

SPIRIT LAKE TRIBE 1.5 MW COMMUNITY WIND ENERGY PROJECT



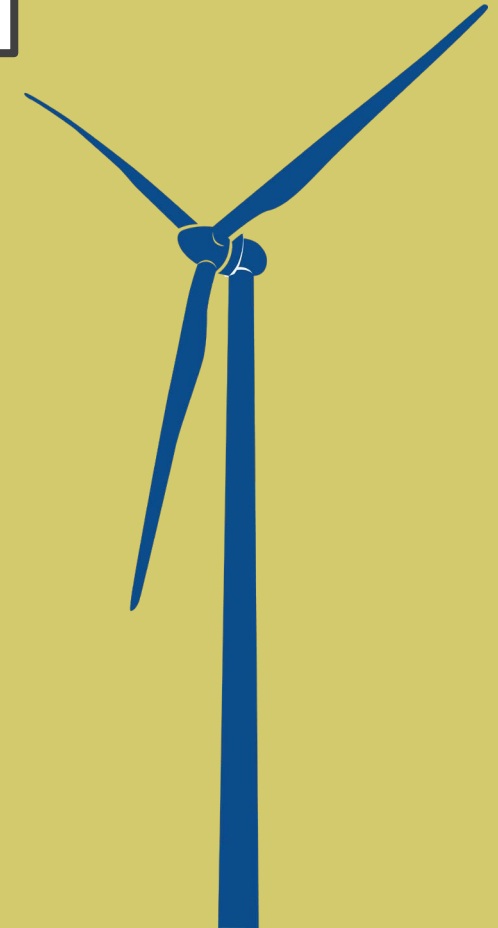
Presented by

Ryan Brown – Economic Development Planner, Spirit Lake Tribe

Jim Yockey – Firm Director, Baker Tilly

DOE Annual Program Review

November 2022



PRESENTATION OUTLINE



- Background of Spirit Lake Tribe
- Project Overview & Location
- Project Participants
- Project Objectives
- Progress to-date
- Next steps



