

Final Scientific/Technical Report for DOE/EERE

Project Title: Comprehensive Community Renewable Energy Implementation Plan in Forest County and Milwaukee County

Covering Period: January 1, 2010

Approved Project Period: March 31, 2014

Submission Date: June 27, 2014

Recipient: Forest County Potawatomi Community
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Website (if available) <http://www.fcpotawatomi.com/>

Award Number: DE-EE0003074

Working Partners: Miron Construction Co., Inc.; Titus Energy; Baker Tilly; Bonestroo (Stantec); Probst Group; Greenfire Management Services; and Pieper Electric.

Cost-Sharing Partners: None.

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Project Objective: To advance its energy, environmental, and sovereignty goals, the Forest County Potawatomi Community (the “Community”) sought and obtained Community Renewable Energy Deployment funding from the Department of Energy to evaluate and implement a diverse number of renewable energy technologies throughout its lands held in trust or owned in fee simple in Forest County and Milwaukee County (the “Project”). The technologies and sites evolved during the Project, ultimately leading to the investigation of biomass and solar projects on the Community’s reservation in Forest County, as well as the investigation and eventual deployment of a solar project and an anaerobic digestion and biogas project on Community lands in Milwaukee.

Background: Based on lessons learned from the Community’s history, tradition, and culture, and recognizing the environmental and sovereignty issues at stake, the Community established the goal of energy independence using carbon-free or neutral renewable resources. The Community’s Executive Council formalized this goal into an Environmental Mission Statement, which provides as follows:

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. (adopted November of 2008)

Consistent with its energy goal and related mission statement, the Community established Project Greenfire, under which the Community began undertaking and otherwise implementing a variety of energy-related initiatives. The Community conducted a comprehensive energy audit to establish a baseline of energy consumption and associated carbon footprint. Based on those results, the Community purchased renewable energy credits to offset its electricity use and to serve as a bridge toward energy independence. The Community then began implementing a number of energy efficiency improvements and practices to reduce its energy consumption and carbon footprint. However, understanding that energy efficiency alone would not allow the Community to meet its energy goal, the Community also began exploring potential energy projects, conducting resource assessments to better evaluate projects that would move the Community toward energy independence via clean, sustainable electricity.

Work Planned:

Original Vision

As originally envisioned, the Project was to consist of the following:

- A Tri-Generation biomass facility that would provide heating and cooling for the Community’s government buildings at its Stone Lake Campus (near Crandon, Wisconsin), produce approximately 1.25 MW of electrical energy at an 85% capacity factor, and dry wood chips for the tri-generation facility’s boiler as well as biomass heating units for numerous on-reservation buildings.
- Dried woody biomass boiler heating systems for numerous of the Community’s on-reservation buildings.
- Three solar photovoltaic units in front of the Executive Building at the Stone Lake Campus.

- Three 100-kilowatt wind generation turbine units, located on 7.5 acres at the top of Sugarbush Hill, the second highest point in the State of Wisconsin.
- A biogas digester and 200-kilowatt generation unit (that was to be operated at 150 kW initially) to utilize the Community's organic solid waste from several sources, including Community-owned facilities, Community member homes, septic sewage and municipal solid waste from both Tribal lands and possibly from non-Tribal communities, and waste oil and grease from area restaurants, including the Community's restaurants.

Ultimately, for reasons briefly discussed below, the Community did not implement any of the foregoing projects exactly as planned.

Forest County Biomass Project – Additional evaluation revealed that, for the biomass project to perform financially, the project's size would need to increase significantly. The need to increase size raised concerns about the availability of biomass (and whether the project would require the Tribe to switch its forest management practices) and concerns about bringing a larger emission source to the reservation (and whether the localized impacts might impact the Community's air quality and/or Class I air). Based largely on these concerns, the project lost the support of the Community members. As such, the Community abandoned that project, which also removed the need or immediate justification for the woody biomass boiler heating system. However, the Community is still investigating the feasibility of a smaller-scale biomass projects, such as a biomass cogeneration system, a syngas or syndiesel production system, or a biomass heating system at its Stone Lake Campus.

Forest County Solar Project – The Community learned that it had somewhat superior solar resources in Milwaukee, and that the incumbent utility in Milwaukee had a grant available. As such, the solar component was relocated to Milwaukee, and is discussed in greater detail below.

Forest County Wind Project – Additional evaluation revalued that Sugarbush Hill's wind resources were not as strong as anticipated. As such, a wind installation there would have been largely symbolic and would not have made financial sense. Therefore, the Community abandoned the wind project. The Community, however, is still evaluating the possibility of a wind project on other lands with superior wind resources, including on its land in Fond du Lac County. However, based on then-existing transmission line constraints and required upgrades, a wind project did not make sense to pursue as part of the greater project.

Forest County Digester Project – After the planned biomass project was abandoned, the Community wanted to investigate other large projects. Lacking strong or easily accessible solar or wind resources, the Community evaluated the possibility of expanding the planned digester project. However, the Community still had concerns regarding a large-project on the Reservation. Also, Community lands in Milwaukee presented certain advantages for a larger digester project. As such, the digester component was also relocated to Milwaukee, as is discussed in greater detail below.

Updated Scope

As discussed above, the solar and digester projects were relocated to Milwaukee and updated or otherwise refined to better reflect new sites or the more streamlined scope of the greater project. In addition, the updated scope included the investigation of a packaged biomass cogeneration system or syngas or syndiesel production system at the Stone Lake Campus as well as the installation of solar PV and/or solar thermal systems in Forest County. Additional

information regarding these projects and investigations is set forth immediately below as well as in the “Significant Accomplishments” section.

Milwaukee Solar Project Overview – A rooftop solar installation located at the Community’s Administrative Building located at 313 N. 13th Street in Milwaukee, Wisconsin.

Milwaukee Digester Project Overview – A 2.0 MW anaerobic digestion and biogas electric generation facility located at 2011 W. Potawatomi Circle in Milwaukee, Wisconsin.

Forest County Small-Scale Biomass Investigation Overview – The investigation of a packaged biomass cogeneration system or syngas or syndiesel production system at the Stone Lake Campus.

Forest County Solar Investigation Overview – The investigation of solar PV and potentially solar heating systems on residences and other buildings on the Tribe’s Reservation in Forest County.

Significant Accomplishments and Status:

The following provides an overview of the sub projects organized around the tasks identified in the Statement of Project Objectives for the Project.

Milwaukee Solar Project

Planning – As discussed above, the Community decided to relocate the planned solar project to Milwaukee County because of the superior solar resources (from solar radiation as well as more southerly location) and the availability of grant funding from the incumbent utility (i.e., We Energies, a d/b/a of Wisconsin Electric Power Company), which was not available from the utility in Forest County (i.e., Wisconsin Public Service).

Siting – The Community selected the Milwaukee Administrative Building as a site with available and unshaded rooftop space, a new roof, and a sufficient load to offset.

Permitting – This project required electric permits, which were obtained by the contractor, and an interconnection agreement with We Energies.

Conceptual Design – As originally envisioned, the installation was going to be a solar photovoltaic array consisting of a 20.68 kW double-stacked awning located on the south wall of the Administration Building and the construction of an 80 square foot solar hot water collector located on the roof. Additional evaluation demonstrated improved economics for a solar photovoltaic system on the roof, which was sized at 31,680-kilowatts.

Funding and Financing – The Community funded this with a Focus on Energy Grant, a We Energies grant, and with Tribal funding.

Equipment Procurement, Construction Documentation and Contractor Selection – The Community issued a competitive request for proposals (“RFP”), ultimately selecting Pieper Electric, Inc. as the contractor for the project. The Pieper Electric, Inc. proposal included panels manufactured by Milwaukee-based Helios USA, LLC (“Helios”).

Project Management and Reporting – The Community’s facilities personnel oversaw the solar installation. The Community provided regular reporting to the Department of Energy during this project, from RFP through actual installation.

Construction Activities – Construction was completed in October 2011, when Pieper Electric, Inc. completed the installation of 132 Helios 240-watt photovoltaic modules and

a photovoltaic powered 30 kW inverter. The Community estimates the system produces approximately 35,000 kilowatt hours of electricity per year and reduces carbon dioxide emissions by approximately 41 tons annually.

Milwaukee Digester Project

Planning – As discussed above, the Community decided to increase the size (to 2.0 MW) and relocate the digester project planned in Forest County to an approximately 2.66 acre site in Milwaukee for a variety of reasons, including the following: the availability of a buyer (We Energies); existing, underutilized property in a census tract eligible for New Market Tax Credits; and nearby sources of high-strength waste material. The facility was sized at 2.0 MW, the maximum size allowed under the then-existing We Energies tariff for electricity produced “using methane (biogas) from an anaerobic digester.”

Siting – The Community selected brownfield property it owns in the Menomonee Valley of Milwaukee, and that was previously used as a surface parking lot. The subject site is bordered on one side by a parking lot that has preexisting polychlorinated biphenyl (PCB) contamination from legacy operations which prohibit development and, on the other side, by a stormwater detention pond. Formerly, all of these parcels were part of the same tax lot; to facilitate development of the facility, the Community divided the property into three parcels.

Permitting – The project required multiple permits based on the nature of the facility as well as the contaminated nature of the property. In connection with the project, the Community obtained the following permits and/or approvals:

- Federal
 - o NEPA Review
 - o Section 106 of NHPA
- State
 - o Air Pollution Control Construction Permit
 - o Conditional Exemption Allowing Construction on Historic Fill
 - o Construction General Permit
 - o Wastewater Pretreatment System Plan Approval
- Local
 - o Wastewater Discharge Permit
 - o General Plan Development and Detailed Plan Development
 - o Certified Survey Map
 - o Out of Program Agreement with the City of Milwaukee
 - o Footing and Foundation Permit
 - o Plumbing Permit
 - o Building Permit (HVAC and Electrical)

Conceptual Design – The Community sought the design of a facility that would accept and treat, via anaerobic digestion, a diverse array of high strength organic feedstocks that would fuel two 1.0 MW generators (already purchased for the project to safe harbor for tax credits). However, to avoid nuisance issues and other possible impacts to neighbors, the Community also required that the material be in a pumpable form, which would allow the tankers to directly connect and unload in an enclosed facility with robust odor control. The design also required that the facility produces biogas, meeting certain quantity and quality parameters, effluent (liquid) and digestate (solid) that could be lawfully and affordably disposed, and include the option to recover waste heat for

beneficial reuse. Additional detail regarding the design is set forth under the construction heading below.

Funding and Financing – Funding for the project, to date, came from the Department of Energy and from capital contributions of the Community. The Community anticipates grants from two additional sources. In particular, the Community created a taxable entity to pursue this project—FCPC Renewable Generation, LLC—to entitle the project to funding from Section 1603 of The American Recovery and Reinvestment Act. In addition, the project has received notice of award, but not payment, from Focus on Energy, the Wisconsin utilities' statewide energy efficiency and renewable resource program. The Community also continues to seek New Market Tax Credits for the project. The facility is expected to generate revenue through a combination of tipping fees and the electricity sold through the We Energies tariff.

Equipment Procurement, Construction Documentation and Contractor Selection - The Community issued an RFP seeking a team to design, build, operate, and source the facility. That global approach proved financially infeasible. The Community therefore issued a revised RFP for a design-build contractor, leaving the operations and feedstock sourcing for separate agreements. Miron Construction Co., Inc. ("Miron") was selected as the Design-Builder for the project, and Miron utilized Symbiont and Biothane, LLC for site and process engineering.

Project Management and Reporting – Titus Energy assisted with pre-development work and conducted design reviews during the engineering process. Greenfire Management Services served as the Owner's Representative overseeing construction. The Community's Legal Department oversaw the entire project, providing regular updates to the management of FCPC Renewable Generation, LLC and to the Department of Energy through meeting minutes, monthly construction reports, quarterly reporting, and periodic meetings (both informal and formal).

Construction Activities – Miron commenced construction of the facility in October 2012, in advance of the November 2, 2012 construction commencement deadline to qualify for the We Energies tariff. Miron completed the design and construction of the feedstock receiving tanks and the two digesters in August 2013, and the facility began receiving seeding sludge and feedstock in September 2013. The facility produced electricity via biogas produced onsite on October 29, 2013, in advance of the We Energies interconnection deadline of November 2, 2013.

The facility includes the following features, components, and/or processes:

- Designed to be able to hydraulically process up to 132,000 gallons per day and up to 110,000 pounds per day of biodegradable chemical oxygen demand (COD);
- Designed for average influent concentrations of up to 30,000 parts per million total suspended solids (TSS) with at least 90% of TSS volatile;
- Designed to produce biogas that consistently contains 50-75% methane by volume and to include a treatment system that ensures compliance with manufacturers' specifications and air permit requirements;
- Includes two unloading bays for tankers to unload material;
- Tankers unload waste, via pumps, to one of five feedstock receiving tanks (30,000 gallons/tank);
- Material sent to equalization tank (160,000 gallons) in a mix designed to maximize biogas production;

- Material from equalization tank goes to one of the two 1.3 million gallon digesters;
- Raw biogas from digesters undergoes conditioning before firing the two 1.0 MW generators and/or the dual fuel boiler;
- Electric energy (along with renewable energy attributes) sold to We Energies;
- Liquid effluent goes to membrane (to retentate going back to digester and permeate to Milwaukee Metropolitan Sewerage District ("MMSD")) and/or is discharged to MMSD;
- Solids go to solids separator, which returns liquid material to the digester and the remaining material to the solids storage tank and eventually to a centrifuge;
- Centrifuge sends solids to roll-off box and liquids to aerator and eventually to MMSD.

The cumulative time spent on engineering and third party project management from the beginning of the project through 2013 totaled approximately 14,632 hours. The cumulative time spent on on-site construction (not including off-site fabrication hours) through 2014 totaled approximately 53,075 hours. Collective time spent on this project through 2014 exceeded 90,619 hours, or 44.20 design/construction full time equivalents. Five permanent jobs have been created in the operation of the facility. In addition, approximately four additional jobs were created in the supply of feedstock and disposal of biosolids.

Forest County Small-Scale Biomass Investigation

The Community sought National Renewable Energy Labs ("NREL") technical assistance to investigate the feasibility of installing a small biomass cogeneration system or syngas or syndiesel production system serve the Community's Stone Lake Government Center in Forest County. The Community owns approximately 15,000 acres of heavily forested land in Forest County that could provide a long-term source of renewable woody biomass in addition to purchases of woody biomass from nearby non-Community-owned businesses, helping to provide economic support to the forest products economic segment in a high unemployment area. NREL provided some preliminary analysis of such biomass systems, but it did not investigate in detail due to the experimental nature of the technology, particularly the syngas technology. Instead, NREL provided a preliminary investigation of a biomass heating system, recommending a more robust feasibility study. The Community is still evaluating the propriety of potential biomass systems, including gasification systems, heating systems, and combined heat and power systems.

Forest County Solar Investigation

Since originally receiving the Community Renewable Energy Deployment funding, the price for solar photovoltaic systems has dropped considerably. As such, outside of the Project, the Community is planning to install a number of solar deployments at or near facilities in Milwaukee and Forest Counties.

Patents: None.

Training and Professional Development: The project, including the interaction with Department of Energy Project Team and the interaction with other recipients of Community Renewable Energy Deployment funding, helped the Community build greater internal expertise relating to energy project development. Also, as a result of some of the lessons learned from the large biomass project planned but not implemented, the Community established an Energy Working Group. This group contains consists of personnel from all departments and enterprises

with an interest in energy matters, includes Community members, and serves as a liaison to the Community.

Publications/Presentations/Travel: The anaerobic digester and biogas facility is unique for a number of reasons. First, it is a large, purely merchant digestion facility. Second, unlike the majority of other digestion facilities, it is located in an urban area. Third, it is one of the more significant renewable energy projects, particularly non-wind or non-solar projects, that has been developed by a tribe or tribally-established entity. As a result of these and other factors, it has generated a significant amount of interest. For example, agencies or organizations have repeatedly requested that project participants provide presentations on the facility, including at conferences California, Colorado, Illinois, and New Mexico. A number of presentations delivered on the facility is collected and attached hereto as Exhibit 1. Similarly, the facility has generated a significant amount of positive press coverage. Representative articles for the facility are collected and attached hereto as Exhibit 2. Moreover, the facility has received the following awards and/or recognition: Association for Facilities Engineering 2013 Project of the Year, RENEW Wisconsin Million Watt Club, and the Daily Reporter Top Project.

Conclusion:

The Community Renewable Energy Deployment funding enabled this Project, which helped the Community take a major step toward achieving its goal of energy independence using carbon free or carbon neutral renewable resources. The Project not only allowed the Community to add significant renewable generation, but also helped to identify other potential projects to further its energy goal.

In addition, as a result of the Project, the Community learned many lessons, including lessons that have helped the Community develop internal expertise that will assist it in future projects. These lessons include the following: the importance of community support, the importance of internal project management, and the likely benefits of a tribal utility. These lessons are discussed in additional detail below.

Community Support

Though the planned biomass project did not occur for a number of reasons, perhaps the most significant reason is that it lost the support of Community members. As the project shifted in size and approach for reasons the Community members did not understand or trust, the Community members lost confidence in the project or, at the time, any large project on or near the Reservation. The Community's Energy Working Group was established to, in part, keep the Community members better informed and engaged with potential energy projects.

Internal Project Management

Renewable energy projects, particularly projects like the Milwaukee Digester Project, demand significant time, attention, and expertise. Because of these demands, early in the project the management occurred primarily by third parties. This caused multiple problems. First, it gave the appearance that third parties were driving the project, leading to some of the community support concerns discussed above. Second, third party project management added significant expense to the project. Though the Community was able to absorb more project management responsibilities through experience gained during the project, the project and process illustrated the need for additional, dedicated internal personnel. Others contemplating similar projects need to understand that such facilities, unlike, for example, solar facilities, requiring significant and ongoing time and attention, even after construction.

