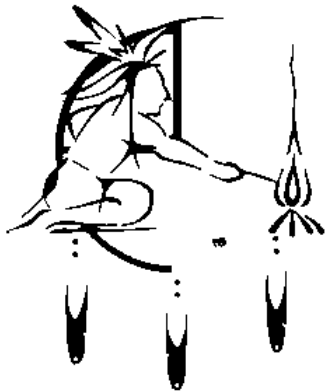


Forest County Potawatomi Community: Energy Efficiency and Renewable Energy Projects

Mercedes Vega

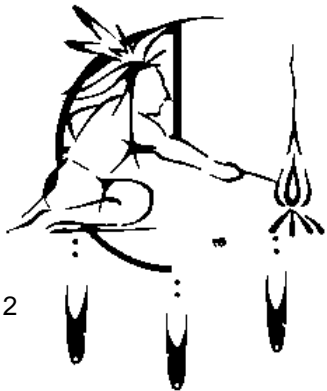
Forest County Potawatomi Community

Milwaukee, Wisconsin



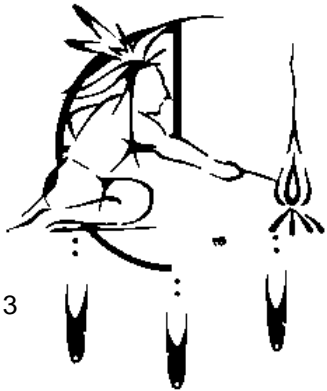
Background on Forest County Potawatomi Community

- Ø FCPC has trust land in northern Wisconsin and the City of Milwaukee.
- Ø Facilities include tribal government offices, a health and wellness center, a cultural museum, a former college campus, a hotel, two casinos and various other smaller support facilities and enterprises.



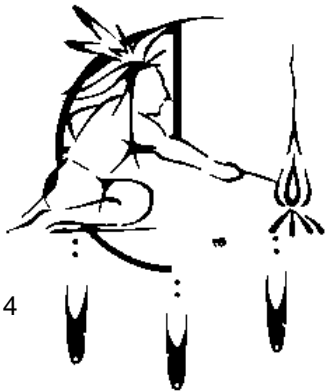
Forest County Potawatomi Community Environmental Mission Statement

“The traditional values of the Forest County Potawatomi Community teach us to respect all living things, to take only what we need from mother earth, and to preserve the air, water, and soil for our children. Reflecting these values, we take leadership in creating a sustainable and healthy world. We resolve to reduce our own environmental impacts and to take steps to remedy the impacts of others. We encourage others to do the same. We also seek legislative and policy changes that protect the environment for all people, including generations to come.”



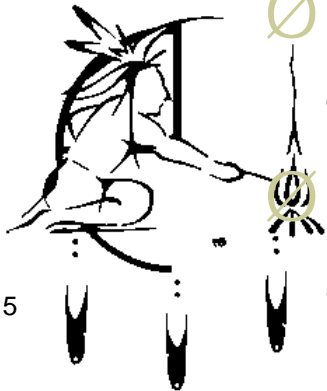
Project Greenfire

- Ø In late 2007, FCPC established Project Greenfire.
 - Ø An effort to assess and reduce the Tribe's environmental impact.
 - Ø A major component of the project is to reduce the Tribe's overall carbon footprint.
 - Ø The goal is to ultimately eliminate the Tribe's carbon footprint, be energy self-sufficient, and to be a provider of carbon-free energy to others.



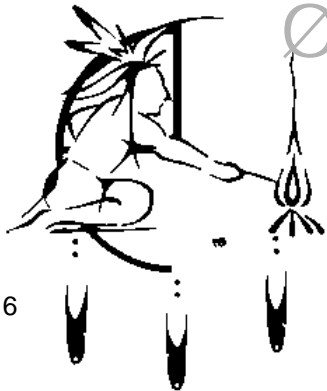
Project Greenfire

- Ø Energy audits for the Tribe's major facilities.
- Ø Identification of over 100 substantial energy-saving projects.
- Ø Implementation of renewable energy projects to offset or replace fossil fuel-derived energy.
- Ø Address transportation-related emissions through 4-day work week.
- Ø Purchase renewable energy credits to cover all of Tribe's electricity use.
- Ø Quarterly energy use reports to track energy use and Tribe's carbon footprint.



