

# Potawatomi Carter Casino Hotel

2013 Feasibility Study of Comprehensive Energy Efficiency Upgrades

Terry Rye - Director of Facilities



# Brief Summary of FCPC

- Forest County Potawatomi Community (FCPC) Tribal enrollment numbers about 1450 with about half living on reservation lands. The FCPC is a federally recognized Indian tribe governed by a 6 person Executive Council.



# Brief Summary of FCPC

- Originally located in Eastern Canada, the tribe migrated to the Western Lake Michigan area. As white settlers moved in, the tribe was relocated to Kansas. Many opposed removal and went to live in areas of Northern Wisconsin, Michigan and Canada. The tribe purchased its own land with Treaty monies in 1913.



# Brief Summary of FCPC

- The Potawatomi are a member of the Confederacy of the Chippewa and Ottawa, and were given the task of keeping the sacred fire, hence the name "Keeper of the Fire."
- The Forest County Potawatomi (FCP) has lived in Forest County, Wisconsin, since the late 1800s. Around 1880, groups settled in areas near Blackwell and Wabeno and have lived in that area since, as well as in the Carter and Crandon (or Stone Lake) areas.



# Brief Summary of FCPC

- Today, life on the reservation is very different than it was for the elders. They have done much for the younger generation, and it is because of the elders that the younger generations are who they are today.
- By pursuing a diverse set of business models, the Forest County Potawatomi of today are the largest employer in Forest County.
- With revenues from various tribal enterprises, the Potawatomi have invested in the health, wellness, education, environment and future of its people



# Brief Summary of FCPC

- Forest County is also home to almost 350,000 acres of national forest land known as the Chequamegon-Nicolet National Forest. In 1998 the two national forests in Wisconsin, the Chequamegon and the Nicolet, were combined in name for administrative purpose



# Project Overview

- The Tribe has hired Grumman/Butkus Associates, Energy Efficiency Consultants and Sustainable Design Engineers, located in Wauwatosa WI. to complete a comprehensive energy efficiency feasibility study, including a full-scale energy audit. The PCCH Energy Study was completed 12-31-2012 and contains detailed reports and actionable recommendations to yield at least a 30% reduction in overall energy use, once implemented at the PCCH.



# Project Location

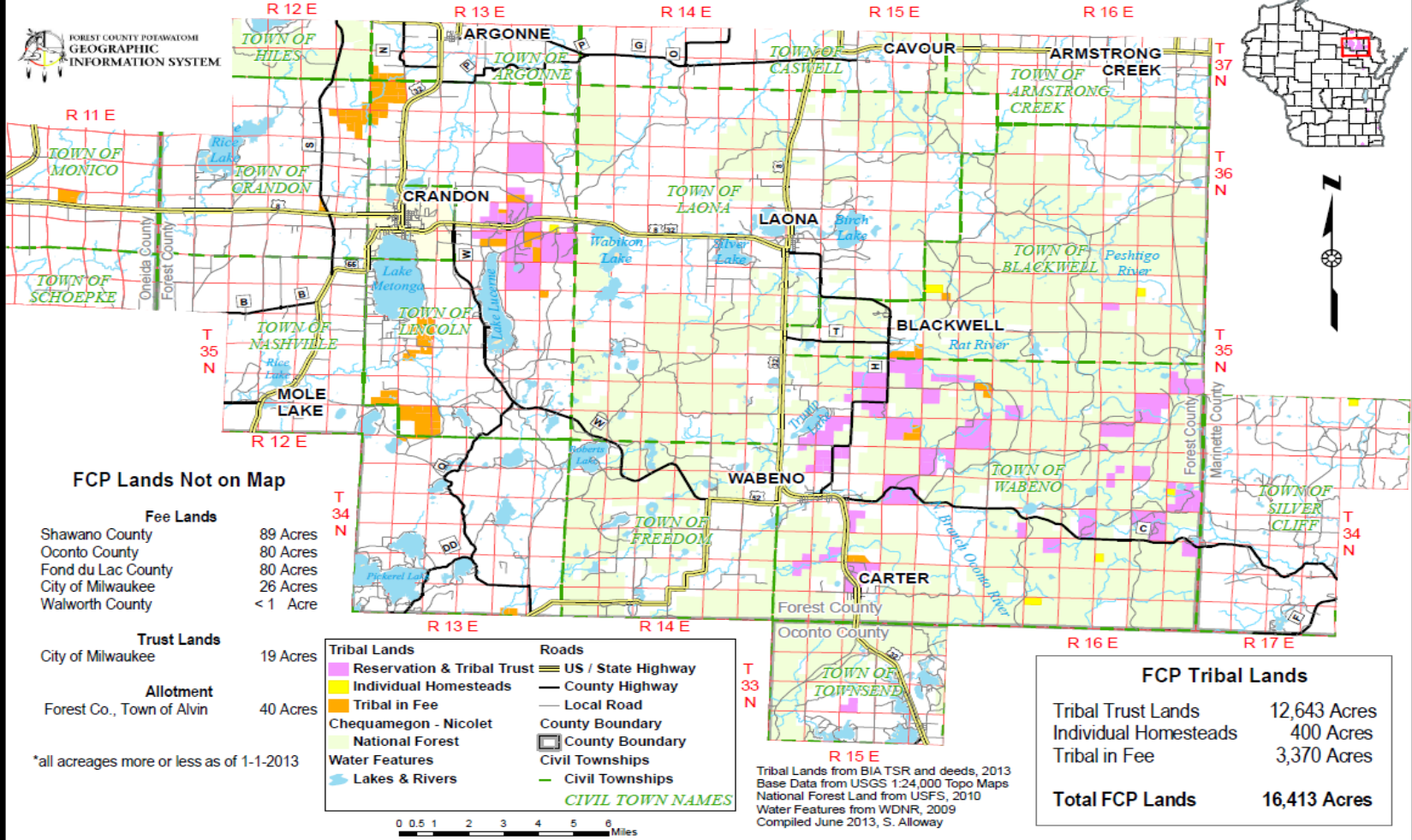
- The Forest County Potawatomi Community (FCPC) reservation lands consist of 12,000 acres in rural Forest County, Wisconsin. The Tribe's reservation lands are “checkerboarded” meaning that non-Indian owned land and Tribal reservation land border each other in several locations, resulting in a visual “checkerboard” of Indian and non-Indian lands.





