion sources such as boilers and emergency generators.

#### **2) Hybrid/Electric vehicles for Tribal Departments**

The Mohegan Tribe has 1 Ford Escape hybrid vehicle within the Health Department.

#### **3) Protective Services use of bikes versus vehicles – Cost: \$18,000**

The Protective Services has Trek Mountain bikes that Security personnel travel on within the reservation for security patrols during summer months. The use of the bikes reduces emissions to zero as there is no gasoline to buy and keeps the Security personnel in top physical shape. The use of bikes also allows access to areas that vehicles could not get into effectively and allows more personal contact with the public.

#### **4) GEM Electric Powered Vehicle – Cost: \$23,500**

The GEM car is being utilized by both the Engineering and Transportation Departments and is now powered by electric (battery) power instead of hydrogen gas.

#### **5) Electric Vehicle (EV) Charging Stations**

**Legrand EV Chargers** – Two level 2 chargers were installed in Sky Valet Slots spaces #2035 and #2037 in 2013 for patrons using valet parking.

**Legrand EV Chargers** – Two level 2 chargers were installed in Indian Summer Garage on level 3, Section K, by the ramp in 2014 for patron use.

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**Legrand EV Chargers** – Two level 2 chargers are installed in the Eagleview Garage, level 2 behind the elevators for employee use.

**Tesla EV Chargers** – Five level 3 chargers were installed in Earth, Sky hotel valet and Sky valet entrance on level B1, free of charge from Tesla. Two more units were installed in Riverview Garage for Momentum Club members who have Ascent and Soar status.

**Leviton EV Chargers** – Four level 2 chargers were installed at the Government Center in the employee parking area at the rear of the building.

### 6) **Selective Catalytic Reduction (SCR) Replacements for the Crow Hill Generators –**

**Cost: \$306,892**

Replaced all SCRs for the Crow Hill Generators #22, 23, 24 as the old ones were not reducing nitrogen oxides at over 90% per manufactures specifications and therefore failed the stack testing required by the U.S. EPA.

## **ENERGY EFFICIENT LIGHTING CONVERSION PROJECTS**

### 7) **Earth and Sky Valet, Riverview, Indian Summer, Eagleview, Thames & Winter Parking Garages conversion from HID to T8 Fluorescents - 2005-2010 – Cost: \$513,346**

Substitution of HID (high intensity discharge) metal halide bulb lighting for GE's T8 long life fluorescents. Project started in 2005 with earth valet garage, continued in 2006 with sky valet. In 2007 Indian Summer and Riverview garages were added. In 2009 Eagleview, Thames and Winter Garages were converted. This technology provides for increased lighting levels, longer bulb life and a 60% decrease in energy consumption when compared to pulse start technology required to power the HID's. Replacement material costs are drastically reduced; HID ballast cost \$50- \$60 each vs. electronic ballast cost \$14.00 each. HID metal halide bulb cost \$20 each vs. T8 lamps cost \$2.25 each. Advantage of the T8 fluorescents is that they have an instant on/off capability which does not exist with HID's. This provides a safer environment for customers, valet attendants and foot traffic for employees in the event of a power failure.

**Enerlume Lighting Controls – 2010 – Cost: \$318,660**

MTGA expanded the Building Management System (BMS) to provide lighting controls and central monitoring for the new lights in 7 parking garages so the lighting intensity can be increased or decreased. This project saves 565,940 kWh/year or \$62,253/year.

**Hotel, Office, Restroom, Storage Room Lighting and HVAC**

**(heating/cooling/ventilation) Occupancy Sensors/Controls – Total Cost: \$1,783,496 (2 projects below)**

**Hotel Rooms:** In September of 2002, an infrared sensor was built into the thermostats which detect the presence of a guest in the room. By activating only when a guest is present both energy for lighting and HVAC costs are minimized. Actual energy cost savings from 2002-2007 was \$842,916. Yearly savings ranged from \$104,000 to 301,000. A sensor is also

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present in the hallway for each room which tells the room attendants if the room is occupied or not by lighting up either red for do not disturb or green for the room has no guest present and can be cleaned by hotel staff. All renovated rooms have been converted to LED lighting as an on-going project.