Tribal Utility

As other renewable energy project developers know, it can be difficult to find a buyer or off-taker for larger energy projects. Part of the reason the larger component of the Project was relocated to Milwaukee was because of the availability of the We Energies tariff. The existence of a tribal electric utility authority would have provided greater flexibility and potential opportunities for sizing, siting, financing, and delivering energy from renewable energy projects.

Exhibit 1

**“Community Renewable Energy Deployment Grant,” presented at
Status Update for Community Renewable Energy Deployment
Funding Recipients, on January 31, 2013, in Golden, Colorado**



Community Renewable Energy Deployment Grant

Presented by:

Nathan Karman,
Forest County Potawatomi Community
January 31, 2013

“Let us share our natural resources for the good of our People. Let us work for clean air and water and pray for the courage to stand up to those who would abuse our Mother Earth. So be it.”

- Bemwetek (Elder James Thunder)

Excerpt from 2007 Class I Air Redesignation Public Hearing Prayer

Background of Potawatomi

- Potawatomi were part of a confederacy with the Ojibwa (Chippewa) and Odawa (Ottawa), other Algonquins, called the Council of the Three Fires
- Potawatomi were designated the “Keeper of the Fire”
- Centuries ago, Potawatomi people numbered more than 10,000 and occupied and controlled almost 30 million acres in the Great Lakes area
- At time of first contact by Europeans, Potawatomi people were living in what is today lower Michigan, Ohio, Indiana, Illinois, and Wisconsin

Background of Potawatomi (cont.)

- From 1789 to 1867, through a series of treaties entered into under duress, ceded all lands east of the Mississippi
- The 1833 Treaty of Chicago alone ceded approximately 5 million acres, after which most of the Potawatomi were forcibly removed from tribal lands
 - Following policy of forced relocation established in the 1830 Removal Act
 - Led to “Potawatomi Trail of Death” (1838)

Origins of Forest County Potawatomi Community

- Many Potawatomi refused to remove West or quickly returned to the Great Lakes Region, including to the Forest County, Wisconsin area
- 1913 Act of Congress provided funds to Potawatomi who relocated, and money was used to purchase trust lands (11,786 acres) in Forest County
 - Lands to be no larger than a section and no adjoining sections in order to “civilize” the Indians
 - Checkerboard holdings in the Crandon (Stone Lake), Blackwell, and Carter/Wabeno areas
- Lands were placed in the name of the United States (instead of in the Tribe’s name and held in trust by the United States), which administrative error was fixed in 1987, which declared the previously purchased lands to be the Reservation of the Forest County Potawatomi Community of Wisconsin

Forest County Potawatomi Community Today

- Organized pursuant to the Indian Reorganization Act of 1934
- Exercises governmental authority under a Constitution last adopted in 1982
- Membership of more than 1,400
- 16,718 acres of land in Forest County (12,503 in trust), plus lands in Oconto, Marinette, Oneida, Milwaukee, Fond du Lac, Shawano, and Walworth counties
- Operates a tribal court system and provides services in numerous areas that include housing, environmental protection, forestry, cultural resources, emergency management, health and wellness, and education
- Major Enterprises include Potawatomi Carter Casino and Hotel, Potawatomi Bingo Casino (Milwaukee), and Potawatomi Business Development Corporation

Community's Commitment to Environmental Protection

- Tradition and history teach a strong commitment to protecting and preserving the natural environment
- Like most indigenous peoples, refer to Earth and “Our Grandmother” or “Mother Earth,” and perceive of it as a living thing
- Significant efforts to prevent environmental harm
 - Crandon Mine Opposition
 - Class I Air Redesignation

Community's Focus on Energy

- Resolution of Crandon Mine and Class I issues freed up time and resources to move beyond project opposition to take affirmative steps to improve the environment
- Elders communicating that things are out of balance
- Participation in (former) Governor's Climate Change Task Force

Project Greenfire

- Established goal of energy independence using only renewable carbon-neutral or carbon-free resources
- Adopted “Environmental Mission Statement” to help implement and institutionalize goal
- Comprehensive Energy Audit
 - Established baseline of energy consumption / carbon footprint
 - Identified “List of 100” facilities improvements
- RECs purchased to completely offset electricity use and serve as bridge to energy independence
- Resource assessments for potential projects

FCPC CRED: The Original Plan

- A Tri-Generation biomass facility that will provide heating and cooling for the Tribal government's Stone Lake campus, produce approximately 1.25 mW of electrical energy at an 85% capacity factor, and dry wood chips for the tri-generation facility's boiler as well as biomass heating units for numerous on-reservation buildings
- Dried woody biomass boiler heating systems for numerous of the Tribe's on-reservation buildings
- Three solar photovoltaic units in front on the Stone Lake Governmental Center
- A biogas digester and 200-kilowatt generation unit (that will be operated at 150 kW initially) will utilize the Tribe's organic solid waste from several sources, including Tribe-owned facilities, Tribal member homes, septic sewage and municipal solid waste from both Tribal lands and possibly from non-Tribal communities, and waste oil and grease from area restaurants, including the Tribe's restaurants
- Three 100-kilowatt wind generation turbine units, located on 7.5 acres at the top of Sugarbush Hill, the second highest point in the State of Wisconsin

FCPC CRED: Current Scope

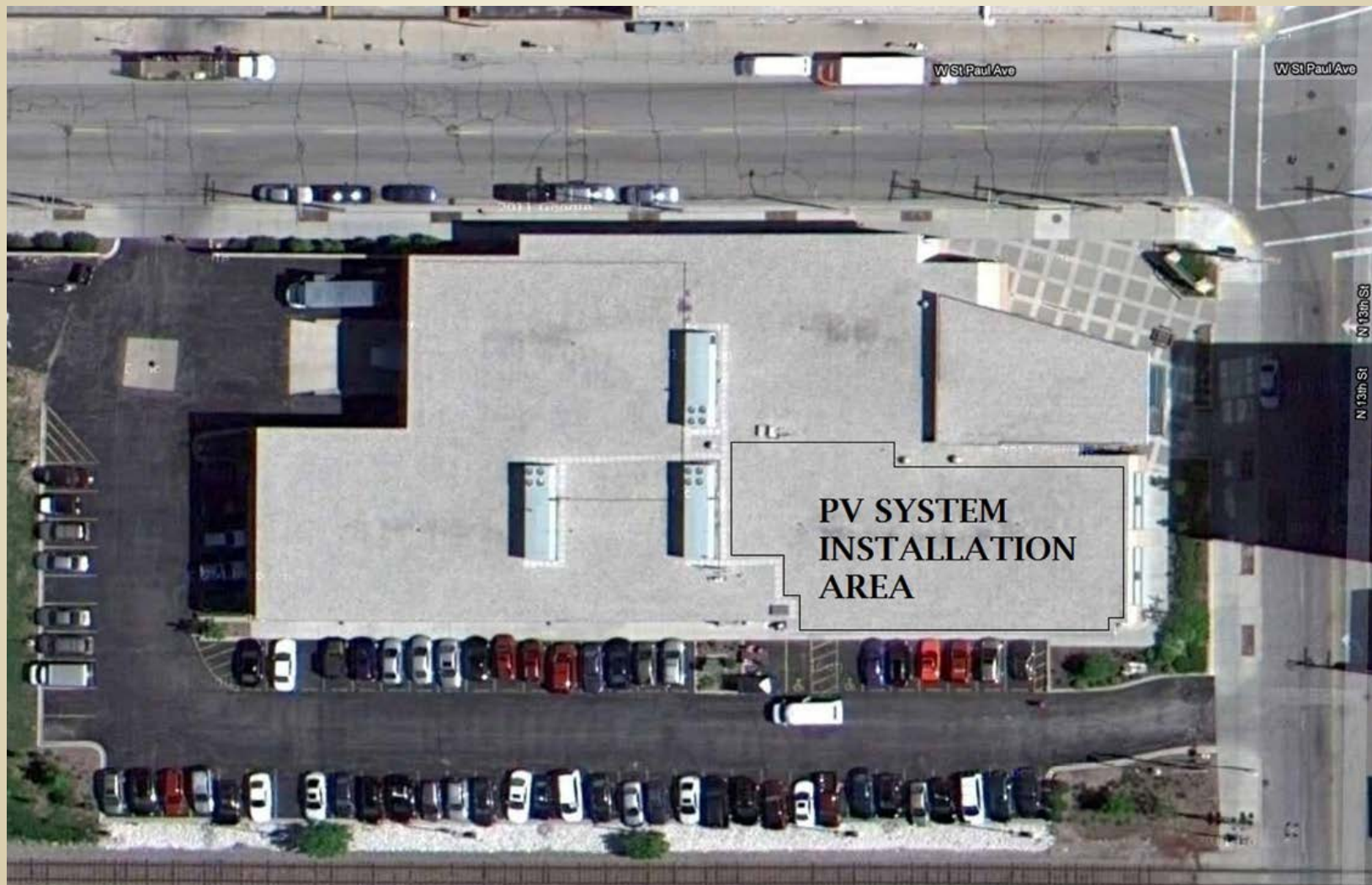
- Milwaukee Solar (completed)
- Milwaukee Biodigester and Biogas Facility (in construction)
- Small Scale Biomass and Rooftop Solar for Reservation (investigating)

MILWAUKEE SOLAR

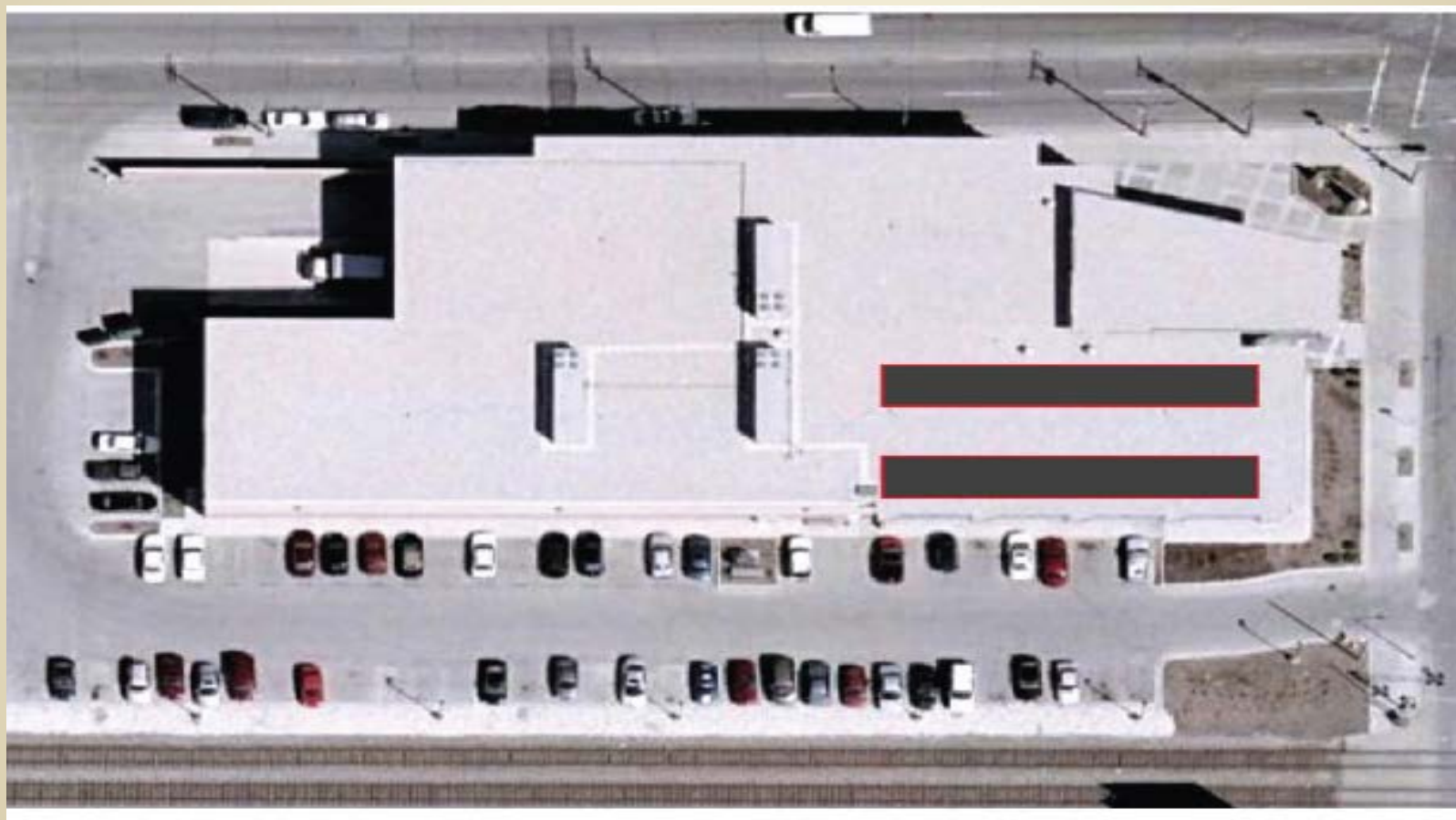
Photo Voltaic Solar Electric Panel Installation



Where is this System Installed?



These modules are aligned in an array across the southeast corner of the Administration Building's roof.

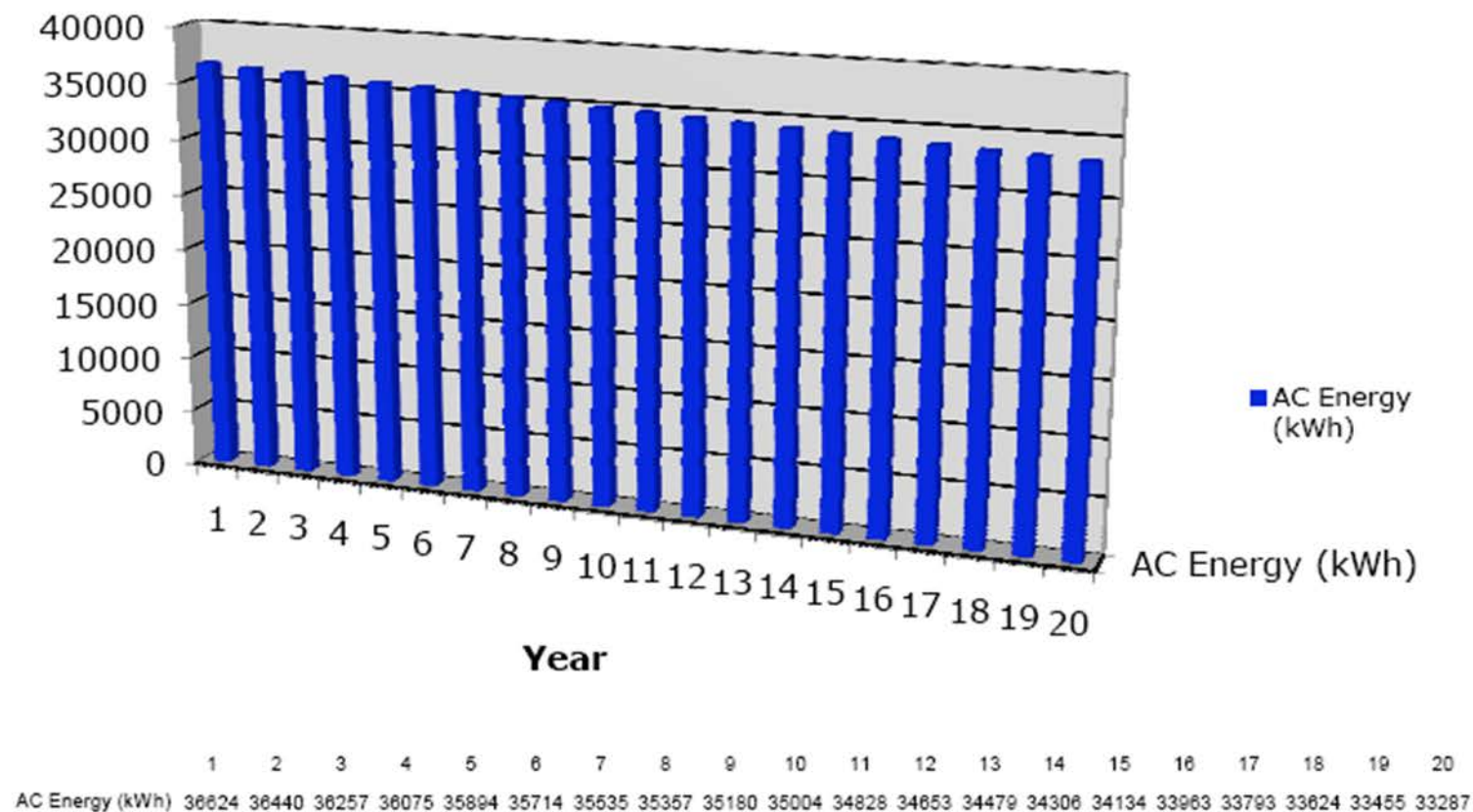


**The system
consists of
132 Helios,
USA LLC
Panels;
installed by
Pieper Electric**



**The system produces approximately 35,000
Kilowatt hours of electrical energy per year**

20 Year System Production



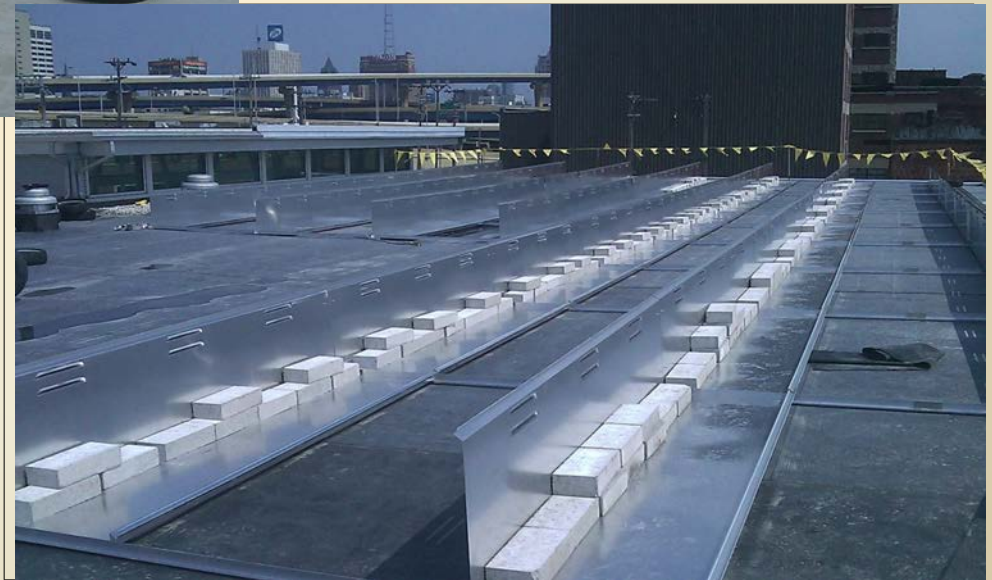
**This project is anticipated to provide an ROI of
11 years after factoring in all incentives and
power cost savings**



