PENOBSCOT NATION SUSTAINABLE ENERGY

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Director of Economic and Community Development
Penobscot Indian Nation

WHO WE ARE

Penawahpkekeyak, the people of the rocky river.

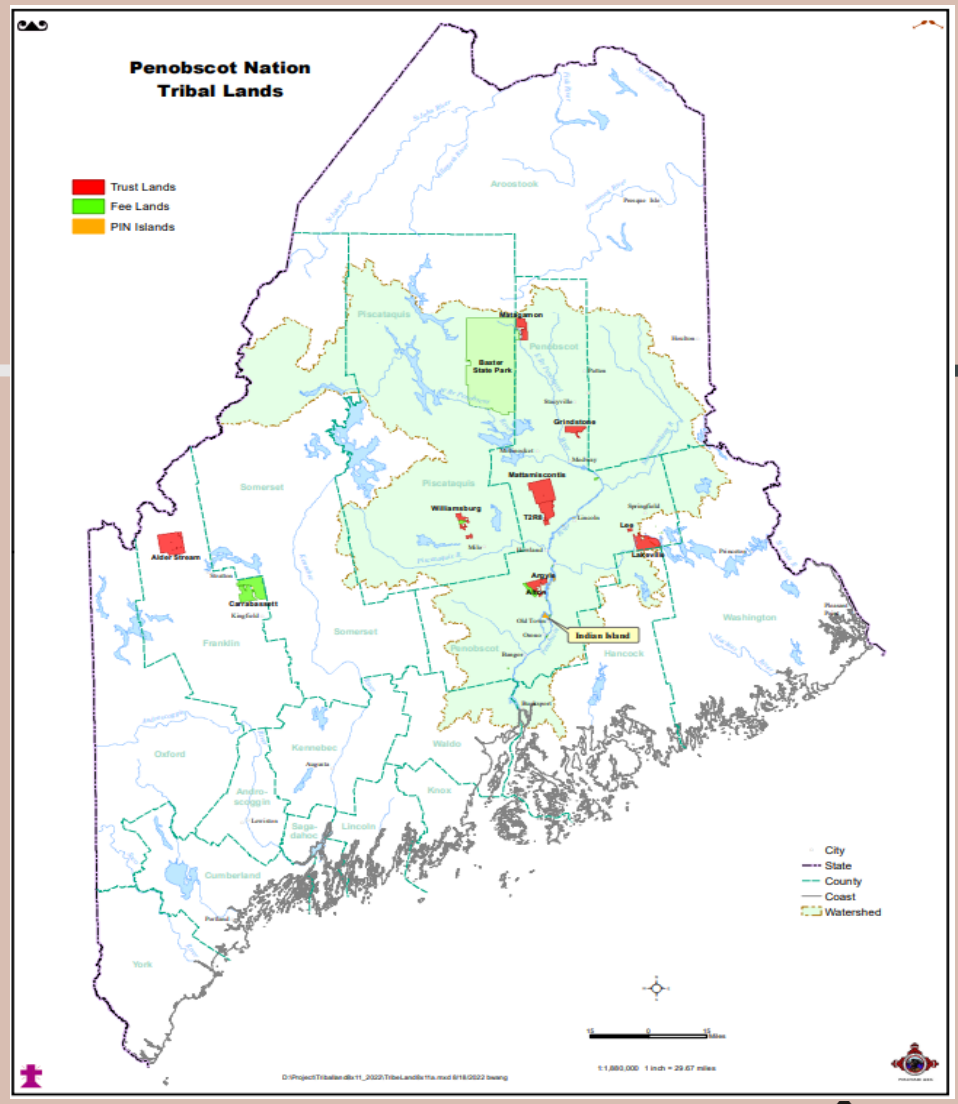
Federally-recognized tribe in central Maine on the Penobscot river.

2,400 Tribal citizens, 553 on Alenape meneha (Indian Island Reservation).

4,900 acres of reservation land, 200+ islands in Penobscot River, 90,000 acres of trust and fee land, 130,000 acres total.

Government; Chief, Vice-Chief, 12 member council.

Median income $41,500, 5.3% unemployment.