**Offices, Restrooms and Storage Rooms:** Lighting and ventilation sensors were added in 2010 for 350 private offices, 10 open office areas, 18 restrooms, 12 storage areas. Energy savings is 617,816 kWh/year. Annual cost savings estimated at \$67,898 from these areas. Lights and ventilation are turned on when occupied and off when unoccupied.

## **Central Plant, Wombi Rock & Uncas Mile LED Conversions in 2011- 2013**

**Total Cost: \$355,700 (4 projects below)**

Central Plant (boiler & chiller areas) upgrade from HID to LED	Cost: \$40,230
Wombi Rock upgrade lighting system inside the structure to LED	Cost: 113,029
LED Replacement for 4500 LF of Zeon rope lighting	Cost: \$141,156
Uncas Mile bulb change-out from 36 to 26-watt, table games, parking garage ramps	Cost: \$61,285

## **LED Fixture Replacements in 2013-2017 Cost: \$500,000**

Phase 1 – Replace 12,000 lamps with LEDs in various casino locations in 2013 – Completed.  
Phase 2 – Replace 5000 – 6000 lamps with LEDs in various casino locations in 2014- 2016.  
This project is on-going into 2017. Closed out.

- 8) Upgrade Sky Valet Canopy & Pole Lighting to LED - Cost: \$59,500**
- 9) Upgrade Sky Valet Landscape Lighting Fixtures to LED – Cost: \$12,700**
- 10) Upgrade Hotel Valet Canopy & Pole Lighting to LED – Cost: \$33,619**

## **ENERGY CONSERVATION PROJECTS**

### **11) Variable Frequency Drives (VFD) –Total Cost: \$2,313,327 (7 projects below)**

**Earth Casino:** Six (6) VFDs and controls were installed on two air handlers AHU-15A and 15B servicing Earth Casino allowing fans to ramp up and down based on CO2 levels which indicate patron occupancy. Carbon dioxide (CO2) sensors determine CO2 levels in the return air based on a pre-determined set point. Variable speed drive fans ramp up or down based on these levels adding outside air as necessary to keep CO2 levels below the set point.

### **Earth and Sky Casino: Indoor Air Quality Optinet Systems - Cost \$127,000**

Installed controls integrated with the air quality system to monitor carbon dioxide, particulate matter, carbon monoxide, and radon to improve and maintain highest quality of indoor air. Projected yearly savings is \$218,228

**Earth Hotel: Variable Frequency Drives (VFD)**

Air handling equipment and water pumps are running on 35 VFDs as part of the earth hotel project.

**Hotel Domestic Water Pumps:** Four (4) new water pumps were installed with a VFD system allowing the speed of the pumps to be ramped up and down based on building demand. This allows MTGA to save energy during periods of low water usage in the hotel. Instead of two constant speed pumps operating at 60hp and 40hp at 100% running speed at 64 amps and 40 amps respectively, you have one variable speed pump operating at 60hp, 87% running speed at 33 amps.

**Primary Chilled Water Pumps:** Two (2) VFDs were installed on the primary chilled water pump unit to modulate chiller speed based on chilled water building demands. Therefore, the chiller does not have to run at constant speed and there is an energy savings electrically. The amperage on the constant speed chillers is much higher than the amperage on the variable speed chiller. Annual savings on this variable speed chiller is \$35,818.

**Central Utility Plant Boilers & Carrier Chillers:** VFDs and interfacing controls are on 1 chiller and 4 boilers at the Central Plant to provide energy savings. An engineering analysis indicates an energy savings of 447,000 KW hours annually.

**Arena:** CO2 controls will be automated to provide the proper amount of fresh air through damper controllers during events and shows.

**12) Vending Miser – Cost: \$7700**

Installation of a passive infrared sensor in the vending machines automatically power down the machine when the area is not occupied by a patron and re-powers the machine back up when it is re-occupied. This unit also monitors the ambient temperature of the air and the electrical current used by the machine. The sensors ensure that every time the machine is powered up the cooling cycle is run to completion before powering down the machine. This ensures that the patron receives a cold drink. The vending miser also reduces 2200 lbs of CO2 and 3600 grams of NOx per year according to manufactures product information.