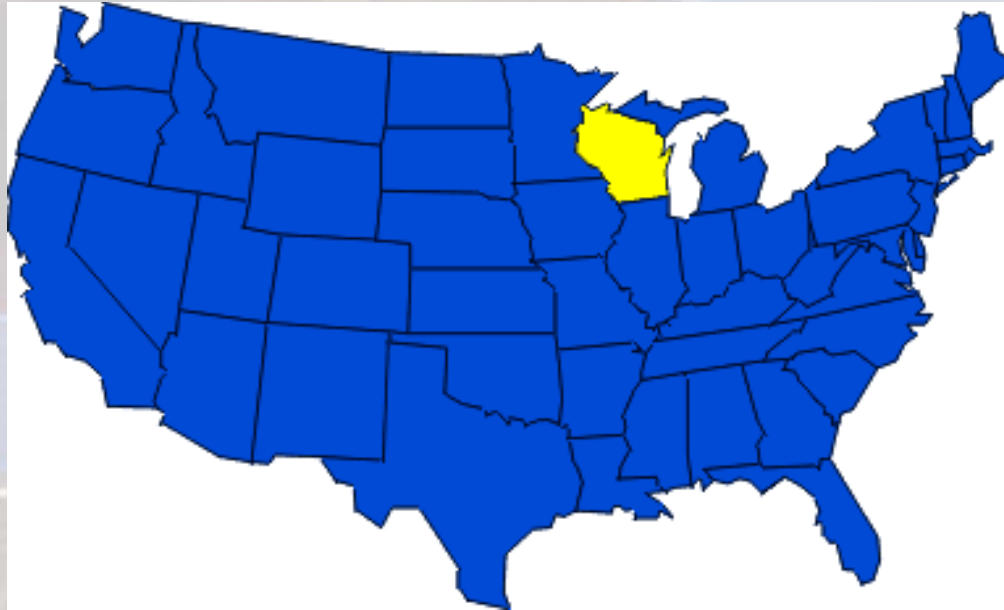
# FCPC Land Base

## Forest County Potawatomi Land Base - 2013





# FCPC Location



The proposed project is wholly located at the Potawatomi Carter Casino Hotel in Carter on the FCPC reservation south of the town of Wabeno, Wisconsin.