Step 1: Vacuum the ballast off the Admin Building roof



Step 2: Lay down a protective roofing membrane & install solar panel racks/ solar docks



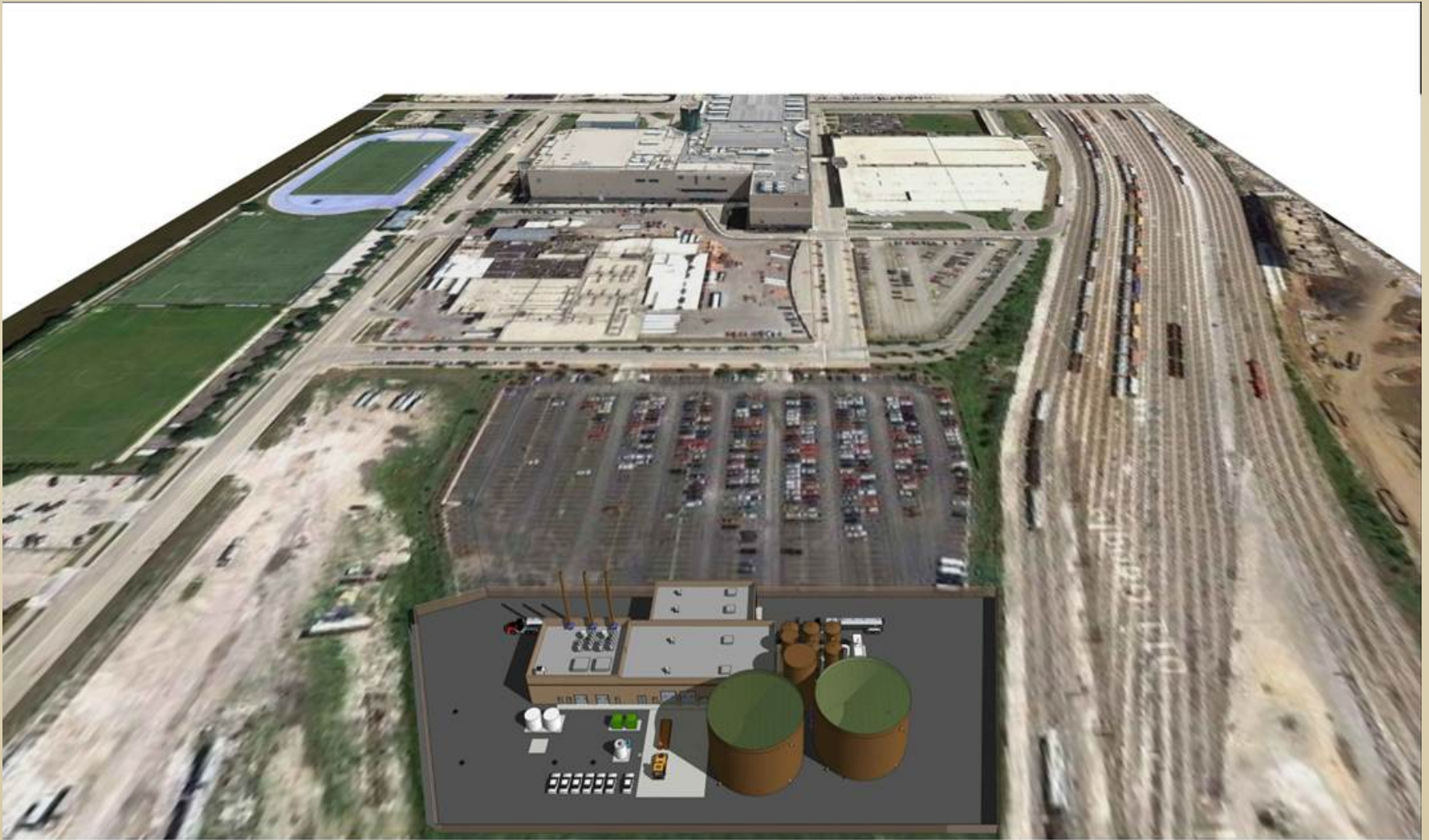
Step 3: Install Solar Panels onto Solar Docks & interconnect them electrically



Step 4: 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.



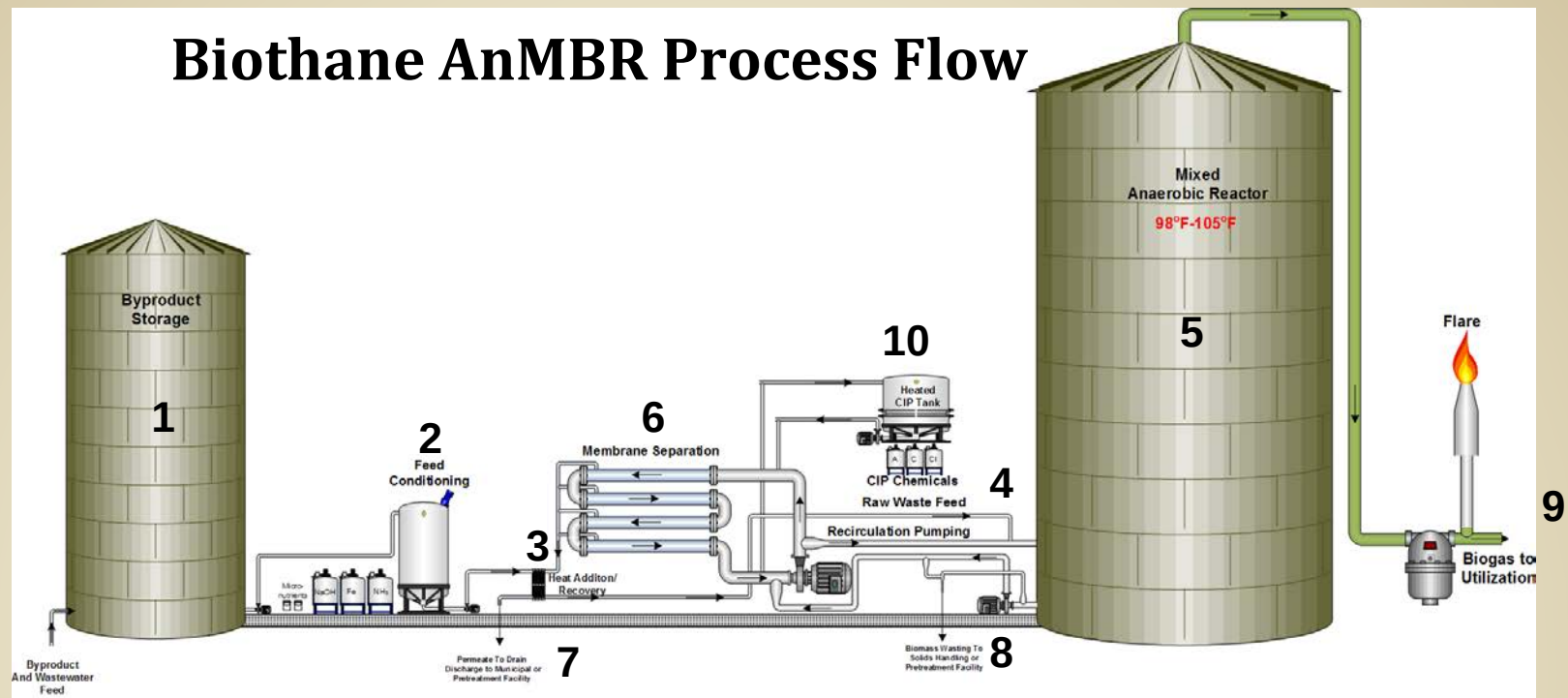
Milwaukee Biodigester and Biogas Facility



Overview of Project

- 2.0 megawatt biodigester and biogas facility currently being constructed in Menomonee Valley of Milwaukee
- Will operate on liquid (pumpable) food wastes, utilizing anaerobic digestion to convert the wastes into a fuel similar to natural gas
- Will generate revenue from a combination of tipping fees and electricity sold through a We Energies Tariff
- Selected partners include Design-Build Contractor Miron Construction Co., Inc. (subs Symbiont and Biothane LLC) and feedstock aggregator Advanced Waste Services, Inc.
 - Still working to identify operator

Biothane AnMBR Process Flow



1. Equalization (function of facility), acidification, existing storage integration possible
2. Chemical character adjusted appropriately
3. Heat applied/recovered (as required) – meso & thermo operations
4. Waste source fed to digester
5. Digested for required time with size meeting facility requirement
6. Recirculated through X-Flow membrane system with membrane number as required
7. Permeate sent to post treatment (COD <300 mg/L; TSS <1.0 mg/L)
8. Biosolids wasted as necessary to solids management system or sewer up to permitted limits
9. Biogas to energy recovery when appropriate
10. CIP system activated to clean membrane when required

Advantages of Biothane AnMBR System

- Short Startup and Recovery Times
- Organic Removal Rates Exceed 99%
 - Allowing for discharge to municipal systems
- No Submerged/Inaccessible Membranes
- Automated Cleanings and Operation
- Precipitation Managed in Digester Vessel
- No Gas Scouring Required
- Accommodates Large COD Swings
- Enclosed Pressurized System

Project Challenges

- Funding
- Entity Selection
- Permitting and Siting
- Sourcing
- Operating
- Timing

Funding

- Section 1603 Grant
 - Purchased two GE/Waukesha generators in 2011 to qualify for safe harbor
- CRED Funding
- Focus on Energy Grant
- New Market Tax Credits
- Self Funding

Entity Selection

- Tax equity an important part of renewable energy project finance
 - Investment Tax Credit (ITC)
 - Production Tax Credit (PTC)
 - Depreciation
- For Tribes to take advantage of ITC or PTC, typically need to find a taxable partner
- Created a taxable entity, FCPC Renewable Generation, LLC, to directly take advantage of tax benefits through a Section 1603 Grant
 - Grant in lieu of ITC or PTC
 - Typically equal to thirty percent of the project's eligible cost basis
 - Required LLC to incur expenses of at least 5% of project's eligible costs basis prior to December 31, 2011 in order to "Safe Harbor"
 - Expiring program unavailable for future projects

[illegible]

Permitting and Siting (cont.)

- Federal
 - NEPA Review
 - Section 106 of NHPA
 - Confirmation from State Historic Preservation Officer and Tribal Historic Preservation Officer
- State
 - Air Permit
 - Conditional Exemption Allowing Construction on Historic Fill
 - Wastewater Discharge Permit
 - Wastewater Pretreatment System Plan Approval
- Local
 - Zoning
 - General Plan Development
 - Detailed Plan Development
 - Certified Survey Map to Subdivide the Property
 - Out of Program Agreement with City of Milwaukee
 - To extend water and sewer lines
 - Footing and Foundation Permit
 - Erosion Control Plan
 - Stormwater Management Plan
 - Sewer Discharge Permit
 - Plumbing Permit
 - Building Permit
 - HVAC and Electrical
 - Utility Extension Agreements with Incumbent Utility

Sourcing

- Merchant facility without guaranteed supply
- Market research indicates sufficient supply available, but it is difficult to obtain long term contracts
 - Teaming with company to identify and secure required feedstock, but challenges remain
 - Market resistance to long-term contracts that would guarantee supply
 - Suppliers' reluctance to commit before project becomes real
 - Suppliers comfortable with current disposal methods or think that, since project needs the feedstock, we should take for free
- Quantity and quality requirements
 - High chemical oxygen demand (COD) required for electricity generation
 - Economics of project require tipping fees
- Unknown how available feedstock will change in future
 - Second reactor added during RFP process to allow for wider array of potential feedstock and maximize operational flexibility

Operating

- Unlike solar or wind projects, requires significant operation and maintenance
- Cannot cause a nuisance or interfere with nearby operations
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 - To qualify for Section 1603
 - Need to place in service by end of 2013
 - CRED grant expires September 30, 2013
- But
 - Feedstock supply is not guaranteed
 - New Market Tax Credit allocation has not been secured
 - Internal funding challenges/cash flow constraints, especially when considering other projects



Potential Reservation Projects

- Small Scale Biomass Deployment
 - Investigating, with assistance from NREL and Office of Indian Energy, potential small scale biomass project(s) on the reservation
- Rooftop Solar
 - Seeking additional technical assistance from NREL to evaluate feasibility of rooftop solar deployments, and ideally to compare those to the potential biomass deployments

Lessons Learned

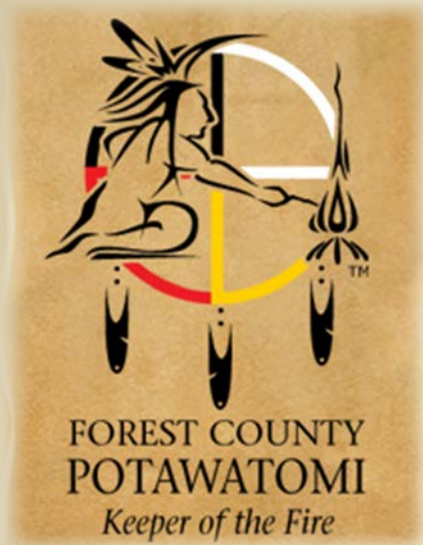
- Importance of Project Management Infrastructure
 - Ensure Community Ownership of Project
 - Suspicion of third parties trying to sell project
 - Keep Tribal Leadership Informed and Engaged
 - Keep Costs Down
- Importance of Independent Technical Support
- Advantages of Electric Utility

Questions?



Thank you!

**“FCPC Energy Independence Initiative,” presented at the
Developing Tribal Energy Resources and Economies Conference, on
June 11, 2013, in Albuquerque, New Mexico**



FCPC Energy Independence Initiative

Developing Tribal Energy Resources and Economies Conference

**Sandia Resort and Casino Hotel
Albuquerque, New Mexico
June 11, 2013**

Attorney General Jeff Crawford

“Let us share our natural resources for the good of our People. Let us work for clean air and water and pray for the courage to stand up to those who would abuse our Mother Earth. So be it.”

- Bemwetek (Elder James Thunder)

Excerpt from 2007 Class I Air Redesignation Public Hearing Prayer

Background of Potawatomi

- Potawatomi were part of a confederacy with the Ojibwa (Chippewa) and Odawa (Ottawa), other Algonquins, called the Council of the Three Fires
- Potawatomi were designated the “Keeper of the Fire”
- Centuries ago, Potawatomi people numbered more than 10,000 and occupied and controlled almost 30 million acres in the Great Lakes area
- At time of first contact by Europeans, Potawatomi people were living in what is today lower Michigan, Ohio, Indiana, Illinois, and Wisconsin

Background of Potawatomi (cont.)