Quarterly Energy and Carbon Reports

- Ø Comparison of energy usage/carbon emissions for past twelve months against 2007 baseline year.
- Ø Already significant reductions: 11.2% decrease in energy and 19.8% decrease in carbon per square foot in 12 months ending June 2011 against 2007 baseline.
- Ø Reductions represent hundreds of thousands of dollars per year in energy cost savings.



Continued Implementation of Energy Efficiency Efforts

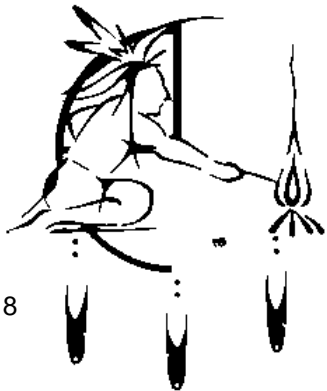
- Ø Although significant reductions have already occurred, numerous additional opportunities remain.
- Ø Coordination among facilities to share best practices and efficiency opportunities.
- Ø Maximizing value of state and federal incentives for energy efficiency measures.
- Ø Use of quarterly reports to track effectiveness of efficiency measures and to identify additional opportunities.



DOE Partnership and Resources

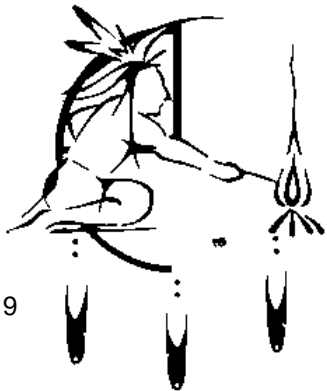
Ø Through a number of grant awards, DOE has provided an important partnership and resources for several key projects.

Ø Results . . .



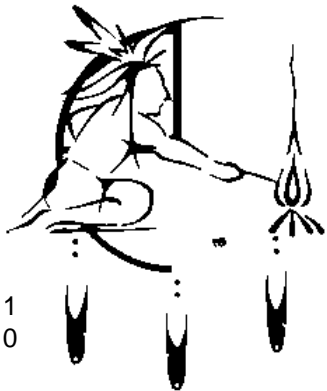
Forest County Potawatomi Community Potawatomi Bingo Casino

- Ø In June 2008, the Tribe's Potawatomi Bingo Casino in Milwaukee completed its expansion, tripling the size of the Casino.
- Ø The expansion incorporated energy efficient design. The Casino now uses 12.5% less energy per square foot than pre-expansion.



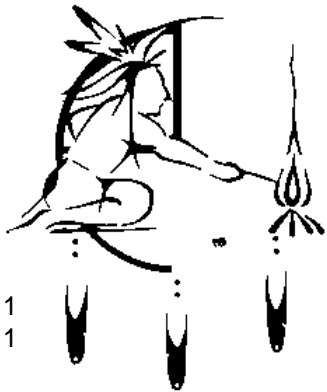
Parking Structure Lighting Project

- ∅ The Casino expansion more than doubled the size of its six-story parking structure to 1,046,640 sq. ft.
- ∅ The parking ramp is lit 24-hours/day.



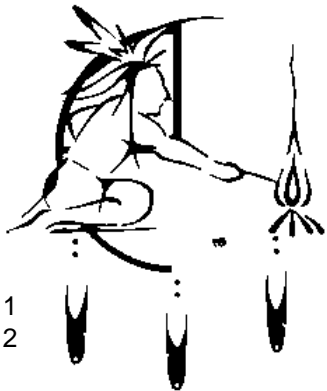
Parking Structure Lights

Ø The Project replaced 205W Metal Halide-type lights in the parking ramp area, valet parking area, and stairwells with . . .



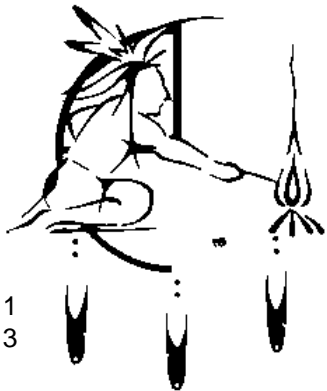
Parking Structure Lights

Ø1,760 new energy-efficient 55W LED lights.



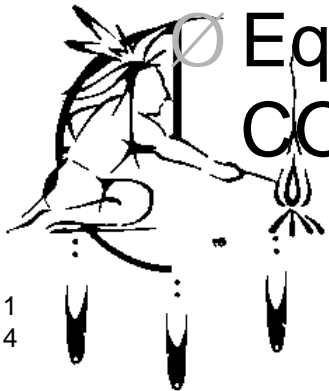
Parking Structure Lights

- Ø Longer life and 10-year warranty reduce maintenance costs substantially.
- Ø With support from DOE and State of Wisconsin Focus on Energy, project has two-year payback.