# Project Participants

## Contact Information

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# Project Participants

## Contact Information

### Key Project Participant

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# Project Objectives

- The Forest County Potawatomi Community with the aid of a Department of Energy Grant commissioned Grumman/Butkus to develop a comprehensive feasibility study with the goal of achieving at least a 30% reduction in energy consumption at the Potawatomi Carter Casino Hotel (PCCH).
- The Potawatomi Carter Casino and Hotel is a 99 room hotel gaming center. Guest services include two restaurants, a swimming pool and a fitness center. The gaming center has an 18,000 square foot casino with slot machines and table games and a 4500 square foot bingo hall. There are also spaces for meetings and banquets. Employee areas include laundry facilities, kitchens, offices, storage and mechanical space. This report focuses mainly on these public and employee areas of the hotel.



# Project Goals

- To identify and evaluate potential energy saving conservation measures, (ECM's)
- To make recommendations regarding implementation of ECM's in the context of current and anticipated infrastructure upgrades.
- To identify operations and maintenance procedures as they relate to energy.
- To provide guidance for the planned hotel renovation.





# On Going or Completed Projects

- 103 Hotel Guest Room PTAC units 21-22 years old have been replaced with new PTHP units.
- Units are (83) 9000 BTU 3KW Heat Pump and (20) 12000 BTU 3KW Heat Pumps.







# On Going or Completed Projects

- These new Package Terminal Heat Pumps in conjunction with the Guest Room Energy Management system being installed in March and April of this year should result in a 40% reduction in energy usage related to this ECM for a \$13,000.00 annual energy savings with a payback of just over 3 years.



# Retrocommissioning

- Item 1: Add CO2 sensor to RTU-7
- Item 2: Reconfigure Hot water system
- Item 3: Provide Schedule and Setpoint changes for RTU-7
- Item 4: Provide scheduling for RTU-3
- Item 5: Provide Scheduling for RTU-6



# Retrocommissioning

## Item 1: Add CO2 sensor to RTU-7

- Add a CO2 sensor to the return air of RTU-7. Program the exhibition hall VAV boxes (2 qty) so that the minimum CFM of each box is reset based on CO2 levels.



# Retrocommissioning

## Item 2: Reconfigure Hot water system

- Provide all hardware and software to reconfigure hot water system as follows:
- Lead boiler to be automatically selected based on runtimes
- Hot water system to be controlled to maintain supply water temperature. Supply water setpoint to be reset based on outside air temperature.
- Each boiler to be staged to maintain setpoint. When one boiler has all of its stages on and their continues to be a call for heating then an additional boiler to stage on.



# Retrocommissioning

## Item 3: Provide Schedule and Setpoint changes for RTU-7

- Schedule unit to operate based on need and reduce the static pressure setpoint to .75”

## Item 4: Provide scheduling for RTU-3

- Provide a schedule for this unit to allow it to go into unoccupied mode when the space is unoccupied.



# Retrocommissioning

## Item 5: Provide scheduling for RTU-6

- Provide schedules for the 24 VAV zones that GBA has determined can be set to an unoccupied mode. Reset minimum VAV flows to a lower value and reset space temperature set points during unoccupied mode. Make adjustments to RTU to allow it to operate with the lower demand that is caused by the unoccupied modes



# Retrocommissioning

- The Total Project Cost was \$10,260.00.
- The total Focus on Energy Incentive was \$6,669.00.
- The total WPS Bonus Incentive was \$2,565.00.
- Total out of pocket expense - \$1,026.00
- The energy savings verified were 135,191 kWhs and 17,597 therms. This equates to \$21,605.30 in annual energy savings and equals a ½ month payback.