- From 1789 to 1867, through a series of treaties entered into under duress, ceded all lands east of the Mississippi
- The 1833 Treaty of Chicago alone ceded approximately 5 million acres, after which most of the Potawatomi were removed from tribal lands east of the Mississippi

Origins of Forest County Potawatomi Community

- Many Potawatomi refused to remove West or quickly returned to the Great Lakes Region, including to the Forest County, Wisconsin area
- 1913 Act of Congress provided funds to Potawatomi who relocated, and money was used to purchase trust lands (11,786 acres) in Forest County
 - Lands to be no larger than a section and no adjoining sections in order to “civilize” the Indians
 - Checkerboard holdings in the Crandon (Stone Lake), Blackwell, and Carter/Wabeno areas

Forest County Potawatomi Community Today

- Organized pursuant to the Indian Reorganization Act of 1934
- Exercises governmental authority under a Constitution last adopted in 1982
- Membership of more than 1,400
- 16,718 acres of land in Forest County (12,503 in trust), plus lands in Oconto, Marinette, Oneida, Milwaukee, Fond du Lac, Shawano, and Walworth counties
- Operates a tribal court system and provides services in numerous areas that include housing, environmental protection, forestry, cultural resources, emergency management, health and wellness, and education
- Major Enterprises include Potawatomi Carter Casino and Hotel, Potawatomi Bingo Casino (Milwaukee), and Potawatomi Business Development Corporation

Community's Commitment to Environmental Protection

- Tradition and history teach a strong commitment to protecting and preserving the natural environment
- Like most indigenous peoples, refer to Earth and “Our Grandmother” or “Mother Earth,” and perceive of it as a living thing
- Significant efforts to prevent environmental harm
 - Crandon Mine Opposition
 - Class I Air Redesignation

Community's Focus on Energy

- Resolution of Crandon Mine and Class I issues freed up time and resources to move beyond project opposition to take affirmative steps to improve the environment
- Elders communicating that things are out of balance
- Participation in (former) Governor's Climate Change Task Force

Project Greenfire

- Established goal of energy independence using only renewable carbon-neutral or carbon-free resources
- Adopted “Environmental Mission Statement” to help implement and institutionalize goal
- Comprehensive Energy Audit
 - Established baseline of energy consumption / carbon footprint
 - Identified “List of 100” facilities improvements
- RECs purchased to completely offset electricity use and serve as bridge to energy independence
- Resource assessments for potential projects



FCPC CRED: The Original Plan

- A Tri-Generation biomass facility that will provide heating and cooling for the Tribal government's Stone Lake campus, produce approximately 1.25 mW of electrical energy at an 85% capacity factor, and dry wood chips for the tri-generation facility's boiler as well as biomass heating units for numerous on-reservation buildings
- Dried woody biomass boiler heating systems for numerous of the Tribe's on-reservation buildings
- Three solar photovoltaic units in front on the Stone Lake Governmental Center
- A biogas digester and 200-kilowatt generation unit (that will be operated at 150 kW initially) will utilize the Tribe's organic solid waste from several sources, including Tribe-owned facilities, Tribal member homes, septic sewage and municipal solid waste from both Tribal lands and possibly from non-Tribal communities, and waste oil and grease from area restaurants, including the Tribe's restaurants
- Three 100-kilowatt wind generation turbine units, located on 7.5 acres at the top of Sugarbush Hill, the second highest point in the State of Wisconsin

FCPC CRED: Current Scope

- Milwaukee Solar (completed)
- Milwaukee Biodigester and Biogas Facility (in construction)
- Small Scale Biomass and Rooftop Solar for Reservation (investigating)

MILWAUKEE SOLAR

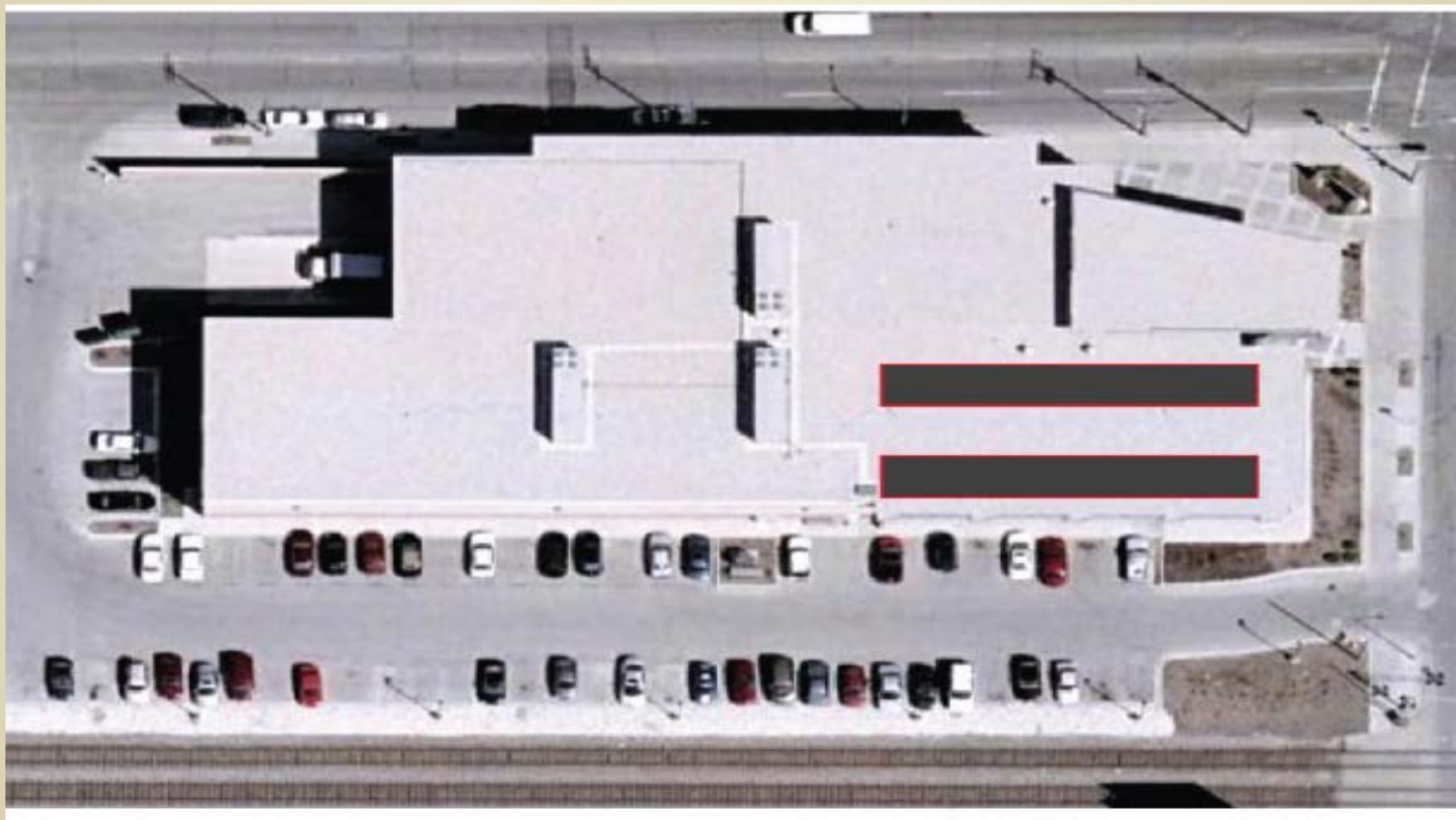
Photo Voltaic Solar Electric Panel Installation



Where is this System Installed?



These modules are aligned in an array across the southeast corner of the Administration Building's roof.

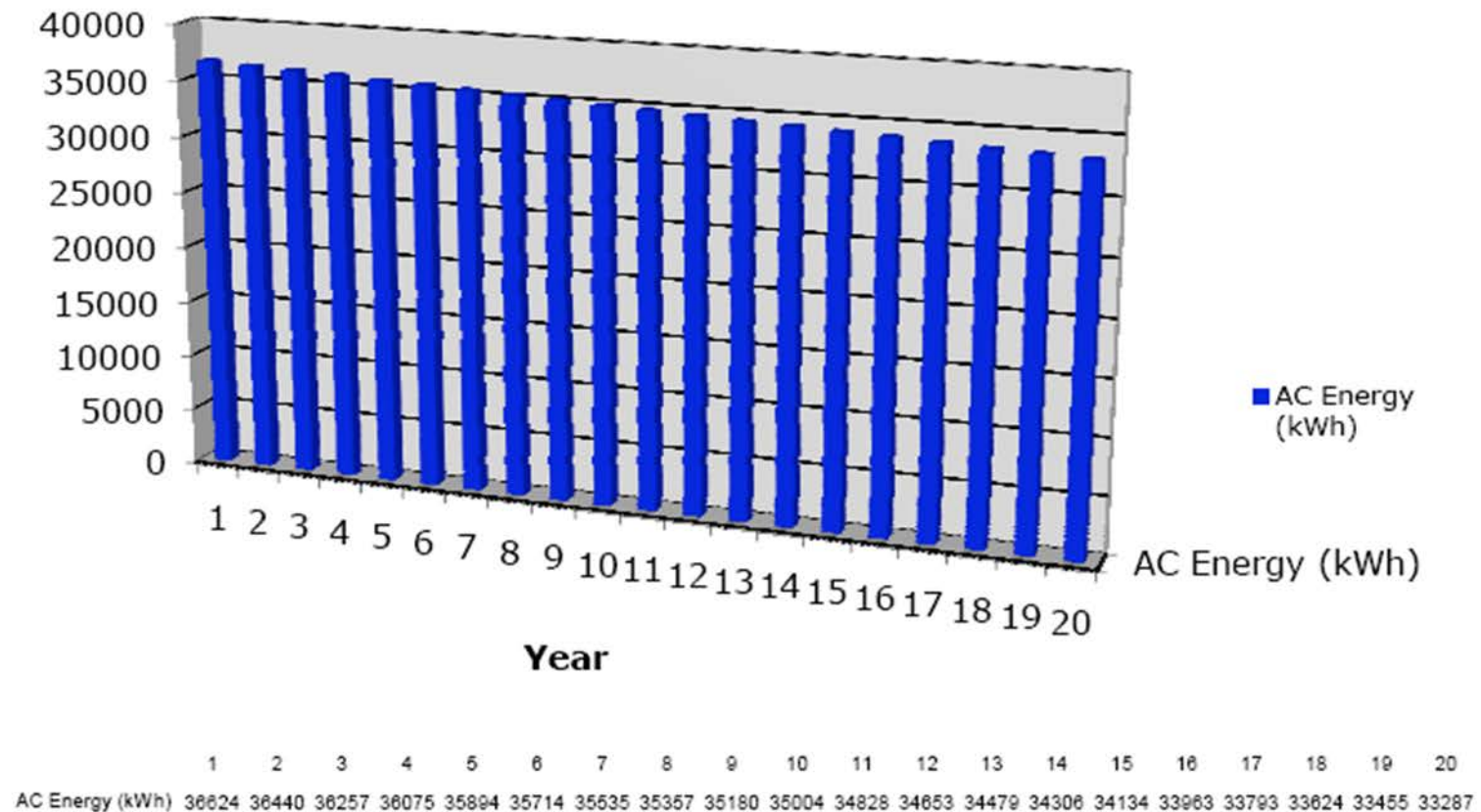


**The system
consists of
132 Helios,
USA LLC
Panels;
installed by
Pieper Electric**



**The system produces approximately 35,000
Kilowatt hours of electrical energy per year**

20 Year System Production



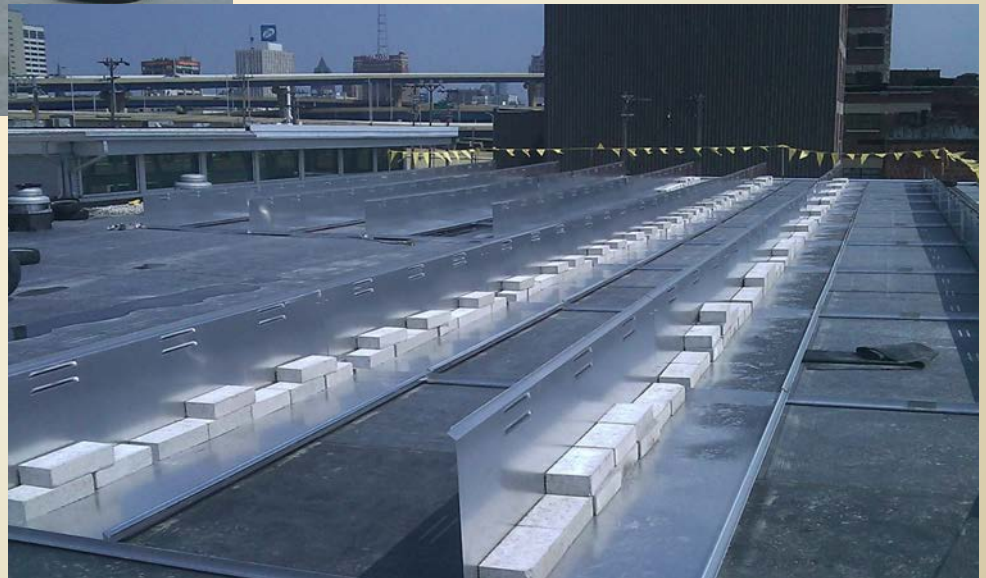
**This project is anticipated to provide an ROI of
11 years after factoring in all incentives and
power cost savings**



Step 1: Vacuum the ballast off the Admin Building roof



Step 2: Lay down a protective roofing membrane & install solar panel racks/ solar docks



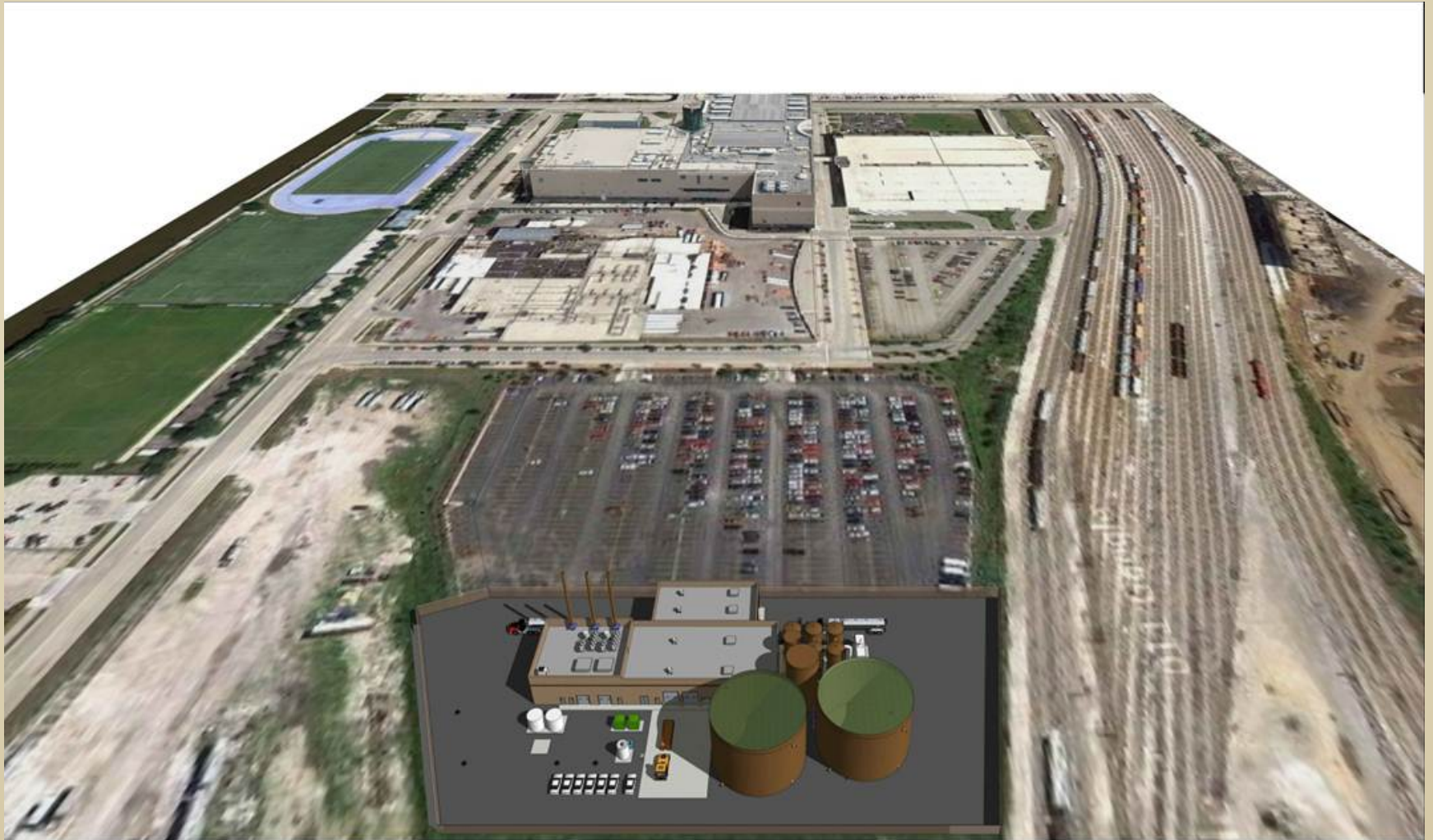
Step 3: Install Solar Panels onto Solar Docks & interconnect them electrically



Step 4: 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.