Parking Structure Lighting Energy Savings

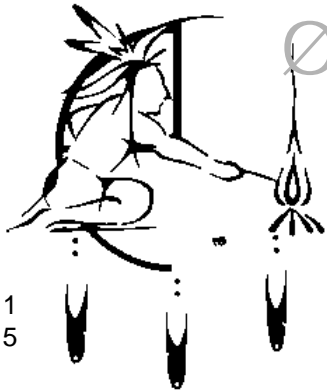
- Ø A 245.7 kW reduction in peak demand has already been measured.
- Ø Total anticipated energy usage reduction of 2,260,080 kWhr/yr.
- Ø Represents 54% reduction in energy use for the Parking Structure and 4% reduction in the Tribe's overall energy use.
- Ø Equates to an annual reduction of 1,900 tons CO₂ emissions.



Potawatomi Bingo Casino

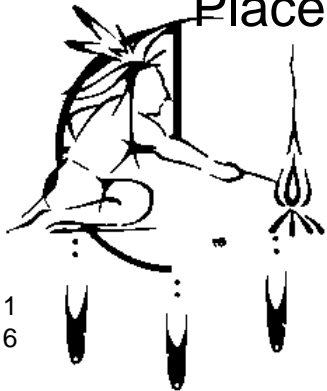
Next Steps

- Ø Since 2007, the Tribe has initiated 23 Casino energy efficiency projects valued at over \$2.5 million.
- Ø These projects combined are expected to realize energy savings of 5,000,000 kWhr/yr and 50,000 therms.
- Ø Equates to reduced emissions of approximately 5000 tons CO₂/year.
- Ø Additional 17 projects are being studied or planned.



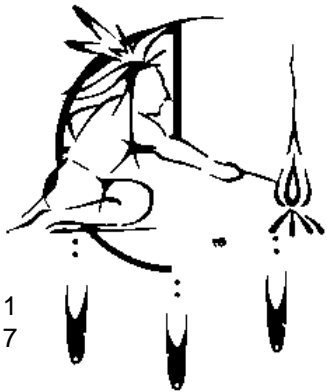
Wunder Hall Project

- Ø The former Concordia College campus, just west of downtown Milwaukee, was acquired by the Tribe and taken into Trust in 1990.
- Ø Wunder Hall is a 34,000 sq ft building located on the campus.
- Ø Wunder Hall was built in 1925 and is listed on the National Register of Historic Places.



Wunder Hall Project

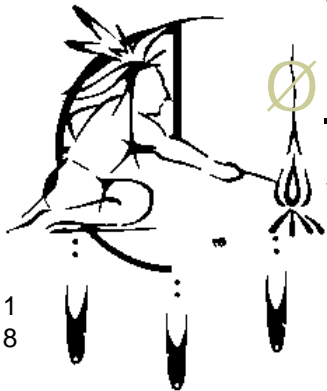
Ø Project is funded in part with DOE support and will include the following components . . .



Wunder Hall Project

Ø Project Components:

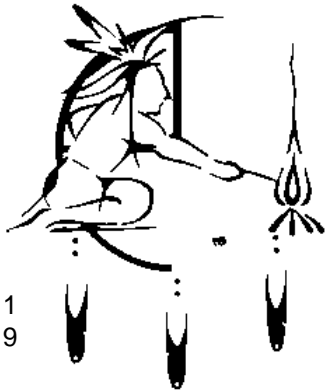
- Ø Building envelope: energy efficient windows and doors, upgraded exterior wall and roof insulation, sealing of exterior masonry.
- Ø Building HVAC System: New 94% efficient gas-fired boilers and chillers, upgrade insulation on the distribution systems, and digital control system to optimize efficiency.
- Ø Building Plumbing System: Energy and water saving fixtures throughout the building.



Wunder Hall Project

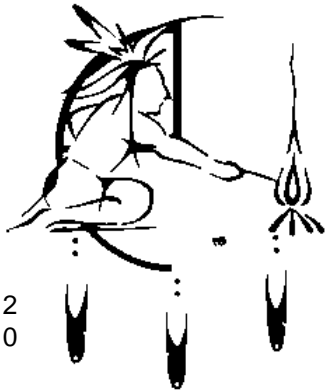
Ø Project Components cont.