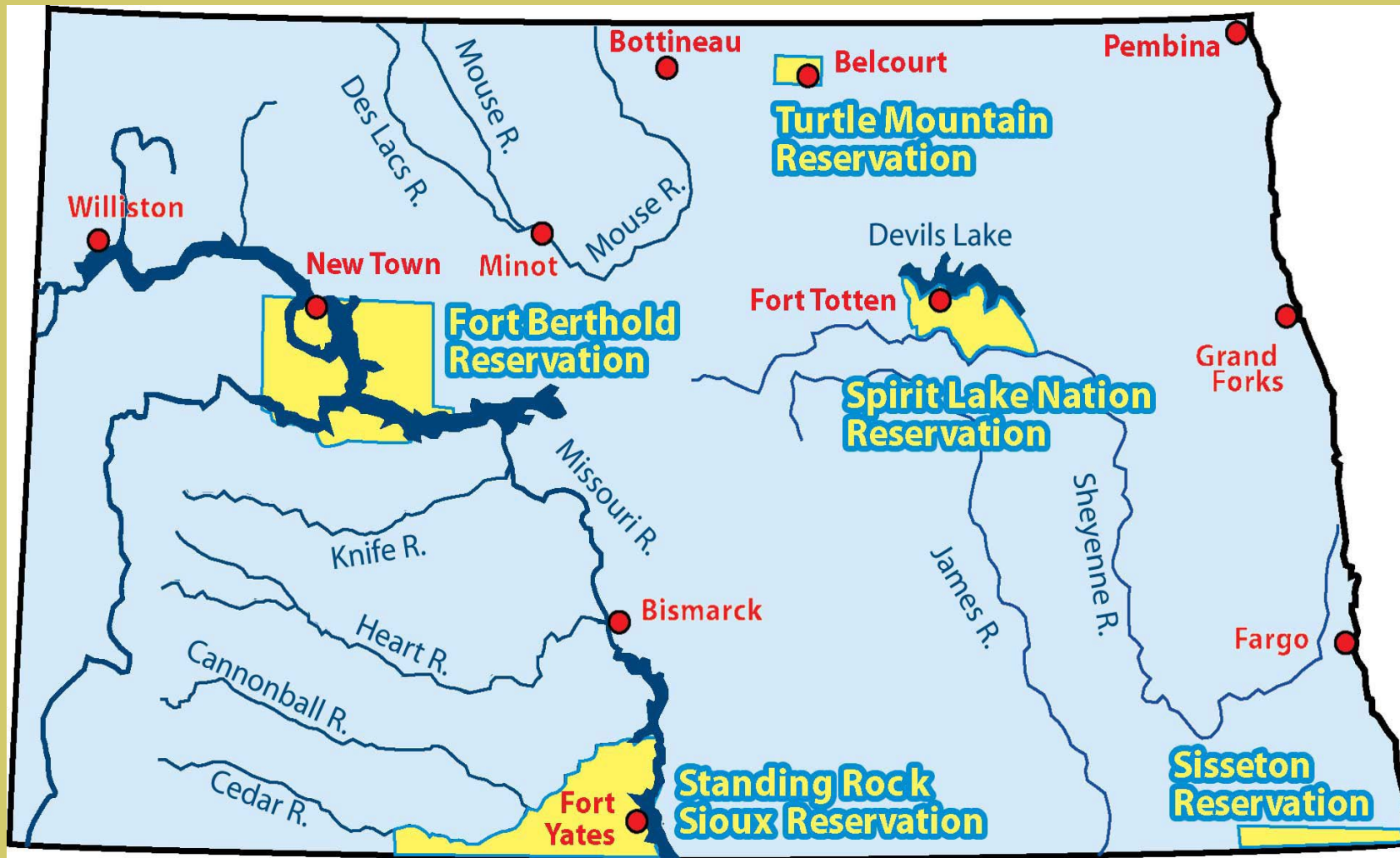
BACKGROUND



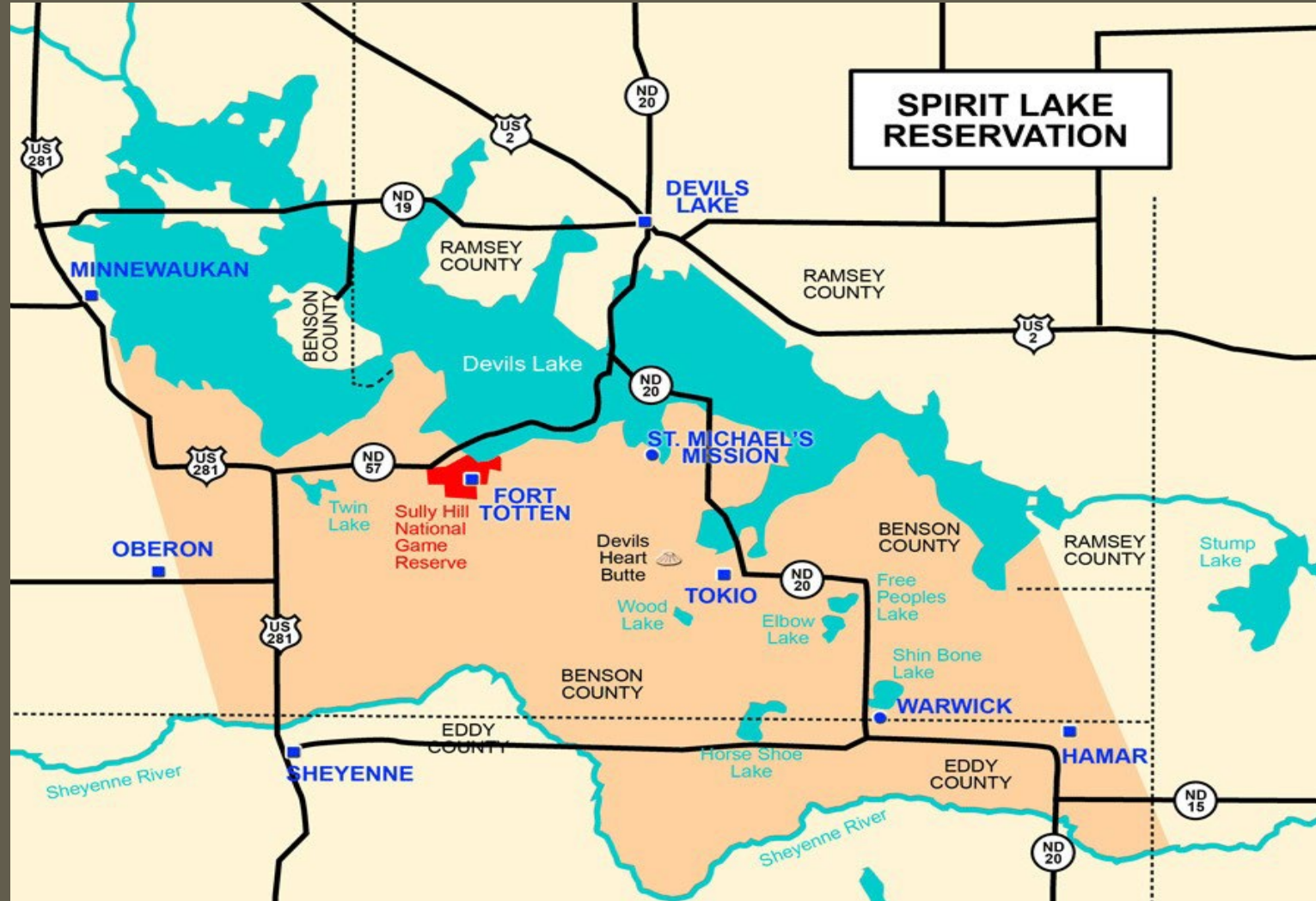
- Located in east-central North Dakota
- Federally Recognized - Treaty of 1867 between US Government and Sisseton Wahpeton Sioux Bands
- Tribal Leadership consists of Chairperson, Secretary-Treasurer, and Four District Representatives (one district representatives voted as Vice Chair)
 - Crow Hill, Fort Totten, Mission and Woodlake Districts
- 245,000 acres (383 square miles)
 - 38% or 93,000 acres – Tribally owned, allotted trust, and government
 - 62% or 152,000 acres – Fee Land
- Enrollment
 - 7,577 members but only
 - 3,674 reside within the boundaries