**13) Cimetrics Equipment Tracking – Cost: \$140,840**

This equipment is computer based software which targets deficiencies in the building management system to pinpoint areas in need of repair or that are wasting energy. The network is so large that it would be impossible for an operator to look at every data point every day to find these types of problems. This enables the MTGA Engineering Department to resolve issues faster.

**14) Additional Plates for the Plate and Frame Heat Exchanger - Cost: \$48,280**

Additional plates were added to the existing heat exchanger for the chilled water system. This increased the free cooling capacity by 24% which is an increase of 4,290,000 BTU per hour. During the colder months operating the plate and frame cools the buildings chilled

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water loop without the need to run a chiller. By using the cooling towers cold condenser water to flow through the plate and frame MTGA reduces the operating hours on the chillers and saves energy in electrical consumption.

### **15) Valet Garage Exhaust Fan Variable Speed Drive Project – Cost: \$595,784**

Thirty-six (36) carbon monoxide (CO) detectors were installed and connected to a Building Management System (BMS) which senses CO levels on two floors within the heated parking garage. The VFD system replaced a constant speed system which operated 8 exhaust fans at 100% running speed at 48 amps each. Energy consumption is saved with the VFD system which operates at a 20% running speed at 15-16 amps each. The system operates effectively with a programmed set point for CO concentration and clears the air at 5-minute exhaust fan run time versus 15 minute run time with the old system. Also, maintenance costs on the system are reduced due to the lower run time.

### **16) Casino of the Wind Glycol Heat Recovery System – Cost: \$486,000**

Two mechanical rooms have upgraded air handling units, additional pumps, piping and controls to incorporate a glycol heat recovery system. The air handlers use 100% fresh air intake and displace the heated exhausted air which passes over a coil containing a glycol and water solution. The heat from the exhausted air is absorbed by the glycol solution as it passes over the coil. The heated glycol solution is then pumped to a coil on the fresh air intake side, pre-heating the cold outside air before it is introduced into the Casino. The heat transfer between the air and fluid is 40-50% efficient according to ASHRAE. The temperature outputs from the coil system will vary depending on the outside air temperature and the return air temperature.

### **17) Dehumidification Energy Saving Controls for Earth & Sky Casinos & Hotel -**

**Cost: \$86,420**

The existing dehumidification system ran both chilled water and steam in excess to achieve an acceptable humidity level in the facility. Johnson Controls, Inc. has installed humidity sensors and a network engine to control air handler units for Earth and Sky Casinos and the Hotel. Energy calculations will verify the cost savings. The reduced chiller water and steam usage will provide a payback of less than two years.

### **18) Load Shedding Program Controls – Cost \$186,990**

A fully automated program sheds load as part of the integrated Building Management System when ISO New England determines a need. Mohegan Sun will be reimbursed by the program in accordance with the load reduction. Estimated payback is less than two years.

## **WATER CONSERVATION PROJECTS**

**19) Casino Water Features:** The water features utilize 100% water recycling through filtration until the water no longer meets specifications then it is drained and the structure is cleaned

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prior to being refilled approximately twice per year. Water features are named: East in Earth Casino, Tautauinick Falls in Sky Casino, and the Hotel Lobby Reflection Pool.

### **20) Hotel Flow Control Project for Guest Rooms- Cost: \$303,604**

**Phase 1:** Install auto flow valves on vertical fan cooling units to reduce chilled and hot water flows for heating and air conditioning units in hotel guest rooms after determining that the actual chilled and hot water flows were outside the design flows thereby saving energy. The implementation of auto flow valves is estimated to save \$75K/year as calculated by Negative Pressure Solutions, LLC in the proposal dated 5/29/12.

**Phase 2:** Continue installing auto flow valves in hotel guest rooms in 2017 to reduce energy used thereby saving approximately \$80K/year.