Ø Building Electrical Infrastructure: Install energy-efficient interior and exterior lighting (florescent or LED) and energy-efficient lighting controls including dual-level switching, day-light controls, and automatic shutoff.



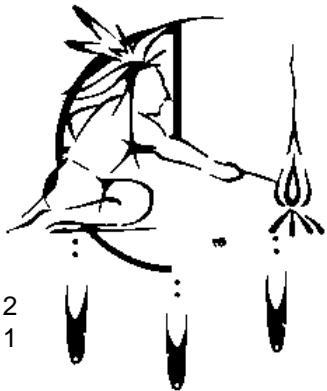
Wunder Hall Project

- Ø Anticipated total energy savings resulting from the implementation of this project are projected to be:
 - Ø Natural Gas-18,400 therms/yr or 58% of previous energy use.
 - Ø Electricity-205,000 kWh/yr or 55% of previous energy use.



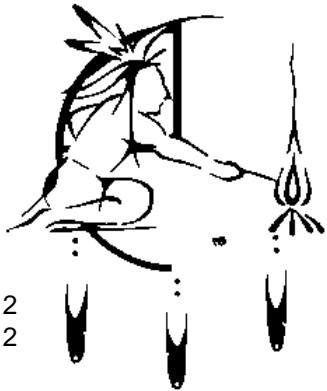
Carter Hotel and Casino

- Ø Located in northern Wisconsin
- Ø Has not yet achieved same level of energy use reductions as Tribe's other facilities



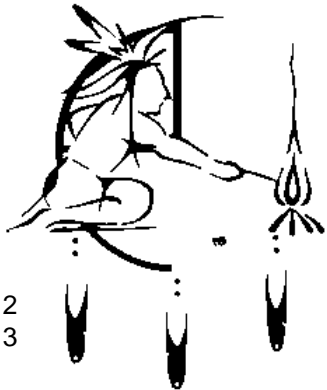
Carter Hotel and Casino

- Ø Working with Focus on Energy, Tribe has identified preliminary measures to achieve greater energy efficiency.
- Ø Tribe has received a grant from DOE to conduct a detailed energy efficiency feasibility study for the hotel and casino.
- Ø Goal: reduce energy usage by at least 30%.



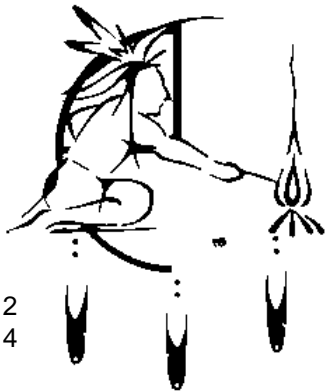
DOE Community Renewable Energy Deployment Grant

- Ø In January 2010, DOE awarded the Tribe a \$2.6 million grant to implement a diverse array of renewable energy technologies.
- Ø With the projects implemented under the grant, the Tribe will be closer to achieving its goal of energy independence and zero carbon footprint.