Milwaukee Biodigester and Biogas Facility

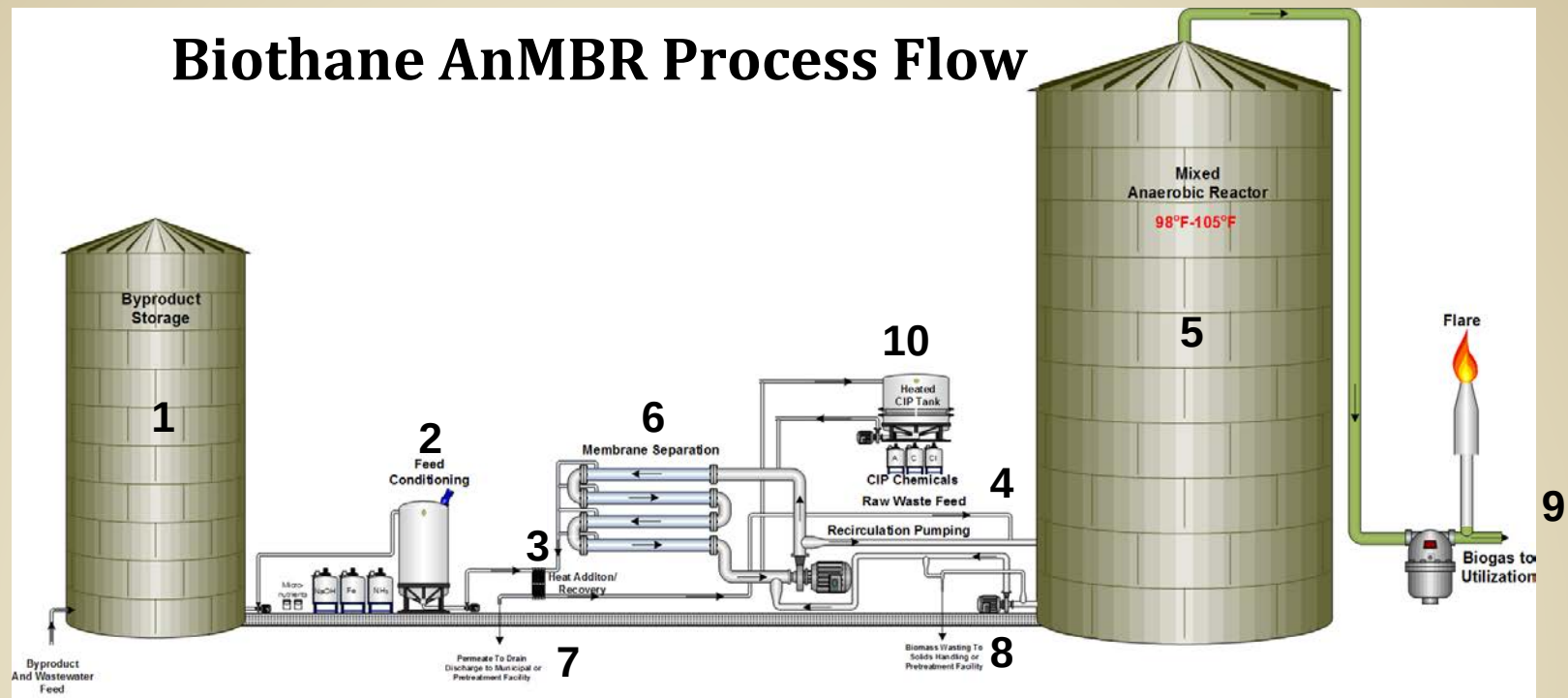




Overview of Project

- 2.0 megawatt biodigester and biogas facility currently being constructed in Menomonee Valley of Milwaukee
- Will operate on liquid (pumpable) food wastes, utilizing anaerobic digestion to convert the wastes into a fuel similar to natural gas
- Will generate revenue from a combination of tipping fees and electricity sold through a We Energies Tariff
- Selected partners include Design-Build Contractor Miron Construction Co., Inc. (subs Symbiont and Biothane LLC) and feedstock aggregator Advanced Waste Services, Inc.
 - Still working to identify operator

Biothane AnMBR Process Flow



1. Equalization (function of facility), acidification, existing storage integration possible
2. Chemical character adjusted appropriately
3. Heat applied/recovered (as required) – meso & thermo operations
4. Waste source fed to digester
5. Digested for required time with size meeting facility requirement
6. Recirculated through X-Flow membrane system with membrane number as required
7. Permeate sent to post treatment (COD <300 mg/L; TSS <1.0 mg/L)
8. Biosolids wasted as necessary to solids management system or sewer up to permitted limits
9. Biogas to energy recovery when appropriate
10. CIP system activated to clean membrane when required

Advantages of Biothane AnMBR System

- Short Startup and Recovery Times
- Organic Removal Rates Exceed 99%
 - Allowing for discharge to municipal systems
- No Submerged/Inaccessible Membranes
- Automated Cleanings and Operation
- Precipitation Managed in Digester Vessel
- No Gas Scouring Required
- Accommodates Large COD Swings
- Enclosed Pressurized System

Progress Photos Current as of April 2013



Centrifuge platform erected, waiting for Centrifuge and railings.



Flare pad forming and reinforcement before pour.



Flare pad before pour, anchor bolt pattern checked.



Forming of exterior tank farm slab.

Progress Photos Current as of April 2013



Form and pour exterior tank slab. Note the tank in the background growth.



Form equalization tank walls.



Overall project.



Pouring the centrifuge floor.

Progress Photos Current as of April 2013



Masonry at Membrane Room



Masonry at Demising Wall



Pouring and Finishing Reactor 1 Slab



Pouring Reactor 1 Slab

Progress Photos Current as of April 2013



Pouring the centrifuge floor.



Pouring truck unloading floor.



Prepping Maintenance Room floor to pour, methane protection in place.



Deck and equipment supports in place, commence roofing over Engine Room.

Progress Photos Current as of April 2013



Roof over Engine Room under way.



Engine radiators in place over Engine Room.



Set bar joist in truck unloading.



Offloading feedstock tanks.

Progress Photos Current as of April 2013



Setting feedstock tanks.



Setting feedstock tanks.



Unload and set engines.



Unload and set engines.

Progress Photos Current as of April 2013



Showing engines, heat recovery units and silencers.



Unloading and placing dryer skid.



Unloading and placing dryer skid.



Unloading materials for remaining roof.

Project Challenges

- Funding
- Entity Selection
- Permitting and Siting
- Sourcing
- Operating
- Timing

Funding

- Section 1603 Grant
 - Purchased two GE/Waukesha generators in 2011 to qualify for safe harbor
- CRED Funding
- Focus on Energy Grant
- New Market Tax Credits
- Self Funding

Entity Selection

- Tax equity an important part of renewable energy project finance
 - Investment Tax Credit (ITC)
 - Production Tax Credit (PTC)
 - Depreciation
- For Tribes to take advantage of ITC or PTC, typically need to find a taxable partner
- Created a taxable entity, FCPC Renewable Generation, LLC, to directly take advantage of tax benefits through a Section 1603 Grant
 - Grant in lieu of ITC or PTC
 - Typically equal to thirty percent of the project's eligible cost basis
 - Required LLC to incur expenses of at least 5% of project's eligible costs basis prior to December 31, 2011 in order to "Safe Harbor"
 - Expiring program unavailable for future projects

POTATOWAMI DP LEGAL DESCRIPTION

The part of the Northwest quarter of the Northeast quarter of Section 31, Township 7 North, Range 22 East, in the City of Milwaukee, Milwaukee County, Wisconsin more fully described as follows:

Commencing at the North Quarter Corner of said Section 31, thence South 31°18'41" East along the east line of the Northwest quarter of said Section 31, 102.15 feet to a point on the proposed right-of-way of Potawatomi Drive, also being the Point of Beginning; thence continuing South 01°18'41" East along said east line of the Northwest Quarter 751.62 feet to the north-south corner of the Canadian Pacific Railroad; thence North 77°02'27" West along said right-of-way line, 171.17 feet to a point of curvature; thence easterly along said right-of-way line 188.02 feet along the arc of a curve tangent to the south, with a radius of 1,027.71 feet, through a second angle of 92°02' and a third bearing North 01°18'41" East, 188.02 feet; thence North 80°41'10" East along said right-of-way line 64.65 feet; thence North 82°22' West along said right-of-way line, 248.03 feet; thence North 01°18'41" West along the east right-of-way line of Canadian Pacific Railroad, 53.65 feet to a point of non-tangent curvature and the south right-of-way line of Canadian Pacific Railroad; thence easterly along said right-of-way line 343.63 feet along the arc of a curve tangent to the south with a radius of 1,027.71 feet, through a second angle of 113°02' and a third bearing North 01°18'41" East, 64.65 feet; thence North 80°41'10" East along said right-of-way line, 69.24 feet to a point of curvature; thence easterly along said right-of-way line 30.85 feet along the arc of a curve tangent to the north with a radius of 970.15 feet, through a third angle of 92°02', with a fourth bearing North 67°12'47" East, 58.85 feet to a non-tangent line; thence North 80°41'10" East and non-tangent the above-lying said south right-of-way line, 288.62 feet to a point on the westerly right-of-way of Potawatomi Drive; thence South 01°18'41" East along said westerly right-of-way line, 461.15 feet to the southeast corner of Potawatomi Center; thence North 80°41'10" East, 76.00 feet to the Point of Beginning.

Containing 448,352 square feet, or 10.882 acres more or less.

CURVE	QUANTITY	BEARING	DISTANCE	CHORD BEARING	CHORD DISTANCE
C1	188.02	S182.71°E	#338.42'	N01°18'41"E	188.02
C2	188.02	S182.71°E	#338.42'	N01°18'41"E	188.02
C3	58.85	S170.15°E	#302.42'	N02°18'41"E	58.85

AECOM

VERIFICATION SCALE
 1" = 100' HORIZONTAL
 1" = 10' VERTICAL
 DATE: 08/11/2011
 DRAWN BY: JLM
 CHECKED BY: JLM
 APPROVED BY: JLM

RENEWABLE ENERGY FACILITY
 FOR RENEWABLE
 CREDIT IN THE
 MILWAUKEE, WISCONSIN

PROPOSED PROJECT BOUNDARY DESCRIPTION

Permitting and Siting (cont.)

- Federal
 - NEPA Review
 - Section 106 of NHPA
 - Confirmation from State Historic Preservation Officer and Tribal Historic Preservation Officer
- State
 - Air Permit
 - Conditional Exemption Allowing Construction on Historic Fill
 - Wastewater Discharge Permit
 - Wastewater Pretreatment System Plan Approval
- Local
 - Zoning
 - General Plan Development
 - Detailed Plan Development
 - Certified Survey Map to Subdivide the Property
 - Out of Program Agreement with City of Milwaukee
 - To extend water and sewer lines
 - Footing and Foundation Permit
 - Erosion Control Plan
 - Stormwater Management Plan
 - Sewer Discharge Permit
 - Plumbing Permit
 - Building Permit
 - HVAC and Electrical
 - Utility Extension Agreements with Incumbent Utility

Sourcing

- Merchant facility without guaranteed supply
- Market research indicates sufficient supply available, but it is difficult to obtain long term contracts
 - Teaming with company to identify and secure required feedstock, but challenges remain
 - Market resistance to long-term contracts that would guarantee supply
 - Suppliers' reluctance to commit before project becomes real
 - Suppliers comfortable with current disposal methods or think that, since project needs the feedstock, we should take for free
- Quantity and quality requirements
 - High chemical oxygen demand (COD) required for electricity generation
 - Economics of project require tipping fees
- Unknown how available feedstock will change in future
 - Second reactor added during RFP process to allow for wider array of potential feedstock and maximize operational flexibility

Operating

- Unlike solar or wind projects, requires significant operation and maintenance
- Cannot cause a nuisance or interfere with nearby operations
 - Pumpable wastes reduce smell and allow for ease in operation but reduces potential feedstock supply
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 - Difficult to identify an outlet without having sample, so assuming worst case

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Lessons Learned

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- Advantages of Electric Utility

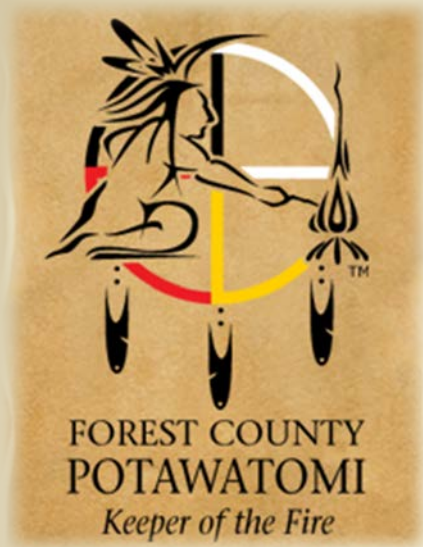
FCPC Energy Work Group

- Institutional buy in for energy initiatives
- Membership from key governmental departments
 - Land Use Committee
 - Natural Resource Division
 - Housing Department
 - Utilities Department
 - Facilities Department
 - Legal Department

Next Steps

- Development of sustainability job description
- Development of modified LEED construction standard
- Development of recommended hybrid vehicle policy
- Pursuing list of 100 energy efficient opportunities
- Continuing to identify and pursue renewable energy opportunities
- Identifying strategies to address cost, financing and pay back issues
- Pursuing policies that promote clean energy development in Indian Country (e.g., FCPC private letter ruling)

Questions?



Thank you!

**“Menomonee Valley’s Waste-to-Resources Solution,” presented at
Reclaiming Food Scraps - Wisconsin Waste Recovery Forum, on
February 19, 2014, in Milwaukee, Wisconsin**

Reclaiming Food Scraps

Wisconsin Waste Recovery Forum

Menomonee Valley's Waste-to-Resources Solution



GREENFIRE
MANAGEMENT SERVICES, LLC



**FOREST COUNTY
POTAWATOMI**
Keeper of the Fire

Jeffrey A. Crawford
President
FCPC Renewable Generation LLC
February 19, 2014

Background

Elders, culture, and traditions confirm a duty to protect and enhance environmental resources, both on and near the reservation and throughout the world



FOREST COUNTY POTAWATOMI
Keeper of the Fire

Project Greenfire

- Economic diversification & sovereignty driving principles
- Initial focus on the low-hanging fruit: energy efficiency
- Realized the need to produce own energy in order to meet goals



FOREST COUNTY POTAWATOMI
Keeper of the Fire

Sustainability Initiatives at FCPC/PBC

- Grind 2 Energy unit operational
- Solar energy array at Administration Building
- 100 % green energy through REC purchases
- Single stream recycling at PBC and other facilities
- Green housekeeping practices instituted
- Recycle/reuse cooking oil – currently converting over to feed digester

Lighting Upgrades at PBC

- Lighting upgrades in parking structure from metal halide to LED – 2,368,618 kWh/year saved
- Cove lighting converted from incandescent to LED – 981,120 kWh/year saved
- Ten similar projects throughout facility – total annual savings 4,367,237 kWh

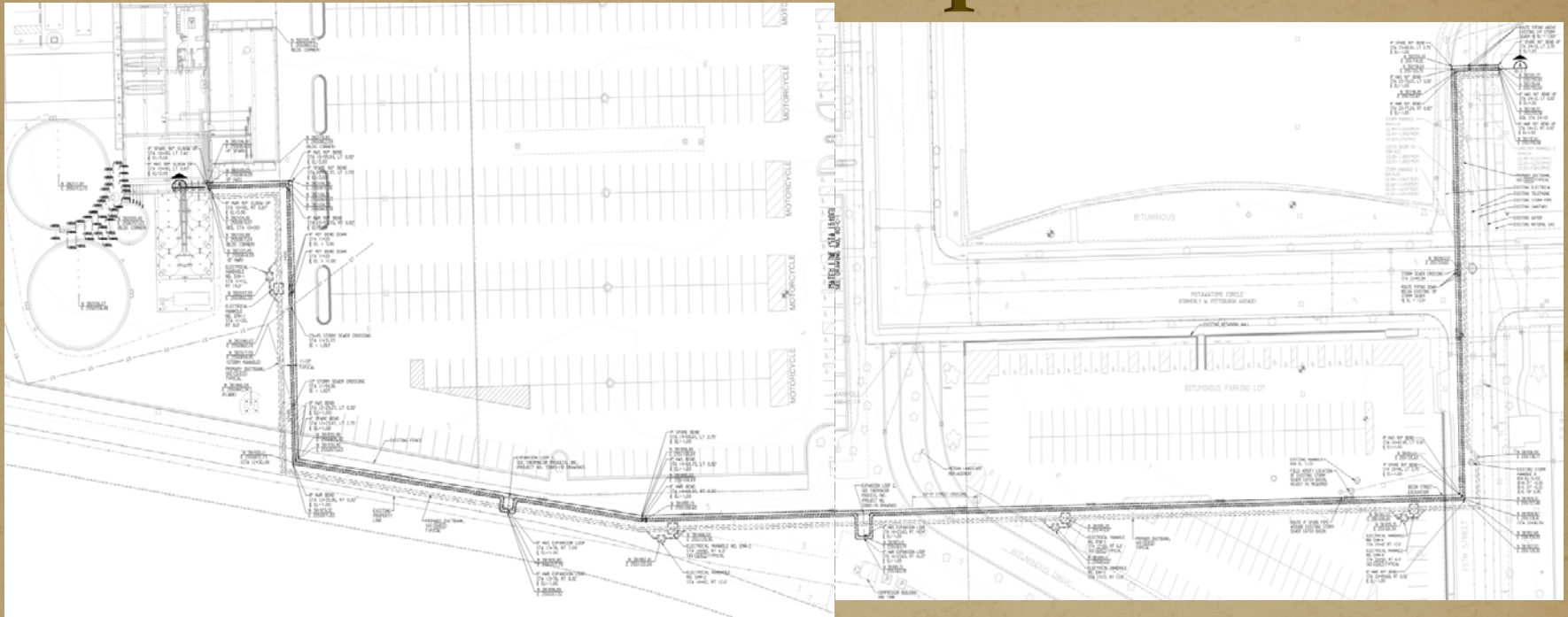
Other Energy Upgrades at PBC

- Vending machine occupancy sensors
- Variable Frequency drives added
- Chiller controls added
- Escalator motor controls added
- Electronically commutated motors
- Boiler optimization
 - High efficiency, high turn down burners added
 - Boiler draft fan VFD's added

Sustainability Strategies for Potawatomi Hotel

- Targeting LEED Silver
- Negative pressure zone in link between casino and hotel to prevent air transfer between facilities
- Food waste and grease trap waste will be recycled back through biogas plant
- Individual room controls tied back to reservation/ check in system and room occupancy sensors. Access, lighting and HVAC controls integrated.
- 81% diversion of construction waste to date – 971 tons
- High utilization of regionally sourced materials –vanities in all rooms were manufactured by Menomonee Tribal Enterprises from sustainably managed forest lands

Heat Loop



- Heat loop added as separate project to take excess heat from plant to PBC and Hotel
- Enough heat is available to offset natural gas requirements for domestic water usage in both Casino and Hotel