MAP OF SPIRIT LAKE RESERVATION



MAP OF SPIRIT LAKE RESERVATION



BACKGROUND (CONTINUED)



- Previous efforts with Wind Energy
 - Micon-108 Wind Turbine
 - Installed in 1997-98, lasted about 10 years
 - Used from Palm Springs
- Early 2000's Spirit Lake Tribe proposed a 49.5 MW Wind Farm Project and set aside the land



BACKGROUND (CONTINUED)



- IHS Clinic to Spirit Lake Health Center – June 1, 2016
 - Control of compact and operations – Title V Self Governance
 - Still receive federal dollars
- Currently process own 3rd party billing



BACKGROUND (CONTINUED)

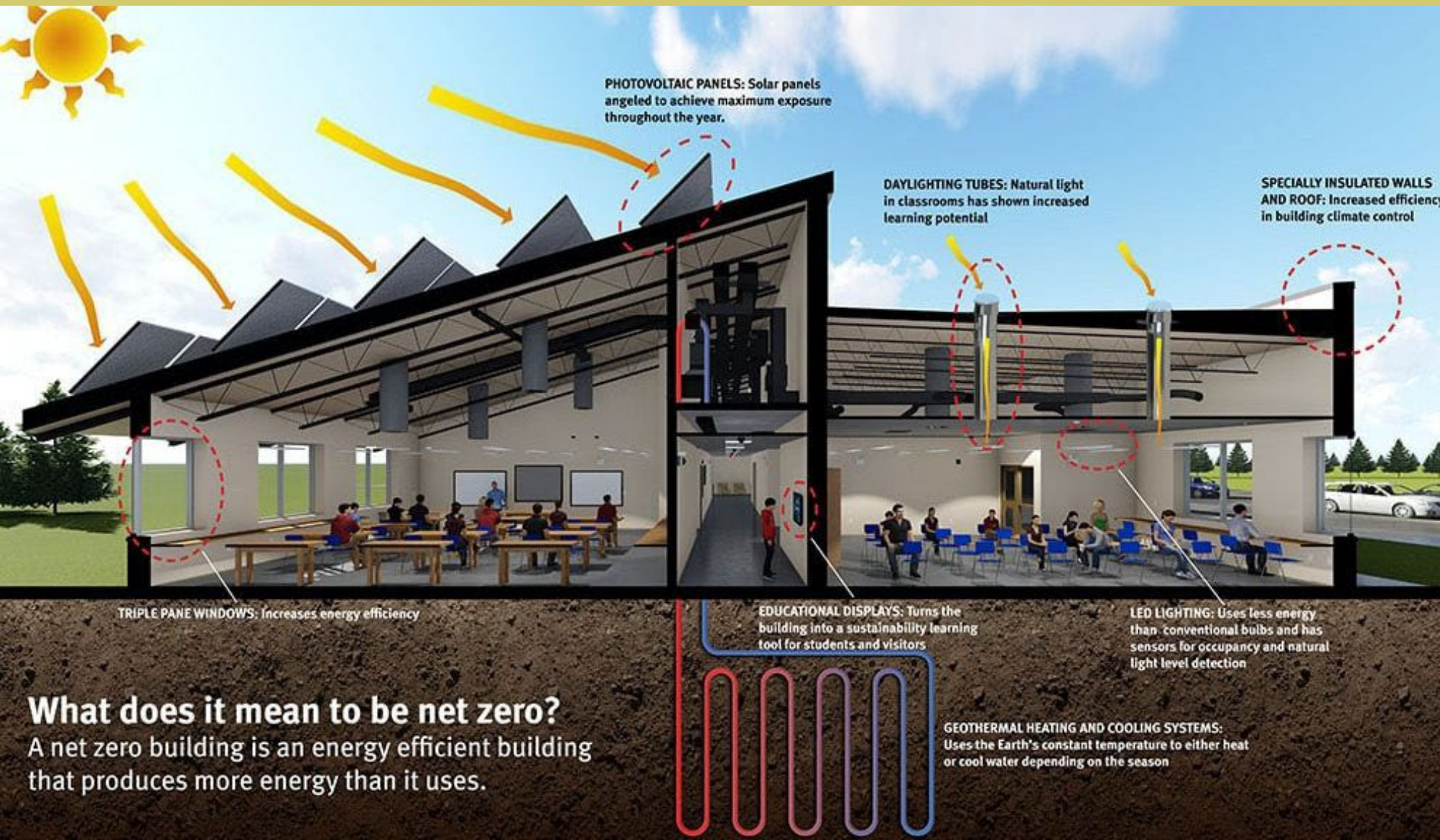


- New Clinic addition (Net Zero)
 - Geothermal heat pumps
 - Solar
- USDA funded expect to break ground in Spring 2023



NET ZERO SCHOOL

FIRST NET ZERO SCHOOL ON TRIBAL LANDS
DECEMBER 13, 2017



PHOTOVOLTAIC PANELS: Solar panels angled to achieve maximum exposure throughout the year.

DAYLIGHTING TUBES: Natural light in classrooms has shown increased learning potential

SPECIALLY INSULATED WALLS AND ROOF: Increased efficiency in building climate control

TRIPLE PANE WINDOWS: Increases energy efficiency

EDUCATIONAL DISPLAYS: Turns the building into a sustainability learning tool for students and visitors

LED LIGHTING: Uses less energy than conventional bulbs and has sensors for occupancy and natural light level detection

GEOTHERMAL HEATING AND COOLING SYSTEMS: Uses the Earth's constant temperature to either heat or cool water depending on the season

- Geothermal Heating and Cooling System
- Solar Panels
- Daylighting Tubes
- LED Lighting
- High-efficiency water-to-air heat pumps
- Insulated walls and roof
- Triple pane windows
- Educational displays

What does it mean to be net zero?

A net zero building is an energy efficient building that produces more energy than it uses.