# Activities Yet to be Completed

Table 1: Summary of Recommended Energy Conservation Measures

ECM	Description of ECM	Electricity		Natural Gas		Energy		O&M	Investment Economics			
		Energy Savings (kWh/yr)	Energy Savings (\$/yr)	Energy Savings (therms/yr)	Energy Savings (\$/yr)	BTU Savings (kBtu/yr)	% Energy Use Savings	O&M Savings (\$/yr)	Total Cost Savings (\$/yr)	Estimated Capital Cost (\$ (5))	Focus on Energy Incentive (\$ (2))	Simple Payback Before / After Incentive (years)
2	Casino Displacement Ventilation with Heat Recovery Chiller	1,048,461	\$68,150	42,478	\$29,265	7,826,197	17.41%	\$10,000	\$107,415	\$864,000	\$105,288	8.04 / 7.06
3	Bingo Hall RTU Demand Controlled Ventilation	44,059	\$2,860	6,655	\$4,585	815,873	1.81%	\$0	\$7,445	\$26,250	\$2,908	3.56 / 3.13
4	Springs Kitchen Variable Volume Hood Exhaust and Makeup	46,700	\$3,000	3,800	\$2,615	539,387	1.20%	\$0	\$5,615	\$52,500	\$2,000	9.25 / 8.99
5	Banquet Kitchen Variable Volume Hood Exhaust and Makeup	46,700	\$3,000	3,800	\$2,615	539,387	1.20%	\$0	\$5,615	\$52,500	\$2,000	9.25 / 8.99
6	Flames Kitchen Variable Volume Hood Exhaust and Makeup	74,800	\$4,860	8,000	\$5,510	1,055,262	2.35%	\$0	\$10,370	\$26,250	\$3,480	2.54 / 2.19
10	Energy Miser for Vending Machines (1)	5,200	\$336	0	0	17,748	0.04%	\$0	\$336	\$756	\$240	2.25 / 1.54
11	Lighting Fixture and Control Upgrades	89,651	\$5,800	0	\$0	282,596	0.63%	\$0	\$5,800	\$22,155	TBD	3.82
12	Retrofit Casino Slot Machines with LED lights	96,000	\$6,200	0	0	327,648	0.73%	\$0	\$6,200	\$28,665	\$5,191	4.62 / 3.78
15	Conference Room Unit replacement upgrade (6)	8,700	\$565	4,100	\$2,825	439,693	0.98%	\$0	\$3,390	\$8,000**		2.36
<b>Total: Recommended Projects Budget Value</b>		<b>1,460,271</b>	<b>\$94,771</b>	<b>68,833</b>	<b>\$47,415</b>	<b>11,843,791</b>	<b>26.35%</b>	<b>\$10,000</b>	<b>\$152,186</b>	<b>\$1,081,076</b>	<b>\$1,211,07</b>	<b>5.84</b>





# Future Plans

- Continue to seek funding to complete the unfinished Energy Conservation Measures identified in the Summary Graph of Recommended ECM's

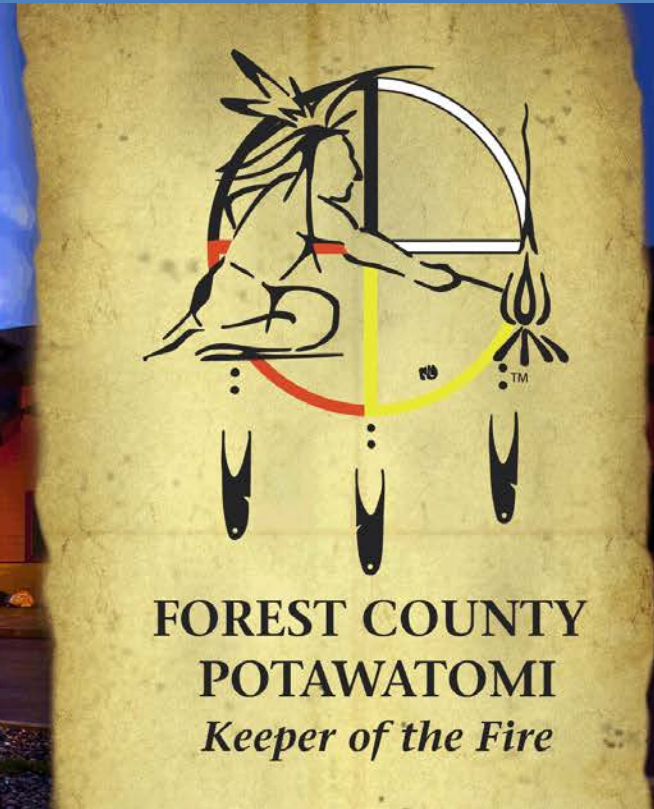


# Carter C-Store Plans

## Carter C-Store

- The Carter C-Store is in the process of taking action on their energy study.
- They are working with Focus on Energy and are in the process of getting Bids for all the recommended lighting upgrades.
- They are hoping to complete their recommended ECMs this year.

# Comments or Questions??



## Potawatomi Carter Casino Hotel

2013 Feasibility Study of Comprehensive Energy Efficiency Upgrades

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