

Inter-Tribal Council of Michigan, Inc. Environmental Services Division

Bay Mills Indian Community Energy Reduction Feasibility Study

Chris Kushman



Thank You

- DOE Tribal Energy Program
- Tribal Energy Program Review presenters
- Bay Mills Indian Community



Bay Mills Indian Community

- Great relationship between ITCMI and Bay Mills
- Proactive in exploring renewable energy alternatives
 - Bay Mills Community College Alternative Energy Curriculum
 - Biofuels and the crops to support biofuels
 - Wind resource data collection
- Upper Peninsula of Michigan
 - Cold temperatures
 - Prolonged exposure to strong north winds off Lake Superior
 - Short winter daylight
- Fishing and fish consuming community
- Electricity largely supplied by coal fired power plants
- Bay Mills Community College Building Trades Program
- Community buildings
 - Tribal administration building
 - College
 - Health center
 - Community building with gymnasium
 - Elementary school





Objectives

- Complete a feasibility study and resulting plan outlining the efficiency measures needed to cut energy consumption 30%.
- The goal of this project and of the Tribe is to reduce the energy consumption at the Community's most energy intensive buildings that will, in turn, reduce emissions at the source of energy production, reduce energy expenditures, create long lasting energy conscious practices and positively affect the quality of the natural environment.
- Increase occupant comfort



Process

- Community Awareness
- Energy & Weatherization Audits
- Determine Opportunities
- Conservation
- Physical Upgrades/Modification
- Alternative Energy
- Feasibility
- Integration & Implementation



Community Awareness

- Project targets highly utilized Community buildings
- Project/buildings are intended to showcase energy efficiency to decision makers and Community
- Informal meetings for community members to share project information and exchange energy reduction knowledge
- Create Community outreach pamphlets/factsheets to advocate future energy reduction expansion



Energy Audits

- Compile and analyze energy consumption
 - Past energy consumption/bills
 - Separate heating, cooling, other and establish baseline
 - Utilize experience and information with building managers
 - Conduct complete onsite inspections of items relating to energy consumption
 - Document and assess items



Weatherization Audits

- Complete inspection of each building's envelope and components to determine items contributing to energy loss
 - Air infiltration and exfiltration, insufficient thermal barrier/insulation
 - Utilize experience and information with building managers
 - Utilize available tools thermography & blower door
 - Document and assess items compromising building envelopes



Determine Opportunities

- Deficiencies
 - Building
 - Equipment
 - Practices
- Transform
 - Energy reduction and comfort



Energy Reduction from Conservation

- Priority – energy reduction through conservation
 - Look to identify ways to further maximize benefit of energy
 - Utilize existing systems
 - Cost benefit
 - Examples of potential areas
 - Heating – Programmable thermostats, modify heating & cooling settings, other
 - Lighting – Occupant behavior change
 - Workstations – Power management settings modifications i.e. hibernate
 - Focus to other systems that aren't compatible with conservation efforts



Building & Equipment Upgrades

- Air leak sealing
- Insulating
- Heating, cooling and HVAC
- Lighting
- High efficiency equipment



Renewable Energy

- Evaluate renewable energy alternatives with identified areas of need



Feasibility

- Energy use comparison between current and energy efficient alternatives
- Cost – The expenditures incurred from the purchase of equipment and materials, installation, maintenance and remaining value of replaced item if useable life remains.
- Sort items by highest energy reduction and lowest cost.
- Engineered life of alternative.
- Likelihood of alternative negated, turned off, overridden, removed, etc.
- Interference or other impacts from presence of alternative.



Integration & Implementation

- Present a sustainable and economically feasible strategy to save money in a manner that serves to improve environmental conditions.
 - Utilize forecasted savings to, in part, invest in improvements to realize energy reduction
 - Prioritize sound/tight buildings
 - Prioritize the future of energy reduction within the Community
 - Innovative, reliable and realistic



**Inter-Tribal Council of Michigan, Inc.
Environmental Services Division
&
Bay Mills Indian Community**

Chris Kushman
ckushman@itcmi.org
(906) 440-0046