NET ZERO SCHOOL



TRIBAL ENTITIES



- **Sioux Per Propane :**
- **Sioux Manufacturing Corporation – 250,000 sq ft**
 - Opened doors in 1974 as a joint venture with Brunswick Corporation
 - DoD funded contracts through Small Business Administrations 8(a) program of which we graduated in 1986
 - 1989, Spirit Lake Tribe purchased remaining share from Brunswick Corp and gained full ownership
 - Manufactured lightweight camouflaged screening systems(1974-1995),helmets (1980-1991), fabric weaving and coating to support helmet program.
 - In late 1980's produced composite spall liners from aramid "Kevlar" and fiberglass materials.

Currently Manufactured in 2020

- Woven Aramid (Kevlar) Fabric
- Aramid/Phenolic Prepreg
- Spall Liners for Combat Ground Vehicles
- Blast Resistant Floors for Commercial Vehicles
- Ablative Tiles for Vertical Launch Systems
- Bonded Ablative/Steel Assemblies



TRIBAL ENTITIES (CONTINUED)

Spirit Lake Housing Corporation – The Spirit Lake Housing corporation will provide low income, quality housing in a safe and healthy environment to the people of the Mni Wkan Oyate.



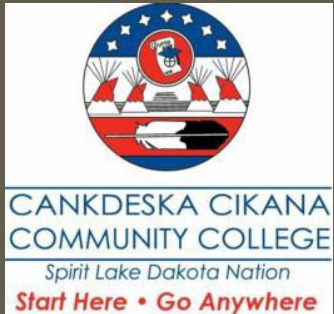
CCCC provides opportunities that lead to student independence and self-sufficiency through academic achievement and continuation of the Spirit Lake Dakota language and culture.

The Mission of the Four Winds Community School is to produce learners who excel academically, physically, spiritually, and socially by expanding curriculum and activities, increasing community involvement and integrating culture in the school environment



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TRIBAL ENTITIES (CONTINUED)



Spirit Lake Casino and Resort

- June 1, 1996
- 49,000 sq. ft.
- \$7 million cost
- 35 new jobs



TRIBAL ENTITIES (CONTINUED)