LEADERSHIP

Experience

- 30 years in Economic Development
  - Director of Economic Development since 2022
  - 1994-2020, Independent Consultant in Economic and Community Development Projects in Europe
  - 1983-1987 72E US Army, West Germany

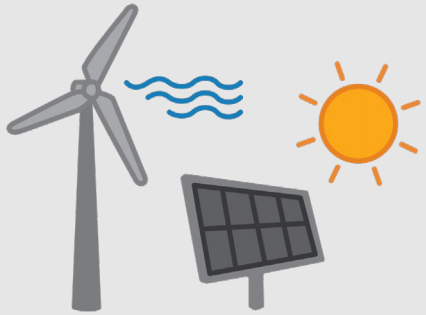
Education

- Oregon, B.A International Studies, Russian Eastern European Studies, MCL; 1994, J.D
- 1991 Fulbright, Hungary

UNIVERSITY OF OREGON

TRIBAL PRIORITIES

U.S. DEPARTMENT OF ENERGY



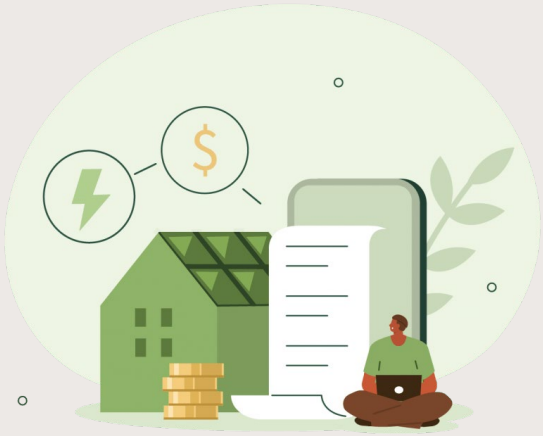
CEDS-Defined

- Develop, use, store and sell generated RE
  - Engage in regional energy storage and microgrids outside Indian Island
- Expansion of Tribal tourism
- Increase Tribal economic self-reliance
- Attract/develop large-scale business
- Asset-based development utilizing NR

Energy-Related

- Utilize tax credit programs to spur renewable energy projects
  - In Maine and the rest of United States
- Expand Wabanaki energy engagement
- Greater energy cooperation with non-Tribal regional stakeholders
- Creation of Tribal microgrid

OPPORTUNITIES AND CHALLENGES



Opportunities

- Unique status for federal tax-credit programs
- DOE grant and technical assistance programs
  - LPO a potential *major* resource
- Regional (Maine) emphasis on renewable energy development
- Cooperation with University of Maine

Challenges

- Tribal funding availability
- Work capacity for grant/project implementation
- Federal regulations
- Reservation land availability
- Utility upgrades

TRIBAL PROJECTS

Direct Projects

- $5,000,000 84 KW + 1.54 MW DC installation in community
- Heat pump for commercial area, 750k
- 100 MW storage facility in Lincoln, ME
  - Tribe as a partner
  - $147,000,000
- Texas Project 334MW project

Regional Affiliations

- Maine Gov Solar For All
- Partner in two solar consortiums
- Lead coordinator for Wabanaki Sustainable Energy

TAX CREDITS

Specifications

- Unique status for Tribes
  - High number of applicable funds
  - **Stackable**
- Use of DoE/IRA
  - Low-Income Communities Bonus Credit
  - Clean Energy ITC
  - Renewable Energy PTC
  - Advanced Energy Project Credit
  - Clean Energy Communities, et cetera
- Assistance and benefits
  - Direct Payment instead of tax offset
  - Technical support for storage, microgrids
  - Flexibility in domestic content requirements
  - DoE general technical support