Overview of Facility

- 2.0 megawatt anaerobic biodigester and biogas facility located near Potawatomi Bingo Casino in Milwaukee, WI
- Operates on liquid (pumpable) food wastes
- Generates revenue from a combination of tipping fees and electricity sold through a WE Energies Renewable Energy Tariff (local utility)
- Partners: Miron Construction Co., Inc., Symbiont, Biothane LLC



FOREST COUNTY POTAWATOMI
Keeper of the Fire



GREENFIRE
MANAGEMENT SERVICES, LLC



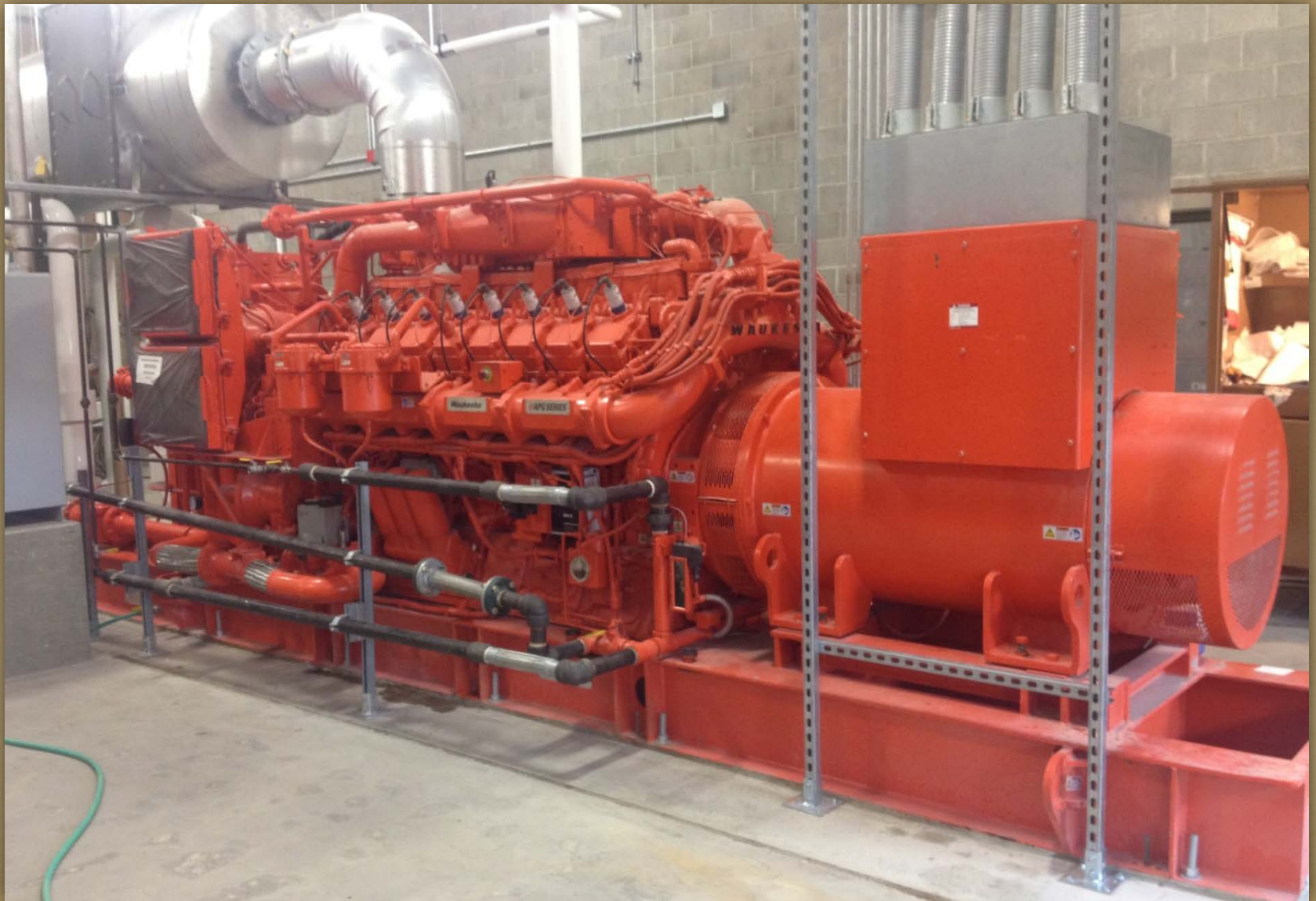




Solids Processing



Generator



Sourcing

- Quantity and quality requirements
 - High chemical oxygen demand (COD) required for electricity generation
 - Economics of project require a tipping fee
- Unknown how available feedstock will change in future
 - Second reactor added to allow for wider array of potential feedstock and maximize operational flexibility



FOREST COUNTY POTAWATOMI
Keeper of the Fire

Operating

- Unlike solar or wind projects, requires significant operation and maintenance
- Cannot interfere (noise, smell, traffic) with casino operations
 - Pumpable wastes reduce smell and allow for ease in operation but reduces potential feedstock supply



FOREST COUNTY POTAWATOMI
Keeper of the Fire

Conclusions

- Important project for region as it will remove waste streams and provide clean energy
- Important project for the Tribe's energy goals
- Economic feasibility dependent on convergence of factors – power sales, feedstock availability, use of heat, and grants



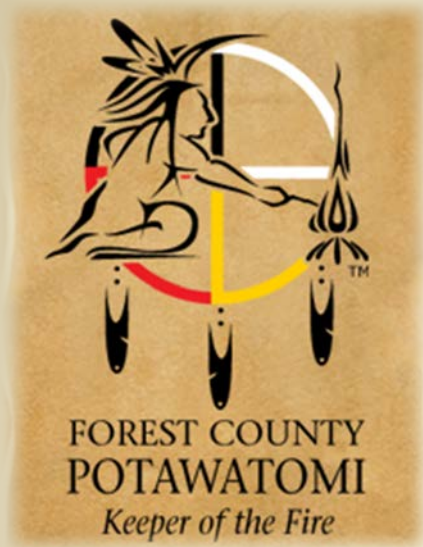
FOREST COUNTY POTAWATOMI
Keeper of the Fire

Questions?



FOREST COUNTY POTAWATOMI
Keeper of the Fire

“Funding and Financing Case Study: *FCPC Renewable Generation, LLC Biodigester and Biogas Facility*,” presented at the U.S. Department of Energy Office of Indian Energy Tribal Leader Forum: Financing and Investing in Tribal Energy Projects, on May 14th 2014, in San Diego, California



Funding and Financing Case Study: *FCPC Renewable Generation, LLC Biodigester and Biogas Facility*

Presented by:

Kevin Hanson, Chief Financial Officer
Forest County Potawatomi Community
May 14, 2014

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- Established, consistent with environmental ethic, goal of energy independence using only renewable carbon-neutral or carbon-free resources
- Adopted “Environmental Mission Statement” to help implement and institutionalize goal
- Initial focus on energy efficiency, which started with a comprehensive energy audit
- RECs purchased to offset electricity use and serve as bridge to energy independence
- Realized need to produce own energy to meet environmental and energy goals
- Resource assessments for potential projects
- Obtained \$2.6M of competitive funding through the Department of Energy’s (DOE) Community Renewable Energy Deployment (CRED) program
- Started Small: Rooftop Solar Installation (35 kW) on Milwaukee Administration Building

Milwaukee Biodigester and Biogas Facility



Overview of Project

- 2.0 megawatt biodigester and biogas facility constructed in Menomonee Valley of Milwaukee
- Operates on liquid (pumpable) food wastes, utilizing anaerobic digestion to convert the wastes into a fuel similar to natural gas
- Pursued primarily for environmental and energy goals
- Partners / Players:
 - Greenfire Management Services (owner's representative)
 - Miron Construction Co., Inc. (design-builder)
 - Design Build team also included Symbiont and Biothane LLC
 - Natural Systems Utilities, LLC (operations and maintenance)
 - Titus Energy (pre-development work)
 - Baker Tilly (financial/tax)
 - DOE and Focus on Energy (grants)
 - We Energies (utility/tariff)
 - Various Waste Haulers/Brokers





Overview of Project Finance

- Tax Equity (through Section 1603)
- Grants
- Self Funding
- Revenue through Electricity Sales and Tipping Fees
- Funding Sources Not Pursued: Bonds, Loan Programs

Tax Equity Overview

- Tax equity an important part of renewable energy project finance
 - Investment Tax Credit (ITC)
 - Production Tax Credit (PTC)
 - Expired, but hopefully returning (via Expire Act?)
 - Depreciation
 - Bonus Depreciation for Indian Country expired, but hopefully returning (via Expire Act?)
- For Tribes to take advantage of tax credits, generally need to find a taxable partner, usually utilizing one of the following structures:
 - Sale/Leaseback
 - Partnership Flip
 - Inverted Lease

Private Letter Ruling

- Private Letter Ruling 201310001
 - Requested March 14, 2011
 - Received December 5, 2012
 - Allows Tribe to transfer tax credits directly to taxable entity through a lease of the renewable energy asset
 - Removes need for separate project LLC, thereby removing federal tax applicability to upfront lease payments and simplifying deal structure
 - Lease must last six years, but tribes can receive upfront lease payment based on value of tax credit

Tax Strategy for Digester

- Created a taxable entity, FCPC Renewable Generation, LLC, to directly take advantage of tax benefits through a Section 1603 Grant
 - Grant in lieu of ITC or PTC for taxable entity
 - Taxable entity did not need tax burden to offset, so no third party tax investors required
 - Typically equal to 30% of the project's eligible cost basis
 - Sequester impacts
 - Required LLC to incur expenses of at least 5% of project's eligible costs basis prior to December 31, 2011 in order to “Safe Harbor”
 - Expired program unavailable for future projects
- Still Seeking New Market Tax Credits
 - Available for up to two years after completion of construction

Grants

- United States Department of Energy Community Renewable Energy Deployment (CRED) Grant of \$2.6M
 - \$1.6 million went to this project
 - Recovery Act Funding
- Focus on Energy Grant of \$250,000
 - Grant from Wisconsin utilities' statewide energy efficiency and renewable resource program

Self Funding

- The Tribe, in reviewing the project, understood that it has a long-term payback (15 – 20 years).
- Banks currently are hesitant to provide financing beyond 5 years due to capital requirements.
- Thus self-funding becomes more important.

Revenue Sources

- Electricity sold to We Energies, the incumbent utility, via a favorable tariff
 - Paid more for electricity than facility (and adjacent casino) pays for electricity
- Tipping Fees from Haulers
- Waste Heat
- Possible Excess Biogas?

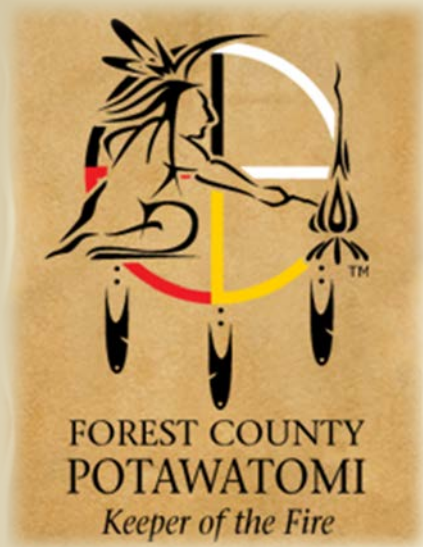
Lessons Learned / Recommendations

- Leverage Financing
 - Identify and seek all available grants, including those for independent technical support
 - E.g., EPA, DOE (Tribal Energy Program / Office of Indian Energy), BIA (IEED), USDA (REAP)
 - Consider taxable partner/tax equity
- Understand Feedstock Market
 - Understand existing and anticipate future competition
 - Understand all costs, including transportation costs, that impact your ability to compete with other disposal options
 - Consider partnering with companies who can guarantee required feedstock

Lessons Learned / Recommendations

- Understand Construction and Ongoing O&M Oversight Responsibilities
 - Costs and time to negotiate and administer contracts, source feedstock, etc.
- Establish and Support Internal Project Management Team
 - Ensure Community Ownership of Project
 - Suspicion of third parties trying to sell project
 - Keep Tribal Leadership Informed and Engaged
 - Keep Costs Down

Questions?



Thank you!

**“Renewable Energy Project Refinement Case Study: FCPC
Renewable Generation, LLC Digester,” presented at the Tribal
Renewable Energy Series Renewable Energy Project Refinement
Webinar on May 28, 2014**



Renewable Energy Project Refinement Case Study: FCPC Renewable Generation, LLC Digester

Presented by:

Nathan Karman

Legal Department

Forest County Potawatomi Community

May 28, 2014

DOE Office of Indian Energy Policy and Programs

DOE Office of Energy Efficiency and Renewable Energy
Tribal Energy Program

Western Area Power Administration

Overview of FCPC Renewable Generation, LLC Project

- 2.0 megawatt biodigester and biogas facility constructed in Menomonee Valley of Milwaukee
- Operates on liquid (pumpable) food wastes, utilizing anaerobic digestion to convert the wastes into a fuel similar to natural gas
- Pursued for environmental and energy goals



Possible Drivers for Renewable Energy Project Refinement

- Financial
 - To Obtain/Leverage Funding and Financing
- Consent
 - To Obtain Internal Support and Approval
 - To Avoid/Minimize Public Opposition
 - To Obtain Regulatory Permits
- Project Optimization
 - Often in Conjunction with Above
 - To Improve Performance
 - To Minimize Negative Environmental Impacts
 - To Maximize Economic Returns

Project Refinement Example #1

- Challenge: To monetize tax incentives
 - Before FCPC received PLR 20131001 (December 5, 2012) allowing Tribe to transfer tax credits directly to taxable entity through a lease
 - Investors uncertainty regarding technology
- Solution: Create taxable entity, FCPC Renewable Generation, LLC, to directly take advantage of tax benefits through Section 1603 grant
 - Grant in lieu of ITC or PTC for taxable entity
 - Taxable entity did not need tax burden to offset, so no third party tax investors required
 - Typically equal to 30% of the project's eligible cost basis
 - Sequester impacts
 - Required LLC to incur expenses of at least 5% of project's eligible costs basis prior to December 31, 2011 in order to "Safe Harbor"
 - Expired program unavailable for future projects

Project Refinement Example #2

- Challenge: To overcome siting challenges
 - Concern about large project on Reservation
 - Concern about impact to neighboring facilities
- Solution: Relocate project to brownfield site in Milwaukee and install robust odor control system
 - Certified Survey Map to subdivide property into three parcels, one of which was developable
 - No odors detectible at boundary of property
 - Other positives for property:
 - Eligibility for favorable tariff from incumbent utility (We Energies)
 - Eligible for New Market Tax Credits (still seeking)
 - Many nearby sources for high strength feedstock
- Compromise: No On-Site Solids Slurrying; Effluent Management.

Project Refinement Example #3

- Challenge: Design-Build-Operate-Source framework would have rendered the project economically infeasible.
 - Issued RFP pursuing this simple, risk free framework, but shedding all risk would have cost too much.
- Solution: Separate Design-Build, Operations and Maintenance, and feedstock sourcing and responsibilities.
 - Issued separate RFPs for Design-Build and O&M.
- Compromise: Increased Transactional Complexity; Additional Responsibilities for LLC; More Opportunities for Finger Pointing.

Questions

- Answers to all questions submitted electronically during today's webinar will be posted on WAPA's website within a few weeks.
- To view and download presentations and corresponding Q&As from the 2014 Tribal Energy Webinar Series, please visit www.wapa.gov and click on Renewables in the top navigation.
- To submit follow-up questions regarding the material covered in today's webinar, please contact:

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Exhibit 2

Potawatomi project will use food waste to make energy

By [Thomas Content](#) of the Journal Sentinel

Oct. 26, 2013

One of Wisconsin's signature industries — food and beverage processing — is getting a cutting-edge flavor in a new renewable energy project scheduled to start operating this week.

The project, located in the Menomonee River Valley, just west of the Potawatomi Bingo Casino, will convert food wastes into renewable energy, with the power to be sold to We Energies.

The developer of the \$20 million project: the Forest County Potawatomi. The digester will produce 2 megawatts of electricity — enough to supply about 1,500 homes — that will be sold to We Energies.

But the project is about more than producing power. The project is small compared with utility power plants or even large wind farms, but it accomplishes something important by producing energy from the waste left behind from food production. Wisconsin's roots in food and dairy run deep. An entire industry has sprung out of converting grain, milk and meat into products of value.

But food production creates a mix of waste that's either sent down the drain to a wastewater treatment plant or spread on farm fields as fertilizer. Meanwhile, pollution rules regulating what's going into rivers and lakes can make disposal alternatives costly and inhibit expansion for food producers.

"There's a lot of the feedstock that is available in any large metropolitan area that's currently being land-applied or being processed through the sewage utility districts. There are costs and problems associated with all of those disposal methods," said Jeff Crawford, attorney general for the Forest County Potawatomi Community. "This merchant facility is going to try to capture as much of that liquid organic feedstock as possible and make green energy out of it, instead of it just becoming a problem in the waste stream."

'Bug' nutrition

The project is somewhat similar to manure digesters that process cow manure into energy at dairy farms across Wisconsin.

But the system opening Monday a block west of Potawatomi Bingo Casino is much larger and more complex, said Charlie Opferman, owner's representative at Greenfire Management Services, the tribal business serving as construction manager on the project.

The digester is part chemical processor, part power producer. Its most visible feature: two 1.3 million-gallon

tanks — the digesters — where the liquid food waste will be converted into a biogas.

The system involves the use of biotechnological processes using microorganisms, or "bugs," to convert wastes into a biogas that contains methane, Opferman said.

In recent weeks, as biomass feedstock began arriving at the plant, the work has been focused on getting the bugs into the right state for converting waste to biogas.