PROJECT OVERVIEW



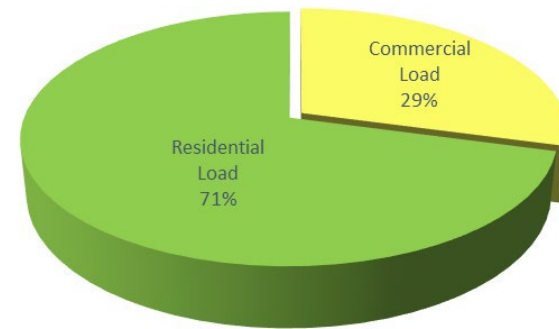
- * Project will address the energy cost on the Spirit Lake Reservation
- * Currently served by three different power companies
 1. Ottertail Power Company
 2. Northern Plains Electric Co-op
 3. Nodak Electric Co-op
- * Project goal is to reduce the electrical energy use of Tribal and Residential buildings within the boundaries of the Spirit Lake Reservation
- * Small Scale and Large Scale Wind Turbine Project
- * Energy Analysis and Organizational Assessment
- * Prior Tribal Utility Development frames this project

ENERGY ANALYSIS - USAGE

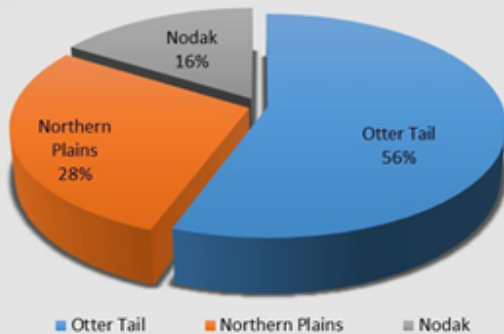


- The tribe is served by 3 utilities
 - Otter Tail Power Company
 - Northern Plains Electric Co-op
 - Nodak Electric Co-op

Residential vs. Commercial Usage



Load share of utilities



Utility	Total Usage (kWhs)
Otter Tail	15,105,886
Northern Plains	6,032,280
Nodak	3,263,172
Total	24,401,338

Missing Loads

Dakota Tribal Industries
Spirit Lake Fire Department
BIA Correctional Facilities
Warwick Public School
Oberon Grain Elevator
Fort Totten Historical Site
Oberon School
Sully's Hill National Game Preserve
Spirit Lake Roads Department
Other smaller loads

* Missing some large loads that are on the reservation

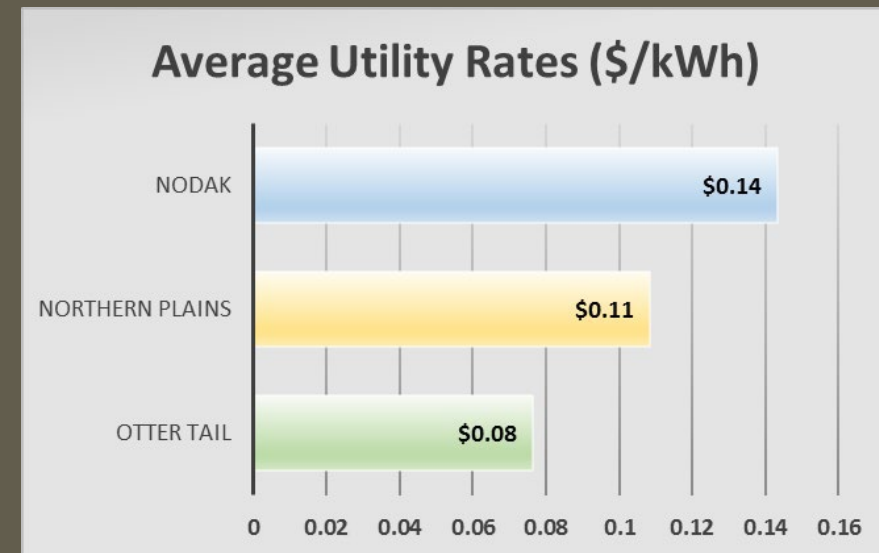
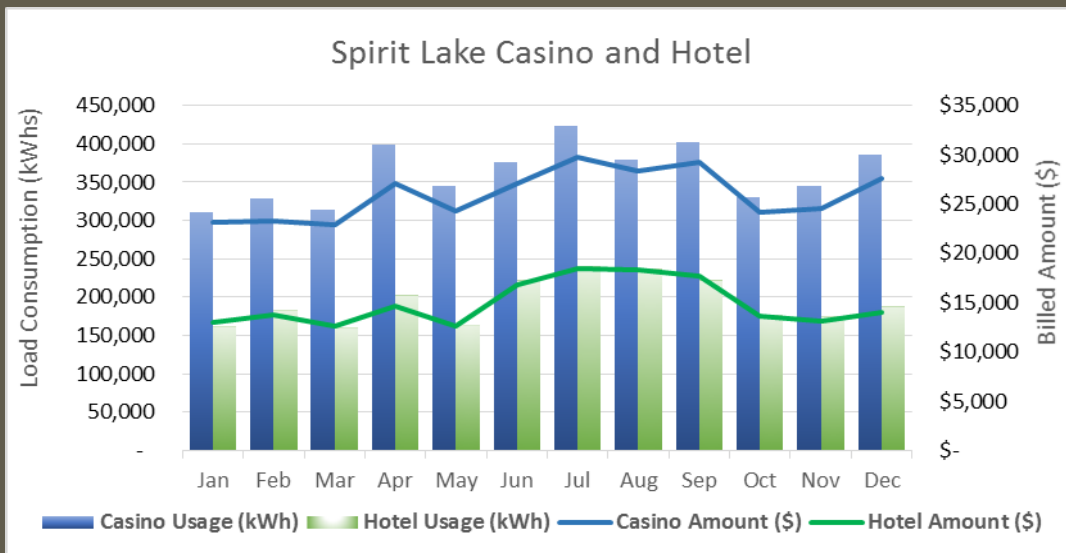
ENERGY ANALYSIS – COST OF SERVICE