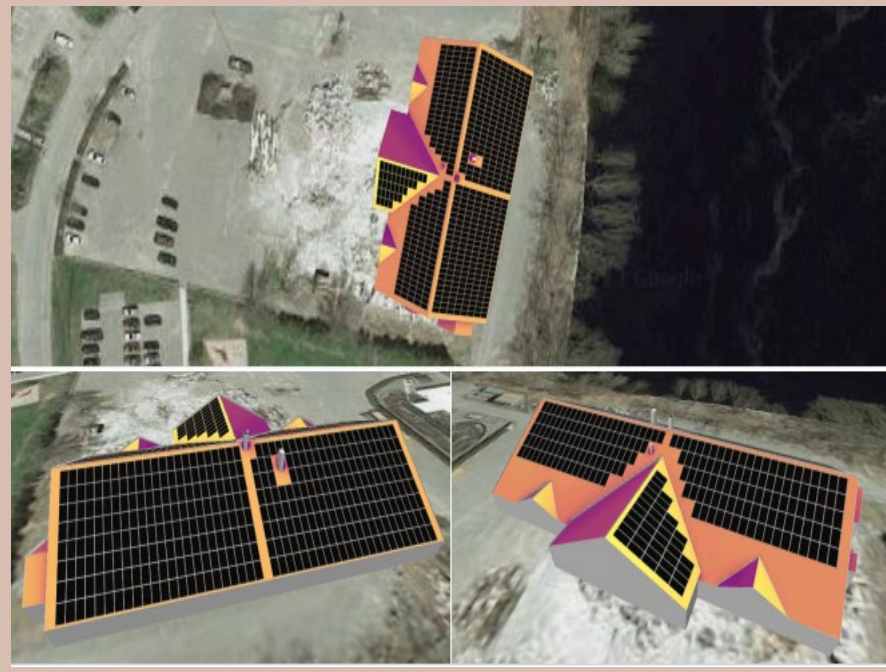
Summary of Investment Tax Credit (ITC) and Production Tax Credit (PTC) Values Over Time

			Start of Construction						
			2006 to 2019	2020 to 2021	2022	2023 to 2033	The later of 2034 (or two years after applicable year[a])	The later of 2035 (or three years after applicable year[a])	The later of 2036 (or four years after applicable year[a])
ITC	**Full rate** (if project meets labor requirements[b])	Base Credit	30%	26%	30%	30%	22.5%	15%	0%
		Domestic Content Bonus				10%	7.5%	5%	0%
		Energy Community Bonus				10%	7.5%	5%	0%
	Base rate (if project does not meet labor requirements[b])	Base Credit	30%	26%	6%	6%	4.5%	3%	0%
		Domestic Content Bonus				2%	1.5%	1%	0%
		Energy Community Bonus				2%	1.5%	1%	0%
	Low-income bonus (1.8 GW/yr cap)	<5 MW projects in LMI communities or Indian land				10%	10%	10%	10%
		Qualified low-income residential building project / Qualified low-income economic benefit project				20%	20%	20%	20%
PTC for 10 years ($2022)	**Full rate** (if project meets labor requirements[b])	Base Credit			2.75 ¢	2.75 ¢	2.0 ¢	1.3 ¢	0.0 ¢
		Domestic Content Bonus				0.3 ¢	0.2 ¢	0.1 ¢	0.0 ¢
		Energy Community Bonus				0.3 ¢	0.2 ¢	0.1 ¢	0.0 ¢
	Base rate (if project does not meet labor requirements[b])	Base Credit			0.55 ¢	0.55 ¢	0.4 ¢	0.3 ¢	0.0 ¢
		Domestic Content Bonus				0.1 ¢	0.0 ¢	0.0 ¢	0.0 ¢
		Energy Community Bonus				0.1 ¢	0.0 ¢	0.1 ¢	0.0 ¢