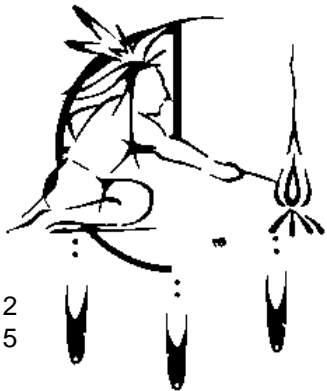
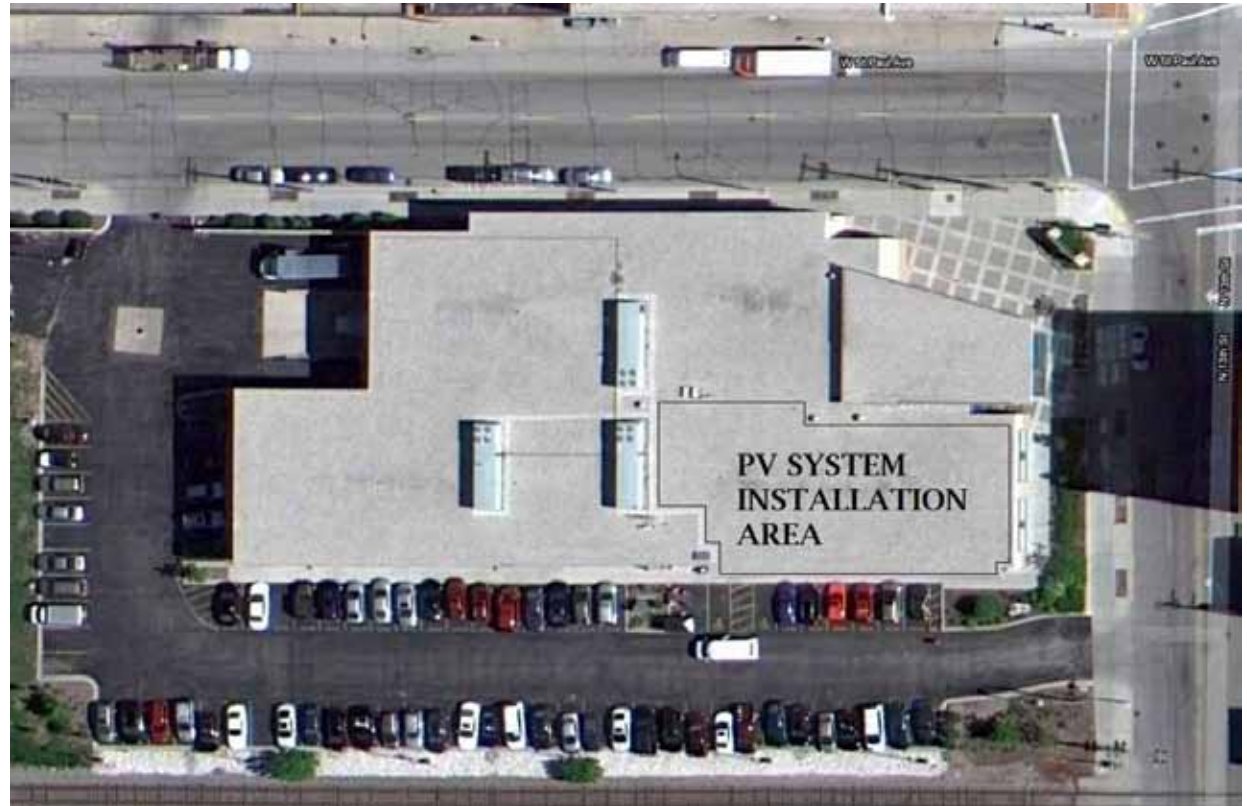
Milwaukee Administration Building Solar Photovoltaic Installation

Ø In October 2011, Tribe completed installation and commissioning of 35 kW array of solar photovoltaic panels on the roof of its Milwaukee Administration Building.



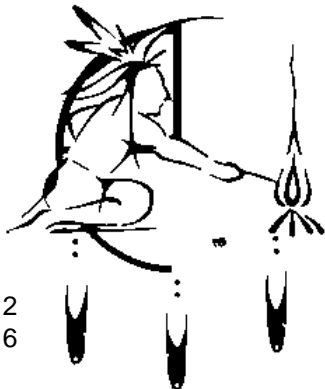
Milwaukee Administration Building Solar Photovoltaic Installation

Tribe partnered with DOE (under the Community Renewable Energy Grant), WE Energies (the local utility) and Wisconsin Focus on Energy to implement the project.