Residential is the largest load followed by Casino and Hotel

- Estimated Electric Load: 24,401 MWh/year
- Total annual electricity spend: \$2.27MM
- Includes Gen, Trans, Distribution

Utility	Estimated Cost of Service
Otter Tail	\$1,154,068.96
Northern Plains	\$663,550.80
Nodak	\$456,844.08
Total	\$2,274,463.84



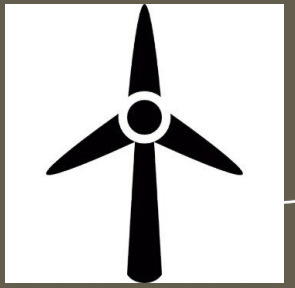
KEY STRATEGIC ELEMENT – CONTROL OF INTERCONNECTING MEANS



- Two substations located on trust lands
 - Otter Tail Power Company
 - Central Power Electric Co-op



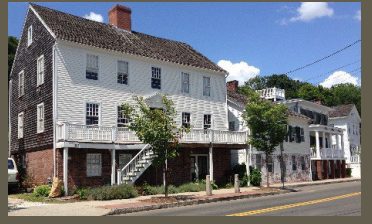
PROJECT MODEL: ENERGY PROJECT DEVELOPMENT IN CONTEXT OF TUA



DG Wind Project



Large Wind Project



Tribal members

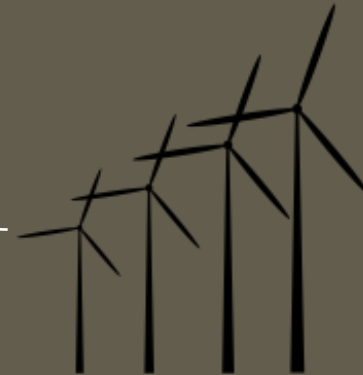
PROJECT MODEL: ENERGY PROJECT DEVELOPMENT IN CONTEXT OF TUA



← Electric Utility Services
→ Bill payments
\$430K



Lease and Dev fee
\$350K

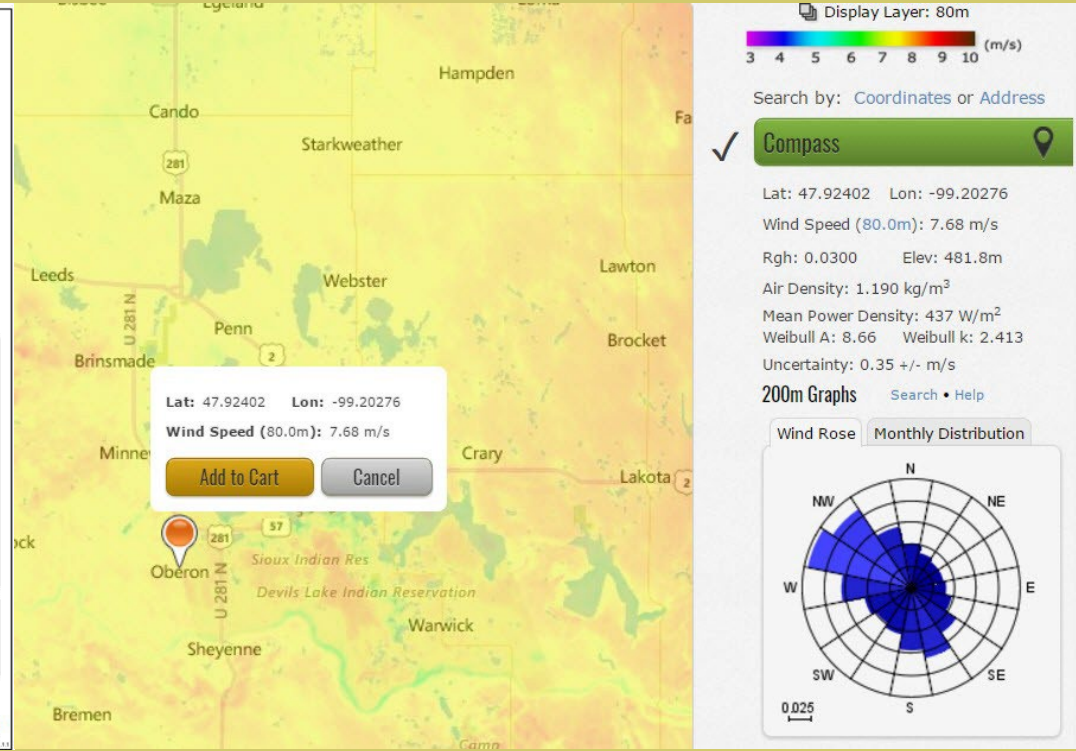
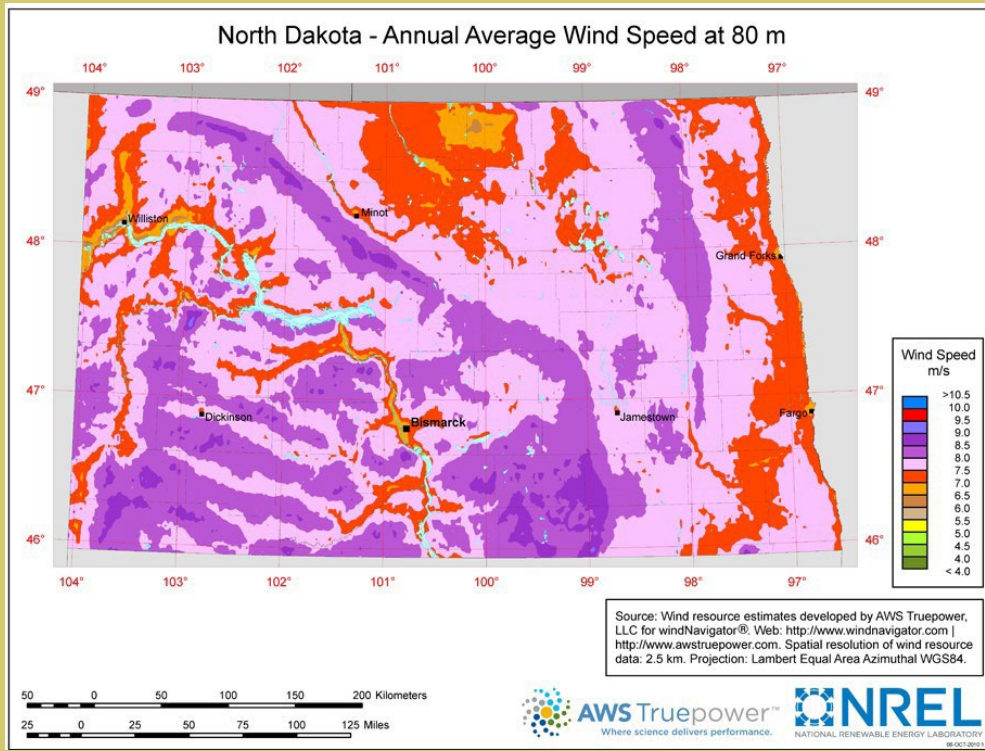


Large Wind Project

PROJECT LOCATION



- ND has the best wind resource in US but only 16% of its electricity generation is from wind recent coal announced
- Fort Totten, ND : Estimated wind speed = 8.2 m/s
 - Good wind resource for an economically feasible project
- Capacity factor: 44-48%