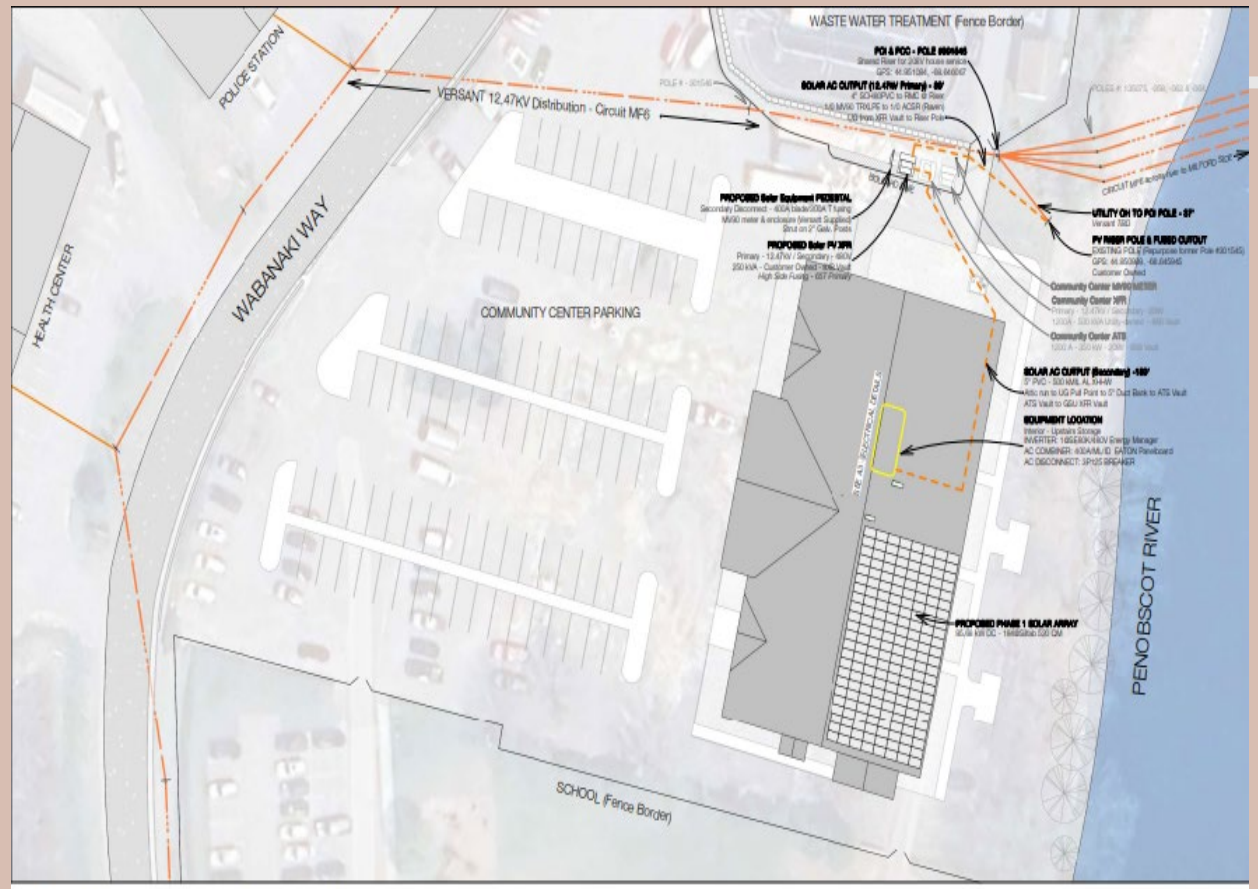
COMMUNITY CENTER

Specifications

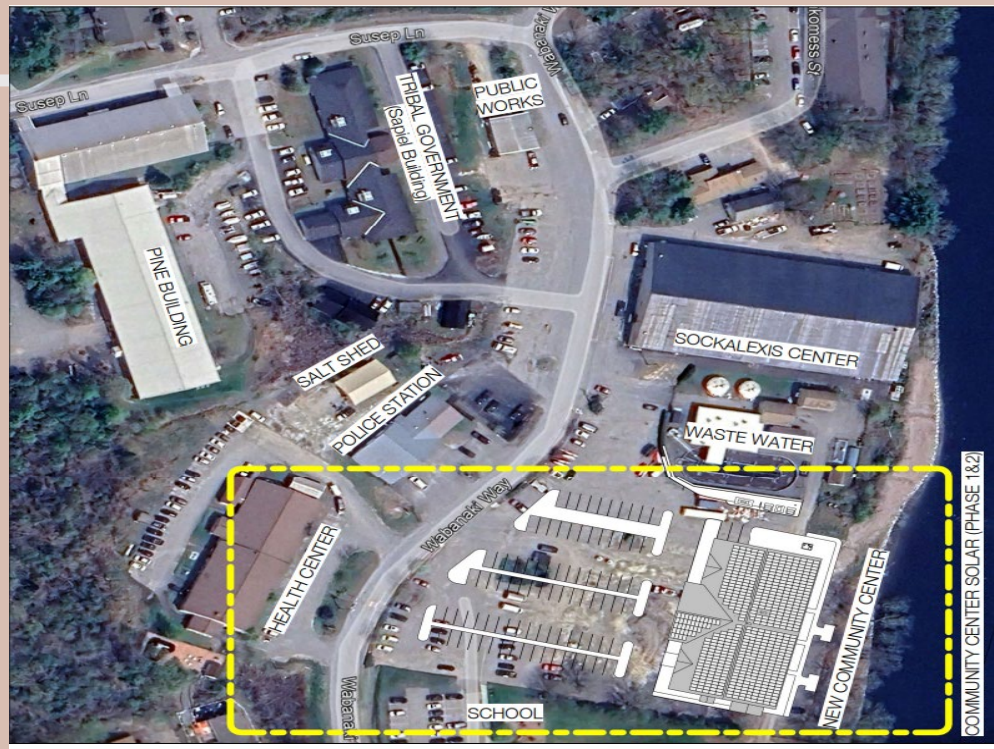
- "Stage 1" of microgrid project
- 84KW installation
  - Addition to a new $8,500,000 community center
  - $750,000 heat pump
- 600 PV modules, 2 inverters
- 221 tons CO2 saved annually
  - Equal to planting 10,153 trees per year