## **WASTE REDUCTION PROJECTS**

**21) Certificate of Achievement in the Food Recovery Challenge received from EPA:** In 2021 U.S. EPA Region 1, honored the Mohegan Tribal Government with Partner of the Year Award for outstanding waste reduction achievements as a Wastewise partner. In 2017 and 2018 EPA Region 1, honored the Mohegan Tribe for demonstrated success in improving sustainable food management practices which diverted food waste from incineration by pick up of 741 and 708 tons respectively by a local piggery located in Waterford, CT.

**22) Used Fry Oil Recycled at Western Mass Rendering:** Used fry oil collected in two 2500-gallon tanks is pumped out by tanker truck and recycled into bio-fuel.

**23) Used Fry Oil Residuals Transported to the First Anaerobic Digester in State of CT:** Twenty-three tons of oily waste residuals were shipped in drums since 2017 from Earth and Sky pump rooms. This significantly reduced the disposal cost with Tradebe who required the waste residuals to be solidified which added weight and therefore cost.

**24) Sky and Earth Hotel Towers participated in Clean the World:** Used soaps, shampoos and body lotions were collected from guest rooms after guest check out and shipped in one ton boxes by UPS to a processing facility in Florida in 2018 and 2019. Repackaged and repurposed products were sent to third world countries struggling with personal hygiene in the form of hand and body washing with soaps and shampoos so that disease from common pathogens was greatly reduced. Many of the world's top hotel chains are partners with this organization and Mohegan was proud to be a partner too. It was estimated that the quantities generated by earth tower at 90% capacity could save 8600 lbs on landfill or incinerator diversion and would generate 28,923 bars of new soap for distribution to families in crisis in the U.S. No sorting is required and both towers generated 8.5 tons of shampoos and soaps in the 2 years they participated in the program and 3.2 tons of plastic bottles were recycled as a result. This was a paid for service and none of this waste was shipped in 2020 due to Covid-19 protocols instituted at the hotels. The program was not adopted by management in 2021 or 2022 and remains inactive presently.

- 25) CT Mandatory Recyclables:** Recyclables are segregated from regular trash in separate collection dumpsters or by single stream recycling at Earth and Sky loading docks and Towers, Expo and Convention Center, and at the Government and Community Center. In addition, site wide Mohegan recycles universal waste such as spent bulbs, spent batteries, mercury devices and electronic waste at facilities specialized to accept them. Construction debris from all projects are also recycled from start to finish.

### **ENVIRONMENTALLY PREFERABLE PRODUCTS**

- 26) Purchasing Products that meet EPA, Eco-logo and Forestry Stewardship Council (FSC) Standards:** Examples include Kimberly Clark paper products for minimum post-consumer waste content. Stickers were applied to the towel dispensers in all the restrooms.

### **CORPORATE SOCIAL RESPONSIBILITY**

- 27) Tribal Sustainability Statement dated 2015**

- 28) Mohegan Environmental Protection Department Mission Statement**

- 29) Formation of the ESG Global Steering Committee** chaired by Carol Anderson, Chief Financial Officer is comprised of four sub-committees in the areas of Environmental, Social, Governance and Communications. Two Co-Chairs from each of the four sub-committees comprises the ESG Committee. An Executive Council is also appointed to provide senior leadership and direction for the ESG Committee activities. Members of each sub-committee are appointed in consideration of each employee's expertise in relevant and varied disciplines, including environmental, health and safety, security, operations, design and construction, legal, investor relations, government affairs, corporate governance, finance, human resources and communications.

The purpose of the ESG Committee is to assist the Management Board in support of the Authority's on-going commitment to environmental, health and Safety, corporate social responsibility, corporate governance, sustainability and other public policy matters relevant to the Authority collectively. The ESG Committee is a cross -functional committee of the Authority comprised of leadership representatives across geographies, functional disciplines, and areas of expertise. It will assist the CEO of the Authority and Board in (a) setting general strategy relating to ESG matters, (b) developing, implementing and monitoring initiatives and policies based on that strategy, (c) overseeing communications with employees, investors and stakeholders with respect to ESG matters and (d) monitoring and assessing developments relating to and improving the Authority's understanding of ESG matters.