"It's a biological process," said Opferman. "You've got to grow your bugs, get them acclimated and feed them well, and make sure they eat a balanced diet."

The better the diet for those microorganisms, the better the end product of the conversion process.

Some of the wastes that will be trucked to the plant include bakery waste from making cookies, cheese plant waste and waste from production of soy, said Joe DeNucci of Advanced Waste Services, a hauler supplying feedstock to the plant.

Leadership role

Bioenergy experts have pointed to the food-processing sector as a key source of renewable energy for Wisconsin.

The Potawatomi project is one of three large projects being developed across the state, including the GreenWhey project that recently opened in western Wisconsin, as well as a large digester project planned at the Brakebush Brothers chicken processing plant in Westfield.

A study for the state of Wisconsin's energy office by the consulting firm Baker Tilly Virchow Krause concluded that Wisconsin can be a leader in the area given its prominence in the nation's dairy industry.

As the state looks for ways to help food processors expand to meet growing international demand, strict local wastewater permits and state environmental rules can hinder expansion plans.

The Baker Tilly study projected that Wisconsin could generate up to 40 megawatts of electricity — or about 20 plants the size of the one at Potawatomi — from a combination of cheese plants and large-scale dairy farms.

The Potawatomi project received \$2.6 million in funding from the U.S. Department of Energy as well as a grant from the state Focus on Energy program.

Partners in the project include Greenfire Management Services, the tribal construction management company, Miron Construction, Symbiont Inc., Titus Energy and Rockwell Automation as well as bioenergy researcher Dan Zitomer of Marquette University.

General Electric Co.'s Waukesha engine plant manufactured the facility's two internal combustion biogas engines. The Potawatomi site is the first U.S. deployment of this more efficient engine model for use in continuous generation.

Environmental stewards

"This is a long time coming for us," said Crawford during a tour of the biodigester in advance of a grand opening the tribe will host Monday. He described the project as an outgrowth of the tribe's environmental mission statement.

"The goal of the tribe is to try to reduce its adverse environmental impacts, and one of the big things we can do is to produce our own green energy," he said.

The \$20 million project is part of a series of capital projects with a total investment of \$200 million in the region, including the [hotel](#) under construction adjacent to the Potawatomi Bingo & Casino and a \$36 million [data center](#) built as part of the tribe's redevelopment of the former Concordia campus.

The renewable energy project is also linked to the casino, since excess heat from the waste-to-energy process will be used to heat the water for guests taking showers at the hotel or using the casino's bathrooms, Opferman said.

In addition, the tribe is exploring ways to supply the biogas project with food wastes from the casino and hotel restaurants, he said.

"We're looking at resolving things that we're doing within our own operations and improving the way we do things," Opferman said.

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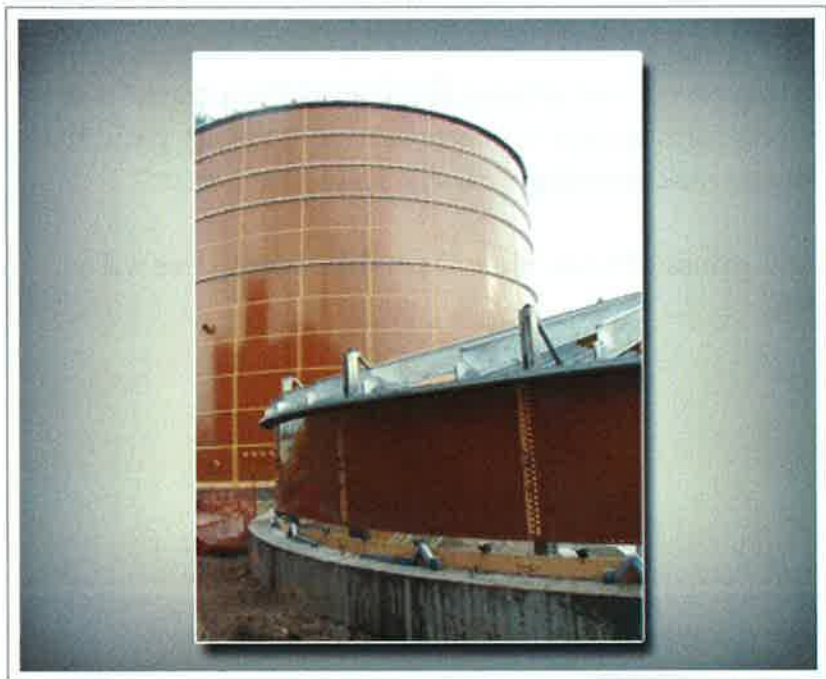
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Potawatomi Community opens casino digester

Monday, October 28, 2013



The Forest County Potawatomi Community opened its \$20 million renewable energy facility this morning near Potawatomi Bingo Casino in Milwaukee's Menomonee Valley.

The FCPC Renewable Generation Digester will use anaerobic digestion to convert food and beverage waste into up to 2 megawatts of electricity.

Rockwell Automation manufactured the Allen-Bradley motor controls for the facility, and General Electric Waukesha Gas Engines manufactured the internal combustion biogas engines.

Miron Construction Co. served as the general contractor and project manager, Symbiont Inc. conducted plant engineering, Titus Energy provided pre-development and consulting services and Greenfire Management Services LLC provided owner's representative consulting services.

Food manufacturers will provide a slurry of organic waste, which is converted into biogas using microorganisms in the facility's two 1.3 million gallon digester tanks.

The methane gas is burned in an engine, producing electricity that is then sold to We Energies. The process also creates heat, which the digester harnesses for hot water and heating.

"The FCPC Renewable Generation Digester helps Wisconsin food and beverage manufacturers dispose of feedstock in an environmentally-friendly manner that enhances and achieves their sustainability goals," said Jeff Crawford, the tribe's attorney general and leader of FCPC Renewable Generation LLC. "The facility will allow all involved to be both environmentally and fiscally responsible, which makes our community a better place to live and work."

A \$2.6 million Department of Energy grant awarded to the FCPC in 2011 covered part of the project. The digester is expected to offset 30 percent of the Potawatomi Community's energy costs.

"Our tribe's culture and traditions establish a duty to help protect and enhance environmental resources," said Gus Frank, Potawatomi chairman. "This project not only helps us meet our energy and sustainability goals, but is also important to the region as it removes a waste stream while providing clean and renewable power."

The facility will accept between 100,000 and 130,000 gallons of waste material per day. Tipping fees will be based on each customer's situation and shipping costs.

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WPR NEWS

Native American Tribe Turns Food Waste Into Electricity

UPDATED:

Monday, October 28, 2013, 5:17pm

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Food waste will be turned into energy at a small power plant that the Forest County Potawatomi tribe has opened in Milwaukee.

The Potawatomi plan to use microorganisms to convert from food and beverage processing waste into methane gas that will be burned to create electricity. Potawatomi Attorney General Jeff Crawford says the \$20 million plant near the tribe's Milwaukee casino fits with a tribal ethic to try to protect the environment, by “marrying old thoughts of digesting food and waste product and combining them with new modern technology.”

“And boom, here you go: We’re going to be producing green energy,” says Crawford.

The federal government and rate-payer-funded state focus on energy program are helping pay for the Potawatomi plant. The tribe plans to sell the electricity to WE Energies, providing enough energy to power 1,500 homes. Heat from the plant will be used for hot water and to help heat the casino.

But plant operator Charlie Opferman does say turning food waste into power is more complex than the Wisconsin plants that use cow waste for energy. He says one challenge will be to provide the microorganisms a balanced diet.

“The different bugs within the digester break down the organic compounds at different rates,” he says.

Opferman says the solid waste or bio-solid not burned may become fertilizer. About 20 trucks per day will bring in food waste but the Potawatomi plant is in an industrial valley and not close to any neighborhood.

Another food waste digester recently opened in Turtle Lake.

 More

Wisconsin biogas CHP plant fires up

By [Anna Simet](#) | October 29, 2013

After a year of development, the Forest Country Potawatomi Community's combined-heat-and-power biogas plant in Milwaukee's Menomonee Valley has come on line, with an official grand opening held on Oct. 28.

The 2-megawatt (MW) FCPC Renewable Generation facility is located near the Potawatomi Bingo Casino on tribal land. Feedstocks for the two 1.3 million-gallon digester tanks are being sourced from a variety of local food producers, and power produced is being sold to WE Energies under a 15-year power purchase agreement. Generated heat is being used to provide hot water and heating to the casino.

The \$20 million project received funding from the U.S. DOE and Wisconsin-based Focus on Energy. It marks completion of the fourth food waste-to-energy project of project manager and EPC contractor Miron Construction, according to Jason Rieth, industrial project executive. However, the company has been involved in numerous other biogas projects, mainly in Wisconsin and Iowa.

Although every project has its own unique characteristics and challenges, one in particular stood out in this case, according to Rieth. "The area where this particular property is located was previously deemed undevelopable," he said. "People claimed that it was basically waste land. The whole area has contaminated soil, so methane barriers had to be placed under the foundations, a methane venting system installed in the building—lots of extra maneuvering that enabled us to do something that we were told wasn't possible, and we're proud of that."

Another challenge was working within the confines of the small piece of land the project is located on. "It's a compact site, right next to the employee parking lot of the casino, so we basically did all of the work on about two acres of land," Rieth said.

Dan Goymerac, vice president of industrial business development, added that an odor control system was put into place to ensure there was no objectionable odor beyond property borders, as the location is near downtown Milwaukee.

The 38,000-square-foot-facility was designed to match the style of the older buildings in the Menomonee Valley, according to Rieth. "They wanted anything new to have a certain look to it, so we went through some pains to match [the look] when we done."

Deadline for completion of the project was Nov. 1, which led to a big push from August to October, Rieth said. All parties worked together to meet deadlines, including Rockwell Automation, which manufactured motor controls for the facility; General Electric Waukesha Gas Engines, which delivered its two 1-MW internal combustion biogas engines; Symbiont Inc., which conducted plant engineering; Titus Energy, which performed predevelopment work and other consulting services, and Greenfire Management Services LLC, which provided representative consulting services.

As for how the future looks for the biogas energy development, Rieth said the company is involved in two projects going into 2014, both of which are electrical generation projects and one of which will be self-generating. "There are some products that may be more attractive than electricity, such as pipeline-quality gas or bioCNG, but power has traditionally been where the subsidies are," he said. "The future is bright, but whether a project makes sense is dependent on a few things—what regulations and incentives require, and also the price of electricity in the region. Though it depends on who owns the project and what their goals are, it's a large capital investment to build a biogas plant, so there has to be a compelling reason for somebody to do it."



The 2-megawatt (MW) FCPC Renewable Generation facility is located near the Potawatomi Bingo Casino on tribal land in the Menomonee Valley region of Milwaukee, Wis. Miron Construction Co. Inc.

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AD Unit Goes Online in Wisconsin

ANAEROBIC DIGESTION

Badger State food waste will be diverted to \$20 million digester facility.

REW Staff

NOVEMBER 1, 2013

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The [Forest County Potawatomi Community \(FCPC\)](#), a federally recognized Native American tribe located in northeastern Wisconsin, has announced the opening of its approximately \$20 million facility that uses food and beverage processing waste as a fuel source that will ultimately produce up to 2 megawatts (MW) of electricity. That's enough energy to power about 1,500 homes while also providing waste heat for beneficial reuse, the tribe says.

The plant, known as FCPC Renewable Generation Digester, uses a proprietary anaerobic digestion (AD) process to convert liquid organic waste into biogas. It is located one block west of the tribe's Menomonee Valley casino in Milwaukee. The feedstock is broken down into microorganisms in one of two 1.3 million gallon digester tanks. This process creates a methane gas that's burned in an engine that produces renewable electricity. The power will then be sold to Wisconsin-based [We Energies](#). The facility also includes a combined heat power (CHP) plant that can recover heat from the biogas production process to provide hot water and heating.

"Our tribe's culture and traditions establish a duty to help protect and enhance environmental resources," says Potawatomi Chairman Gus Frank. "This project not only helps us meet our energy and sustainability goals, but is also important to the region as it removes a waste stream while providing clean and renewable power."

"The FCPC Renewable Generation Digester helps Wisconsin food and beverage manufacturers dispose of feedstock in an environmentally-friendly manner that enhances and achieves their sustainability goals," adds Jeff Crawford, the tribe's attorney general and leader of FCPC Renewable Generation. "The facility will allow all involved to be both environmentally and fiscally responsible, which makes our community a better place to live and work."

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The FCPC Renewable Generation Digester received funding from the U.S. Department of Energy and Focus on Energy. The Tribe also partnered with several Wisconsin-based companies on the development of this project including:

- Miron Construction Co.—overall project management and general contracting services
- Symbiont, Inc.—balance of plant engineering
- Titus Energy—significant pre-development work and other consulting services
- Greenfire Management Services LLC., a subsidiary of Potawatomi Business Development Corp.—owner's representative consulting services
- Rockwell Automation—Allen-Bradley motor controls

Additionally, General Electric's Waukesha plant manufactured the facility's two internal combustion biogas engines. This is first U.S. deployment of this engine model for use in continuous generation.

The construction of the renewable energy plant is part of a broader \$200 million investment the tribe has underway in the city of Milwaukee. This includes the recently opened \$36 million Data Holdings data center in Milwaukee's historic Concordia neighborhood and the \$150 million, 381-room hotel adjacent to Potawatomi Bingo Casino scheduled to open in summer 2014.

Wisconsin Lt. Gov. Rebecca Kleefisch, Milwaukee County Executive Chris Abele and Milwaukee Mayor Tom Barrett were among the one hundred guests at the facility this week to mark its official opening.

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Angel of the Winds Announces Major Hotel Expansion



The Stillaguamish Tribal Enterprise Corporation (STECO) recently announced that Angel of the Winds Casino in Arlington, WA, will begin immediate construction of a \$20 million dollar, 125-room, five story hotel. The anticipated opening for

the hotel is scheduled for winter/spring 2015, which will create an additional 50 jobs for the community. A ground breaking ceremony was held last month.

"This is the next step in our growth of Angel of the Winds Casino," stated Koran Andrews CEO of STECO, "We continue to look at what our guests want and develop those amenities."

Shawn Yanity, Tribal Chairman, added, "We are truly blessed to have an opportunity to add a hotel to our facility and provide more services to our guests. Not only are we growing our tribal economy, but growing the local economy too by increasing job opportunities and tourism."

This expansion adds over 100,000 sq ft. onto the casino. The expansion will also add a new gift shop, smoke shop and porte-cochere that will centralize the guest's entrance experience to the property.

Forest County Potawatomi Opens \$20 Million Renewable Energy Facility



The Forest County Potawatomi Community (FCPC) announced the opening of its approximately \$20 million facility that uses food and beverage processing waste as a fuel source that will ultimately produce up to 2.0 megawatts (MW) of clean, green and renewable electricity. That's enough energy to power about 1,500 homes while also providing waste heat for beneficial reuse.

The plant, known as FCPC Renewable Generation Digester, is located one block west of the tribe's Menomonee Valley casino and uses a proprietary anaerobic digestion process to convert liquid organic waste, referred to as feedstock, into biogas. The feedstock is broken down into microorganisms in one of two 1.3 million gallon digester tanks. This process creates a methane gas that's burned in an engine that produces renewable electricity. The power will then be sold to We Energies. The facility also includes a combined heat power plant that can recover heat from the biogas production process to provide hot water and heating.

"Our tribe's culture and traditions establish a duty to help protect and enhance environmental resources," said Potawatomi Chairman Gus Frank. "This project not only helps us meet our energy and sustainability goals, but is also important to the

region as it removes a waste stream while providing clean and renewable power."

"The FCPC Renewable Generation Digester helps Wisconsin food and beverage manufacturers dispose of feedstock in an environmentally-friendly manner that enhances and achieves their sustainability goals," added Jeff Crawford, the tribe's Attorney General and leader of FCPC Renewable Generation. "The facility will allow all involved to be both environmentally and fiscally responsible, which makes our community a better place to live and work."

The FCPC Renewable Generation Digester received funding from the U.S. Department of Energy and Focus on Energy. The tribe also partnered with several Wisconsin-based companies on the development of this project including: Miron Construction Co. – overall project management and general contracting services; Symbiont, Inc. – balance of plant engineering; Titus Energy – significant pre-development work and other consulting services; Greenfire Management Services, LLC., a subsidiary of Potawatomi Business Development Corporation – owner's representative consulting services; and Rockwell Automation – Allen-Bradley motor controls. Additionally, General Electric's Waukesha plant manufactured the facility's two internal combustion biogas engines. This is first U.S. deployment of this engine model for use in continuous generation.

The construction of the renewable energy plant is part of a broader \$200 million investment the tribe has underway in the City of Milwaukee. This includes the recently opened \$36 million Data Holdings data center in Milwaukee's historic Concordia neighborhood and the \$150 million, 381-room hotel adjacent to Potawatomi Bingo Casino scheduled to open in summer 2014.

Wisconsin Lt. Governor Rebecca Kleefisch, Milwaukee County Executive Chris Abele and Milwaukee Mayor Tom Barrett were among the one hundred guests at the facility to mark its official opening.

Kickapoo Lucky Eagle Casino Hotel Completes Casino/Hotel Expansion



Kickapoo Lucky Eagle Casino Hotel in Eagle Pass, TX is now even bigger with the recently completed casino expansion that includes exciting new hotel, gaming and dining options.

The casino expansion includes a brand new, full-service destination hotel with 249 well-appointed, spacious suites and guest rooms with views of the Rio Grande and surrounding South Texas landscape. Kickapoo Lucky Eagle's hotel amenities

include a lobby bar, gift shop, outdoor pool (coming soon), fitness center, meeting rooms and a business center.