COMMUNITY CENTER



② SITE PLAN (Community Center) - PHASE 1
1" = 50'-0"



③ SITE PLAN (Municipal Campus) - PHASE 2
1" = 100'-0"

HEAT PUMP

Energy and Climate Sustainability

- Installed in Public Safety, Maintenance and Administration
  - $12,000 annual savings per building
  - 300-400% energy efficiency (compared to boilers)
  - 4.4 metric tons CO2 reduction annually per building
- Funded through EPA
  - Incentives received through Efficiency Maine
  - Contributes to microgrid

HEAT PUMP

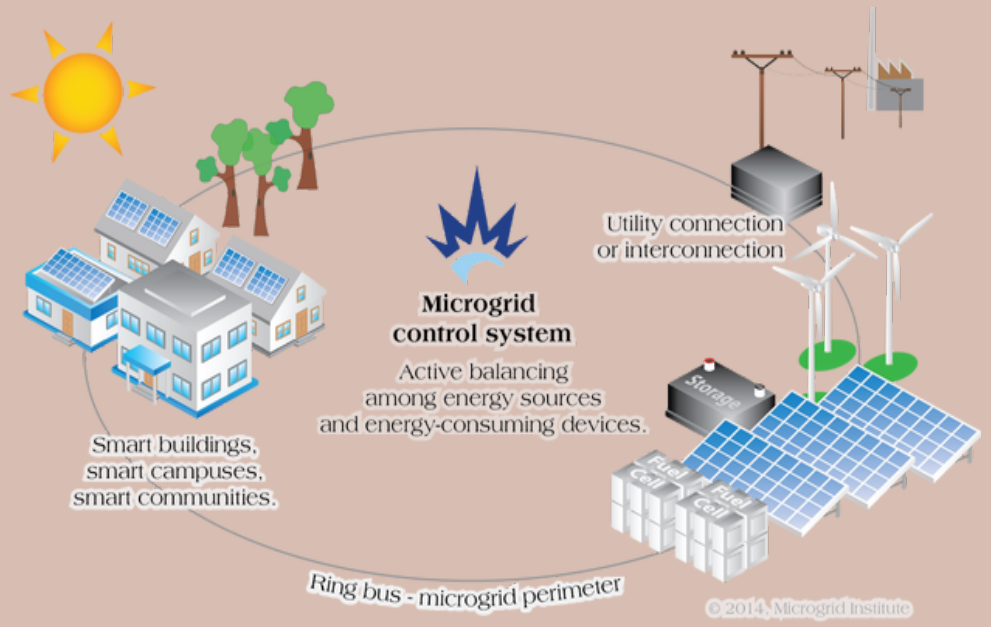
Installations

- Installed in municipal buildings
  - Public safety
  - Public works
  - Tribal administration
- ⇩ = installed heat pump