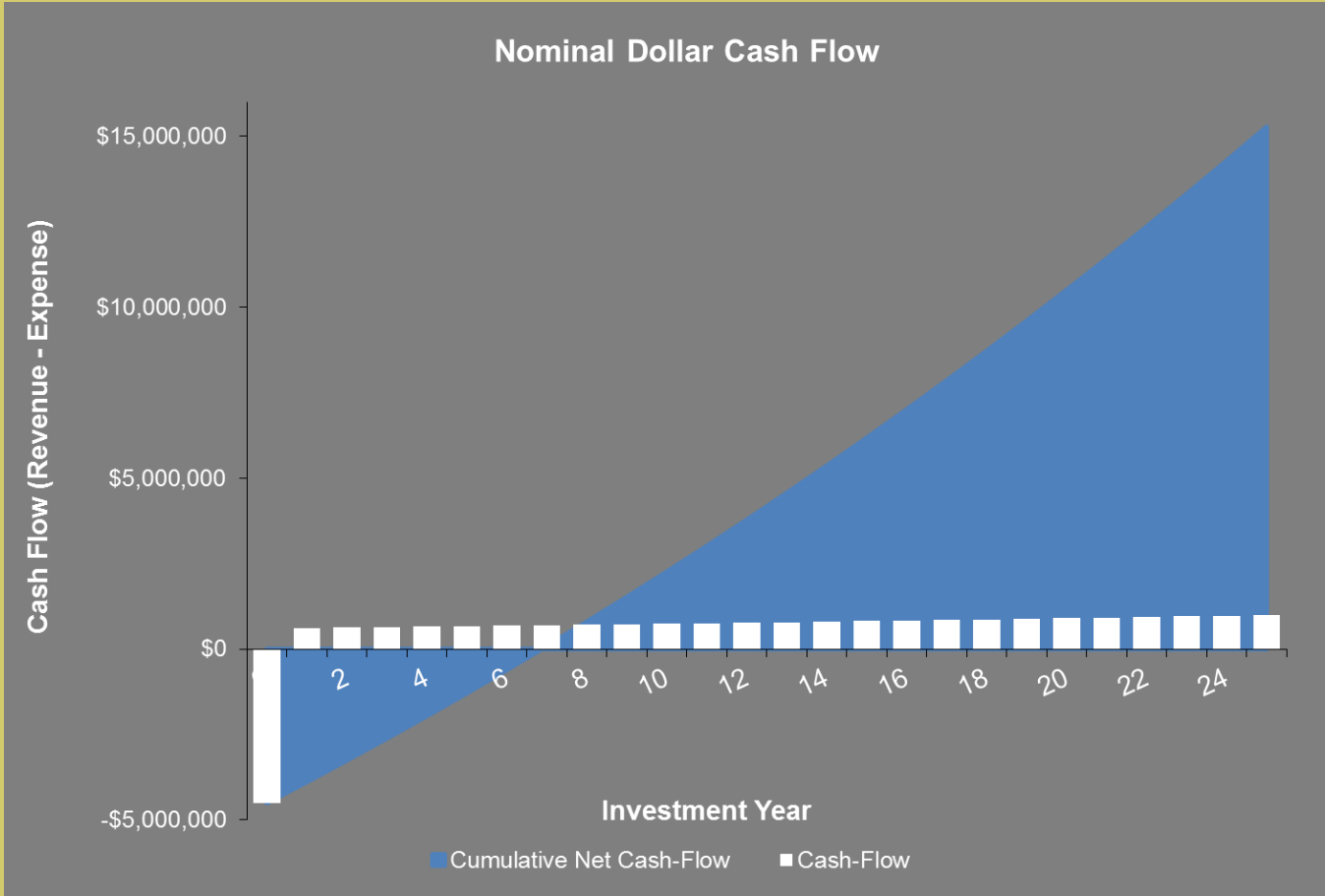


PROJECT PRO-FORMA



Power Output (kWh/year)	5,501,664
Average Cost of Electricity (\$/kWh)	\$ 0.12
Nominal Electricity Escalation Rate (%/year)	2%
Analysis Period (Years)	25
Total Installed Cost / Lease Initial Cost	\$ 4,500,000

Payback Period (SPB)	7
Rate of Return (IRR)	15%
Net Present Value (NPV)	\$9,469,808



PROJECT COSTS



- Total Project Cost = \$5.0 million
 - DOE Grant = \$1 million
 - COVID relief = \$750,000
- Remaining Cost Share = \$3.2 million
 - Potential Partnership considerations
 - Tribal Funds/Resources



PROJECT PROGRESS



Progress Timeline:

- Grant Award/Agreement May 1, 2019
- Signed Grant Agreement by TC in Sept 2019
- Change of Chairperson in June of 2020
- Environmental Assessment completed – July 2020
- Began interconnection application to Otter Tail – Summer 2020
- Gathered and reviewed ROW data on local substation – October 2020
- Signed new WAPA contract – December 2020
- Completed Geotechnical Assessment October 2022
- TUA documents created Summer 2022
- Utility District land identified and designated August 2022
- TSA and EPC agreements in final negotiation



NEXT STEPS



- Approval of Tribal Utility Authority Paperwork (TUA)
- Interconnection Agreement with Otter Tail
- EPC and TSA finalized
- Transport and Crane Walk Plan
- Foundation Pour
- Erection of turbine and BOP



PARTICIPANTS



- Ryan Brown, Economic Development Planner, Spirit Lake Tribe
- BakerTilly US, LLP
- WES Engineering
- Spirit Lake Tribal Council
- Vensys US
- Department of Energy, Office of Indian Energy



U.S. DEPARTMENT OF
ENERGY

Office of
Indian Energy

QUESTIONS??



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