The expansion also includes a new fine dining restaurant, The Sage Steakhouse, where guests can enjoy regional specialties such as Certified Angus Beef steak aged 30 days, sip on the fine wines and dive into delectable desserts. Across from the steakhouse is the sleek High Limit Bar, a full-service bar adjacent to the new high limit gaming area.

"We're excited to welcome our guests to the recently expanded Kickapoo Lucky Eagle Casino Hotel, where winning is now even bigger!" said Robin Miller, General Manager at Kickapoo Lucky Eagle Casino Hotel. "With expanded gaming and dining options and a new hotel, Texas is now home to a first-class entertainment destination."

The recent expansion also included over 1,000 new electronic games, a new private poker room with live-action poker games and Texas Hold 'Em tournaments and a new Players Club. Dining expansions included The Buffet, a 250-seat restaurant featuring expanded food selections and daily specials for lunch and dinner; the luxurious Center Bar – a full-service bar with room to relax right in the middle of the gaming action; and ¿Que Pasa? Lounge – an intimate bar and lounge only steps away from the gaming floor with live entertainment.

Ceremonial Kick-Off Marks Beginning of \$110 Million Project in Cherokee County, NC



L-R: Richard Sneed, Ray Rose and Paula Wojokowski of the Tribal Casino Gaming Enterprise Board, Vice Chief Larry Blythe, Tribal Council – Brandon Jones, Bill Taylor (Vice Chair), David Wolfe, Alan B Ensley, Albert Rose and Tommye Saunooke, Principal Chief (Mr.) Michell Hicks, and Tribal Council members Gene Crowe, Adam Wachacha and Perry Shell.

A \$110 million project to build a new casino in Cherokee County, NC is officially underway. A groundbreaking ceremony for the new Harrah's Casino was held today at the future site of the facility just outside the town of Murphy. The casino will be owned by the Eastern Band of Cherokee Indians (EBCI) and will be managed by Caesars Entertainment Corporation.

The EBCI already owns Harrah's Cherokee Casino Resort, which is located in the town of Cherokee, about an hour away from the new casino site. The Cherokee County facility will feature 60,000 sq. ft. of gaming space with slots and

traditional table games; a 300-room full service hotel; and a variety of dining options.

The casino will be located approximately two hours away from Knoxville, Chattanooga and downtown Atlanta and will serve the large and growing adult population living within that radius. In 2011, 7.4 million people age 21 or older lived within 2.5 hours of the casino site. Now, more than 7.6 million adults live in that same area.

"Our winning partnership with Caesars Entertainment gives us a proven track record in the gaming industry," said Principal Chief Michell Hicks. "This is an ambitious project, but we are confident that it will be a success – for our customers, our tribe and for the surrounding community."

The games featured will include traditional favorites as well as the most popular slot products available on the market when the casino opens.

"The Cherokee County casino will certainly bear the high standards of the Caesar's name and brand," said Gary Loveman, Chairman, Chief Executive Officer and President of Caesars Entertainment Corporation. "We are an industry leader, and we implement the full expectations of that status into every facility we manage. Hopefully, that will translate into continued success for the Eastern Band of Cherokee Indians and the residents and other businesses of Cherokee County."

The casino will create an estimated 900 jobs on-site and inject up to \$39 million in wages into the surrounding area.



222 S. Hamilton, Madison, WI 53703

For immediate release

December 30, 2013

More information

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RENEW to Honor “Class of 2013” Renewable Projects

Newest Wisconsin Installations Powered by Biogas, Solar, and Wind

(Madison) – At its third annual Energy Policy Summit next month, RENEW Wisconsin will recognize the six largest nonutility-owned renewable generation projects built in Wisconsin in 2013. Titled “We Mean Business,” RENEW’s summit is set for January, 10, 2014, and will take place at The Pyle Center on the UW-Madison campus.

All six clean energy projects to be “inducted” into RENEW’s Million Watt Club next month have a minimum electric generating capacity of one megawatt (MW). These installations are designed either to supply energy directly to the host facility or a Wisconsin utility. The combined generating capacity of the Class of 2013 installations is 19.6 MW, compared with the 15.4 MW that came online in 2012.

Below are capsule descriptions of the Class of 2013 renewable generation projects to be inducted into RENEW Wisconsin’s Million Watt Club next month.

- Galactic Wind Farm, a 10 MW facility in the Town of Springfield in Dane County and interconnected to Madison Gas & Electric. This plant is the largest wind-power project in Wisconsin not owned by an energy company. Project participants include Verona-based Epic Systems (owner), The Morse Group (general contractor), Cullen, Weston, Pines & Bach (legal services), and W.E.S. Engineering (consulting engineer).
- GreenWhey Digester, a 3.2 MW facility located in Turtle Lake and interconnected to Xcel Energy. This plant is powered with biogas derived from liquid organic wastes produced at several food processing companies located in Turtle Lake. Project participants include GreenWhey Energy (owner), Miron Construction (general contractor), Symbiont Inc. (balance-of-system engineer), and Geo Investors (financing).

- Forest County Potawatomi Community (FCPC) Renewable Generation Digester, a 2 MW facility located in Milwaukee and interconnected to We Energies. This plant is powered with biogas derived from liquid organic wastes produced at the tribally owned casino next door. Project participants include FCPC (owner), Miron Construction (general contractor), Symbiont Inc. (balance-of-system engineer), Titus Energy (consulting engineer), Godfrey & Kahn (legal services), and Greenfire Management Services (owner's representative), and Rockwell Automation (motor controls). The GE engine generators were manufactured in Waukesha.
- Dane County Community Digester, a 2 MW facility located in the Town of Springfield in Dane County and interconnected to Madison Gas & Electric. Dane County's second community digester, this plant is powered with biogas derived from manure produced at several adjoining dairy farms. Project participants include Gundersen Health (owner), C.G. Schmidt (general contractor), Dane County (catalyst and facilitator), and U.S. Biogas (system designer).
- Rosendale Dairy Digester, a 1.4 MW facility located near Pickett in Winnebago County and interconnected to Alliant Energy. This plant is powered with biogas derived from manure produced at Rosendale Dairy. Project participants include Milk Source (owner), BIOFerm (system designer), and UW-Oshkosh Foundation (financing and educational partner).
- Jefferson Solar, a 1 MW facility located in the City of Jefferson and interconnected to Jefferson Utilities. This plant, Wisconsin's first commercial solar energy plant, produces electricity for sale to WPPI Energy. Project participants include Half Moon Ventures (owner) and S&C Electric (general contractor).

"The Energy Policy Summit is a fitting venue to honor the people and organizations that embraced the vision of energy self-sufficiency and job creation, and made it happen in Wisconsin," said RENEW Wisconsin's Executive Director Tyler Huebner.

"Their solar, wind, and bioenergy installations created jobs, reduced the flow of imported fossil fuels into Wisconsin, and demonstrated responsible environmental stewardship. They truly deserve the recognition, as well as everyone's appreciation," Huebner said.

A list of distributed renewable energy generation projects in Wisconsin with a minimum capacity of 1 MW appears below.

To learn more about RENEW's Energy Policy Summit, go to

http://renewwisconsin.org/2014_Summit/

To register, go to http://renewwisconsin.org/2014_Summit/register.html

-END-

RENEW Wisconsin is an independent, nonprofit 501(c)(3) organization that leads and represents businesses, organizations, and individuals who seek more clean renewable energy in Wisconsin.

RENEW Wisconsin's Million Watt Club

Class of 2014

Project	Resource	Size (by MW)	Location (by County)	Project Participants
Galactic Wind	Wind	10.0	Dane	Epic Systems, The Morse Group/Cullen, Weston, Pines & Bach/W.E.S. Engineering
GreenWhey Biodigester	Biogas	3.2	Barron	GreenWhey Energy, Miron Construction/ Symbiont
Forest County Potawatomi Biodigester	Biogas	2.0	Milwaukee	Forest County Potawatomi, Miron Construction/ Symbiont/ Titus Energy/ Godfrey & Kahn
Town of Springfield Community Biodigester	Biogas	2.0	Dane	Gundersen Health/U.S. Biogas/ Dane County/ C.G. Schmidt
Rosendale Dairy	Biogas	1.4	Winnebago	Milk Source/ BIOFerm/ UW-Oshkosh Foundation
Jefferson Solar	Solar	1.0	Jefferson	Half Moon Ventures/ S+C Electric

Class of 2013

Project	Resource	Size (by MW)	Location (by County)	Project Participants
Cashton Greens	Wind	5.0	Monroe	Gundersen Health/ Organic Valley/ W.E.S. Engineering/Michels Energy/Cullen, Weston, Pines & Bach
WTE Dairyland/S+S Ag/Wakker/Deer Run/Dallman	Biogas	4.0	Kewaunee, Calumet, Door	DVO, Inc.
Waxdale Wind	Wind	3.0	Racine	SCJohnson, W.E.S. Engineering
Epic Solar Field	Solar	1.8	Dane	Epic Systems, The Morse Group
Richland Center Renewable Energy	Biogas	1.6	Richland	Schreiber Foods, Foremost Farms USA, Miron Construction

2012 or Earlier

Project	Resource	Size	Location (by County)	Project Participants
Holsum (Irish + Elm) Biodigesters	Biogas	1.9	Calumet	Holsum Dairies, DVO, Inc.
Maple Leaf (Dairy + West) Biodigesters	Biogas	1.8	Manitowoc	Maple Leaf Dairy, DVO, Inc.
Pagel's Ponderosa Biodigester	Biogas	1.6	Kewaunee	Pagel's Ponderosa Dairy, Northern Biogas
Grotegut Biodigester	Biogas	1.42	Kewaunee	Grotegut Dairy, DVO, Inc.
Green Valley Biodigester	Biogas	1.2	Shawano	Green Valley Dairy Northern Biogas



Jan 31 2014

FCPC RENEWABLE GENERATION DIGESTER

By: Erika Duelge

TAGS: DEVELOPING, E-NEWSLETTER, FEATURED, MILWAUKEE BUILDING TRADES, NEWS AND EVENTS, PROJECTS, SUCCESS STORY, WHY UNION

In October 2013, the Forest County Potawatomi Community (FCPC) completed a nearly \$20 million renewable energy facility, the FCPC Renewable Generation Digester – their second of three large construction projects in Milwaukee.

They completed their \$36 million **Data Holdings Center** in May 2013, and construction of their \$150 million hotel is scheduled to be open in summer 2014. These projects have kept Building Advantage members working because of a choice the FCPC and **Greenfire Management Services, LLC** make when building – partnering with groups who want to do better for their members.

Greenfire was formed by the FCPC in 2010 and is a construction management, property management and owner's representative subsidiary of the Potawatomi Business Development Corporation. They've managed all of the FCPC's projects since opening, and are continuing to advance the Tribe's missions and goals when it comes to construction.

That being said, the Tribe built the Renewable Generation Digester for several reasons, but mainly to protect the environment and Mother Earth. The Tribe has said that since 2007 they have reduced its energy usage per gross square foot by 12 percent and reduced their corresponding carbon emissions by more than 20 percent.

"Our Tribe's culture and traditions establish a duty to help protect and enhance environmental resources," said Potawatomi Chairman Gus Frank. "This project not only helps us meet our energy and sustainability goals, but is also important to the region as it removes a waste stream while providing clean and renewable power."

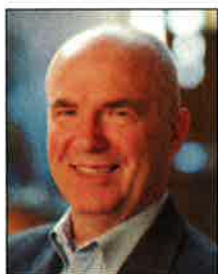
According to the Tribe, the Biodigester project is another example of the FCPC's ongoing commitment to Milwaukee, job creation and economic development. In fact, they even used two internal combustion biogas engines manufactured at General Electric's Waukesha plant – once again keeping local workforces employed.

Building Advantage members are also grateful for the work they've performed for the Tribe and have consistently brought projects in on time and on budget. The relationship our Building Trades shares with the FCPC greatly benefits the Tribe and our members. In fact, the list of union contractors (and Building Advantage members) that performed work on the site includes:

Miron Construction
Gillen Foundations
Willkomm
Stark Asphalt
Martell Construction
Chilstrom Erecting
Choice Construction
Davco
Mortl Restoration
Munson Fencing
Winding Roofing
Milwaukee Plate Glass
Quality Ceilings
Omni Glass & Paint
David J Frank Landscaping
Bohmann & Vick
Grunau
J&H Heating
Uihlein Electric

With the work that Greenfire and the FCPC are currently undertaking, we're happy to be part of helping the environment, keeping our members working and making a difference in Milwaukee. Next up for Building Advantage is to complete the hotel on time and on budget – and we'll be sure to tell you more about the project soon.





Forest County Potawatomi Community's Biogas Facility Brings Renewable Energy to Region

by Charles Opferman



The Forest County Potawatomi Community (FCPC) committed themselves towards achieving energy sovereignty when they built a two megawatt renewable energy plant powered with biogas created by anaerobic digestion. The digesters operate on liquid (pumpable) food waste. This feedstock comes from Potawatomi Bingo Casino as well as byproducts of local and regional food processing resources.

Potawatomi elders, culture, and traditions confirm a duty to protect and enhance environmental resources, both on and near the reservation and throughout the world. Development of this plant was mission driven, not as a response to regulatory or economic issues, and benefits both the tribe and regional community. It is also a significant step in FCPC's reduction of its carbon footprint. This project offsets a portion of the electricity that the FCPC utilizes and does so with non-polluting renewable resources. Much of the feedstock processed by the plant was slated for land application, which has the potential for runoff issues and microbial degradation which releases significant amounts of methane

gas. Methane has twenty times the impact as a greenhouse gas compared to carbon dioxide. This plant abates that methane release and offsets the need for coal fired electricity generation. Methymercury pollution from coal fired electricity production and climate change from greenhouse gasses affect the Potawatomi directly, as well as the world at large. The Wisconsin community benefits by having material diverted from landfill and recovered into energy. Food processors and their contractors benefit from a competitive disposal option, reducing trucking and other costs.

In 2010, FCPC obtained \$2.6M of competitive funding through the U.S. Department of Energy's (DOE) Community Renewable Energy Deployment program, which underwrote the initial development of this project. Challenges for the project included permitting, siting, timing, funding, and ownership entity selection.

Permitting proved to be one of the largest challenges to starting the project. FCPC attempted to get ahead of the process with an application for a construction air permit prior

"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."

- FCPC Environmental Mission Statement formalized in 2008

to hiring the design/build team. Subsequent layout revisions rendered the initial application sufficiently inaccurate and the entire process, including public comment period, had to be repeated.

The project is located west of the Potawatomi Bingo Casino between an employee parking lot and a storm water retention basin. The project was built on 90 feet of fill in a former tamarack swamp. Located within the Menomonee River Valley, the water table is five feet below grade at river/Lake Michigan level. Surrounded by active rail yards and an employee parking lot, access and execution required close coordination.

Work on site started in October, 2012. The \$20 million project consists of a 15,236 sq. ft. building housing two enclosed unloading bays, an on-site lab and office, process equipment rooms, and two 1.0 megawatt engine generators. The plant has a biological odor control system to capture and abate any malodorous fumes released within the plant or process equipment. The project has five feedstock tanks to sort supply, an equalization tank to mix and hold supply, two 1.3 million gallon anaerobic digesters, and a membrane filtration system to keep active "bugs" and undigested feedstock within the digesters. The plant is designed to process 132,000 gallons of liquid a day, or about 20 tankers.

Biogas is piped from the digesters through gas treatment that filters, cleans and compresses the gas for the engine generators. The two megawatts they generate is enough electricity to power about 1,600 average homes. Heat for process and plant use is recovered from the engine cooling systems and exhaust. The digester tanks are maintained at 98° F to sustain the microbial colonies at optimum temperature. Excess heat from the plant will be piped under a separate project to Potawatomi Bingo Casino to offset domestic water heating requirements. The plant delivered electricity to the grid in October of 2013.

Anaerobic digestion is the same process that takes place in the human gut. This plant completes the digestion process with the breakdown of carbohydrates (sugars/starches), proteins (meat and complex dairy and vegetable) and lipids (fats) into a methane and carbon dioxide mixture (biogas).

Solids are extracted from the membrane and reduced to cake consistency in a centrifuge. FCPC is still looking to market the solids to a local soil amendment business.

Additional funding for the project came from a Focus on Energy Incentive. Focus on Energy is Wisconsin utilities' statewide energy efficiency and renewable resource program. In addition, FCPC is in the final stages of securing a Section 1603 Grant under the American Recovery and Reinvestment Act (ARRA). Section 1603 of ARRA promoted the development of renewable energy resources. A taxable ownership entity, FCPC Renewable Generation, LLC, was established to obtain a grant under this program in lieu of having to monetize tax credits. This allowed FCPC to benefit from this program without having to surrender ownership control to an outside developer or losing significant value of the tax incentives in transactional costs in sale of the tax credits. Initial application and purchase of the engine generators took place prior to the end of 2011 to safe harbor for Section 1603.

Revenue for the plant comes from electricity sales and from tipping fees. The local utility, WE Energies, uses this energy to help fulfill its renewable energy portfolio requirements under State of Wisconsin Public Service Commission tariffs. Tipping fees are paid by the material generators and/or their haulers for processing their material. The plant continues FCPC's diversification of its economic base and control of its economic destiny.

The design/builder was Miron Construction Co. Inc. of Neenah, WI. Symbiont Science, Engineering and Construction, Inc. of West Allis, WI served as the engineer of record. Biothane, LLC of Pennsauken, NJ, a Veolia Water Solutions company was the process engineer and technology provider. Greenfire Management Services LLC, a business owned by FCPC, served as the Owner's representative. Natural Systems Utilities, LLC is the operator. ♣

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