MICROGRID

In-Progress

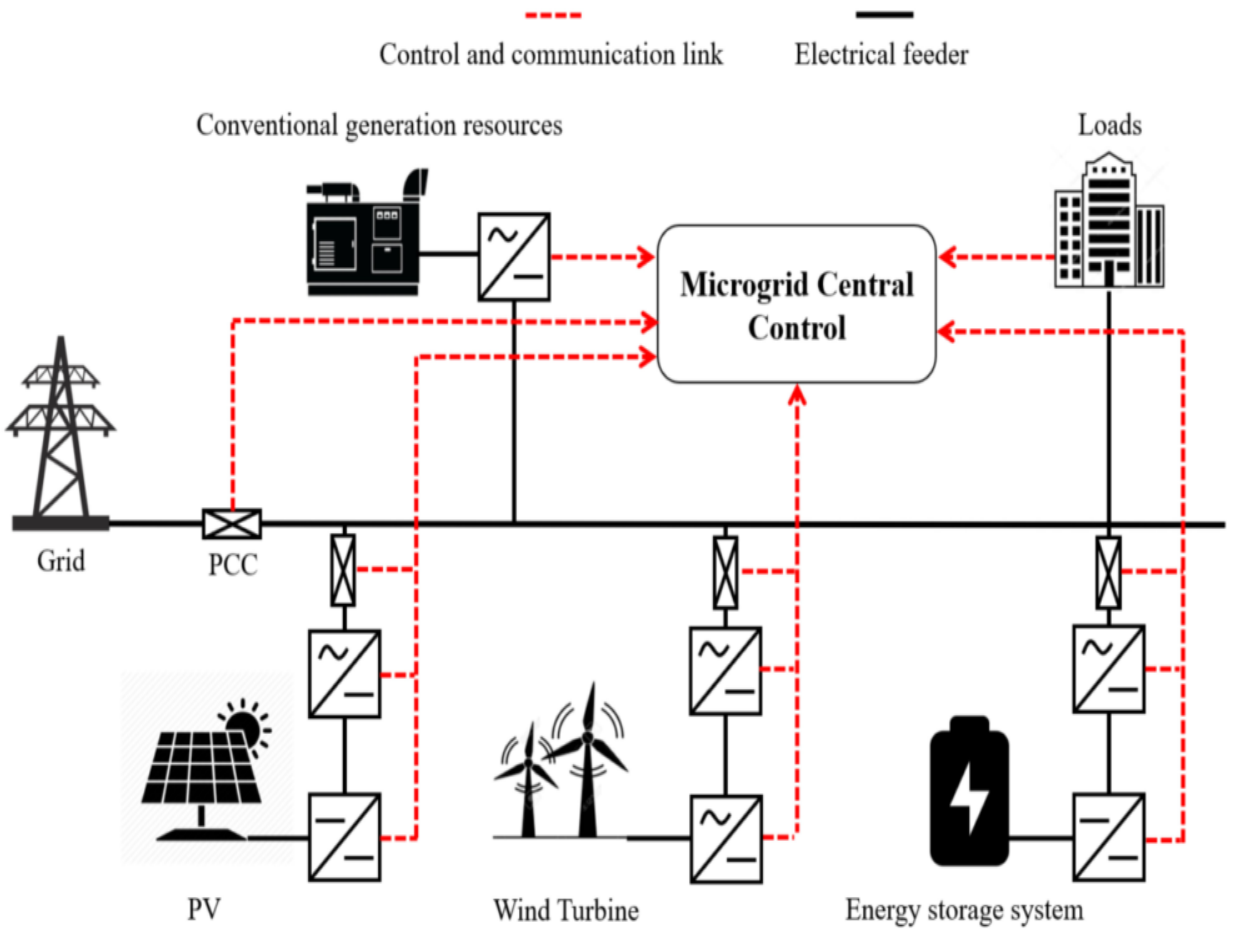
- "Stage 2" using community center + 1.54 MW DC build-out
  - $624,000 annual savings
  - Powers all Tribal buildings
- Aim to create domestic storage in place of interconnection
  - Application ongoing

