A Net-Zero Energy Community

A Model For Our Future

Net-Zero

A net-zero energy community is one where the total amount of energy consumed is no greater than the amount of renewable energy created.

Leading by Example

Protecting the earth is inherent to our culture; our plan to achieve net-zero status reinforces that commitment

The Prairie Island Indian Community will be Minnesota's first net-zero community; we will be one of the first Indian Nations in the United States to achieve a net-zero goal

Funding Prairie Island's net-zero plan through Minnesota's Renewable Development Account (RDA) allows those dollars to be used as intended

Current State

Energy is purchased from Dakota Electric

7 MW

Community's energy requirement in 2018

- + Basic energy demand purchased at $.04 kWh
- + Peak energy rates purchased at $18-$24 kW
  - + Prior to any discounts

Tribal Administration Buildings

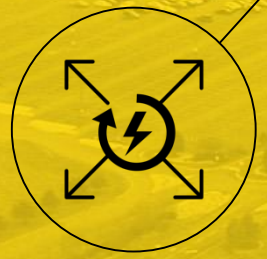
Business Interests, including Treasure Island Resort & Casino

Residential Homes of Tribal Members

Future State

Use a $46M grant from Minnesota's Renewable Development Account to:

Reduce Community's Energy Requirements to < 6MW



Generate > 6MW of Renewable Energy through a combination of solar and geothermal technologies

Develop Microgrids to store and distribute energy, while more efficiently managing load peaks and demands

Adopt Sustainable Building Standards and Community-wide net-zero policies

Achieve Net-Zero by 2022

Getting to

Net-Zero

Three Phase Approach:

1	Conservation
2	Generation
3	Sustaining

Goal

Reduce Community's energy consumption by >1 MW

Project Summary

+ Implement ISO-50001, SB-2030 energy management standards
+ Energy-use audits and energy modeling to develop comprehensive energy plan
+ Upgrade HVAC infrastructure to more energy-efficient equipment
+ Replace current lighting with highly efficient LED lighting
    + Currently only 20% of lighting is LED
+ Replace vehicle fleet with electric vehicles
    + Install charging stations
+ Install energy management system to efficiently manage energy loads

Costs and Timeline

Project	Cost	Timeline
ISO-50001	$75,000	3 months
Energy Audits & Modeling	$285,000	2 months
Equipment Upgrades	$4,850,000	6 months – 1 year Work begins after audits/modeling
EV Vehicles/charging stations	$3,500,000	7-year replacement plan
Energy Management	$1,500,000	1 year
Conservation Total	**$10,210,000**	

Goal

Generate > 6 MW of renewable solar and geothermal energy

Project Summary

+ Build solar grids across 18 acres, including:
    + parking lot solar canopy (valet/employee)
    + on-location solar gardens to support:
        + Prairie Island
        + Upper Island
        + Mount Frontenac,
        + 316/61, including the planned residential development
+ Establish microgrid with battery backup
+ Develop water-to-water or water-to-ground geothermal heating and cooling for community and business buildings
    + geothermal projects will be powered by solar with battery back-ups to make it self-sustaining.

Costs and Timeline

Project	Cost	Timeline
5 MW Parking Solar Canopy	$25,000,000	1-3 years
1 MW On-Location Solar Garden + Prairie Island + Upper Island + Mount Frontenac + 360/61	$2,500,000	1-3 years
Microgrid	$6,000,000	1-3 years
Geothermal	$2,500,000	1-3 years
Generation Total	**$36,000,000**	

Goal

Protect the next seven generations by reducing our carbon-footprint and adopting self-sustaining policies

Project Summary

+ Training and awareness programs for Community and businesses to adopt and implement environmentally friendly/sustainable practices
+ Pass Tribal ordinances that continue to move Community to a lower energy impact through:
    + Adoption of Minnesota's SB-2030 standards for all new construction
    + Eliminating purchase of single-use carbon-intensive products
    + Implementing community-wide Reduce, Reuse, Recycle policy

Costs and Timeline

Project	Cost	Timeline
Tribal Ordinances / Awareness efforts	No cost to project	Ongoing
Sustaining Total	**$0**	

PROJECT SUMMARY
Costs and Timeline

Project	Cost	Timeline
Conservation	$10,210,000	1 year
Generation	$36,000,000	1-3 years
Sustaining	$0	ongoing
Project Total	**$46,210,000**	

Project Total

COMMUNITY COST
Ongoing Commitment

Project	Cost
Project Monitoring	~$1,850/mth ($.10/panel/month) (assumes about 18,500 panels)
Service Contracts	$75,000 - $87,500/year ($12,500/MW/yr)
SB-2030 costs for new construction *	10% of total construction costs*
Change procurement policies to reduce/eliminate single-use carbon-intensive products	$TBD
Reduce, Reuse, Recycle awareness program	$TBD
Project Total	**$**

* Increased upfront construction costs, offset by savings on electric and heating (recovered after 10 years)

Project Total

Next Steps

We can accomplish most of our plan in the coming year and that is why full-funding of our grant request this year is required.

- Our conservation efforts can start immediately and run concurrently with generation planning and construction.
- We have already begun and will continue the important conversations with our local utility partners, who will play a crucial role in the implementation and success of our plan.