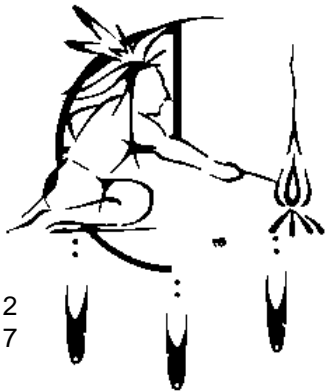
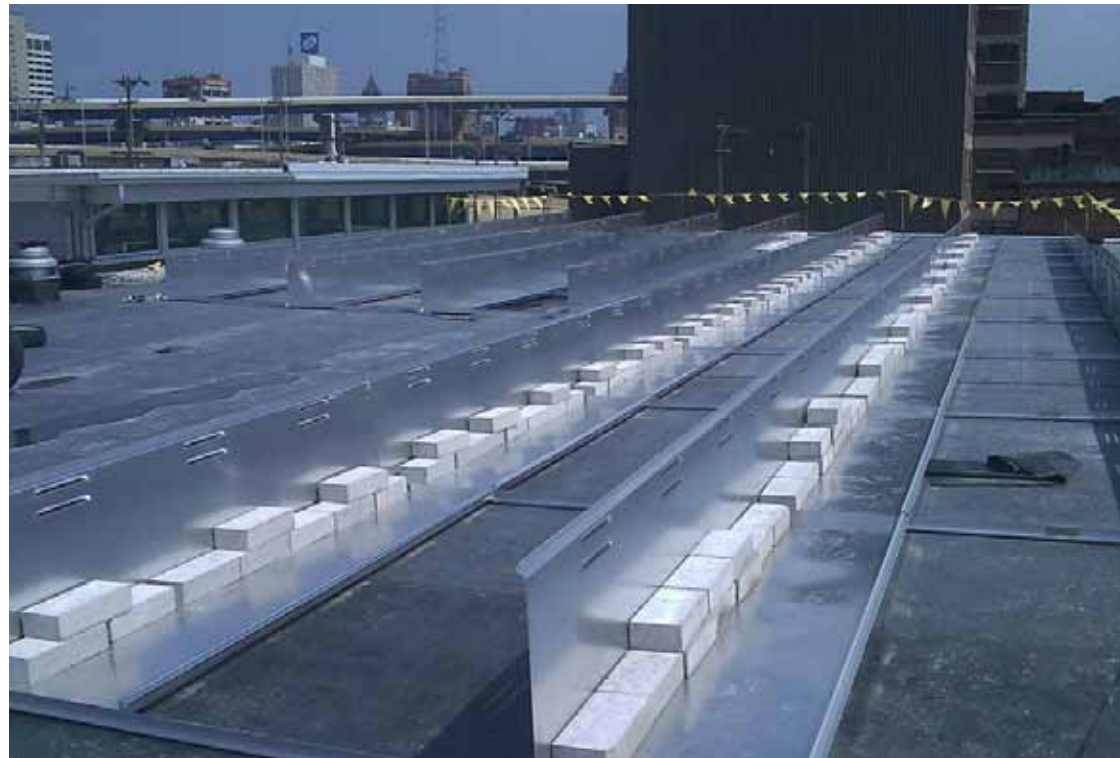
Milwaukee Administration Building Solar Photovoltaic Installation

Step One: Vacuum ballast off the roof.



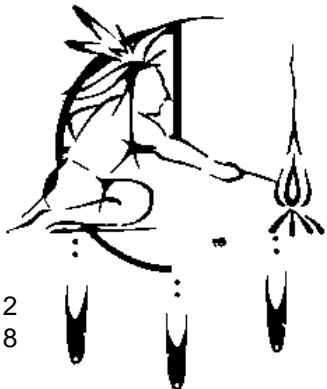
Milwaukee Administration Building Solar Photovoltaic Installation

Step Two: Lay down a protective roofing membrane & install solar panel racks/ solar docks



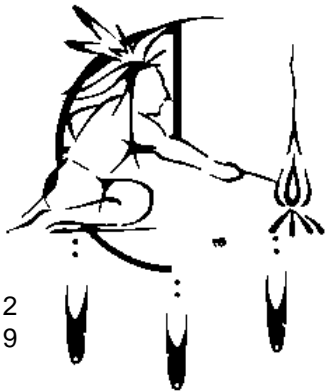
Milwaukee Administration Building Solar Photovoltaic Installation

Step Three - Install Solar Panels onto solar docks & interconnect to electric system



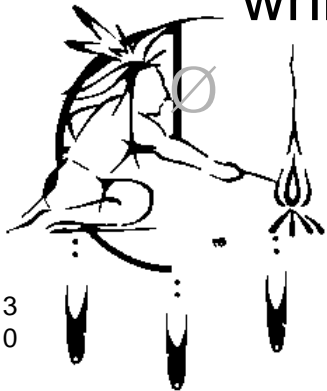
Milwaukee Administration Building Solar Photovoltaic Installation

Step Four - The solar panels feed their solar electrical energy into an inverter which converts it from D.C. power to A.C. power and in turn feeds this power to the building for consumption



Anaerobic Digester and Biogas Generation Plant

- Ø The Tribe is currently developing and evaluating plans for an anaerobic biodigester and biogas generation facility, which would be funded in part under DOE Community Renewable Energy Grant.
- Ø The facility would convert food waste from local businesses into biogas, which would then be converted to electricity by large internal combustion engines.
- Ø The facility would generate up to 2 MW of clean power, which would be sold to the grid.



Anaerobic Digester and Biogas Generation Plant