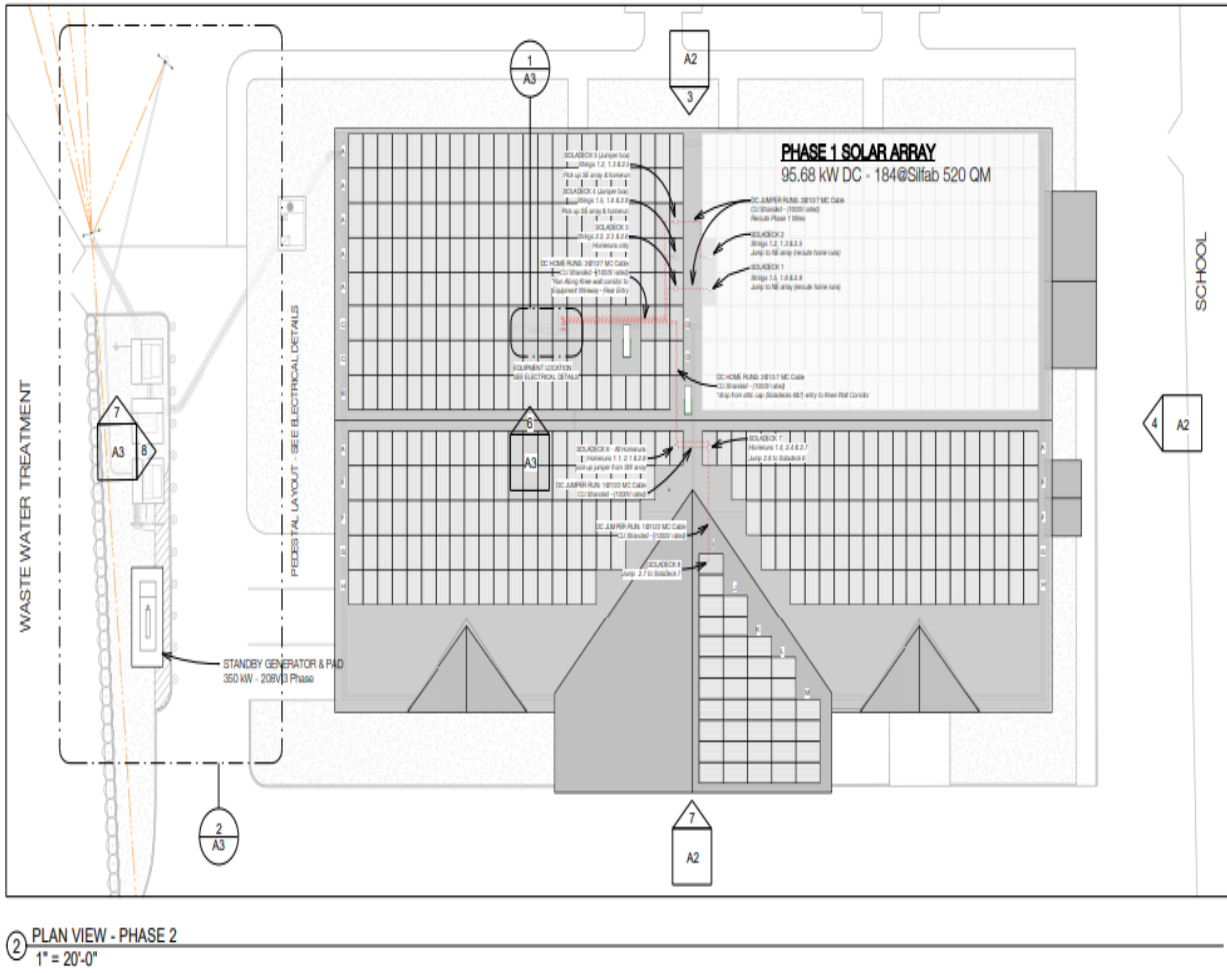


Microgrid Vision

- Grid connection
  - PCC connect to grid
- Power generation
  - Solar panels/wind
- Distribution
  - VPP software
- Storage
  - Battery storage (lithium or rust)

MICROGRID

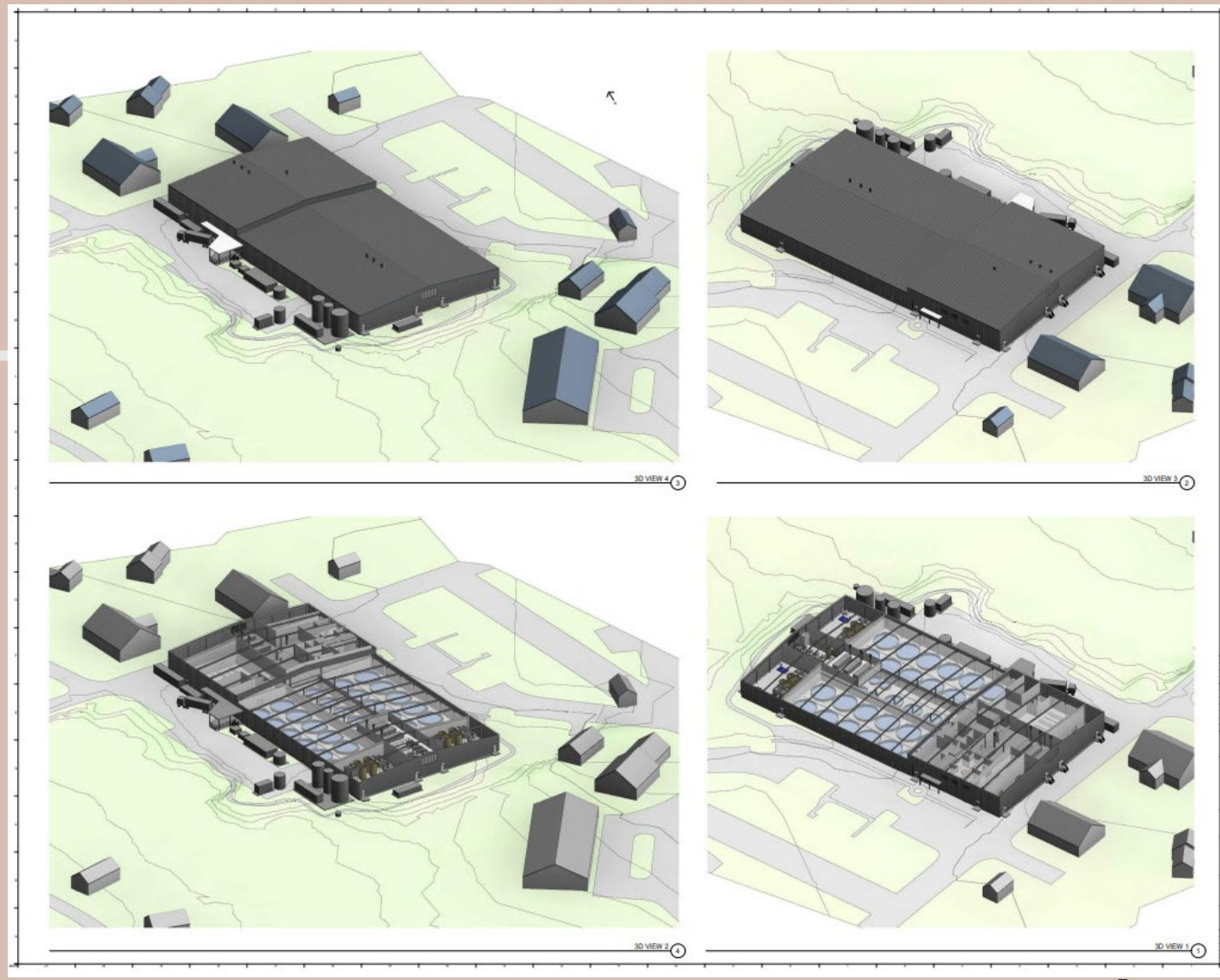

Control and communication link
Electrical feeder
Conventional generation resources
Loads
Microgrid Central Control
Grid
PCC
PV
Wind Turbine
Energy storage system


PHASE 1 SOLAR ARRAY
95.68 kW DC - 184@Silfab 520 QM
WASTE WATER TREATMENT
PEDESTAL LAYOUT - SEE ELECTRICAL DETAILS
SCHOOL
STANDBY GENERATOR & PAD
350 kW - 208V/3 Phase
PLAN VIEW - PHASE 2
1" = 20'-0"

SALMOGEN

Renewable Energy

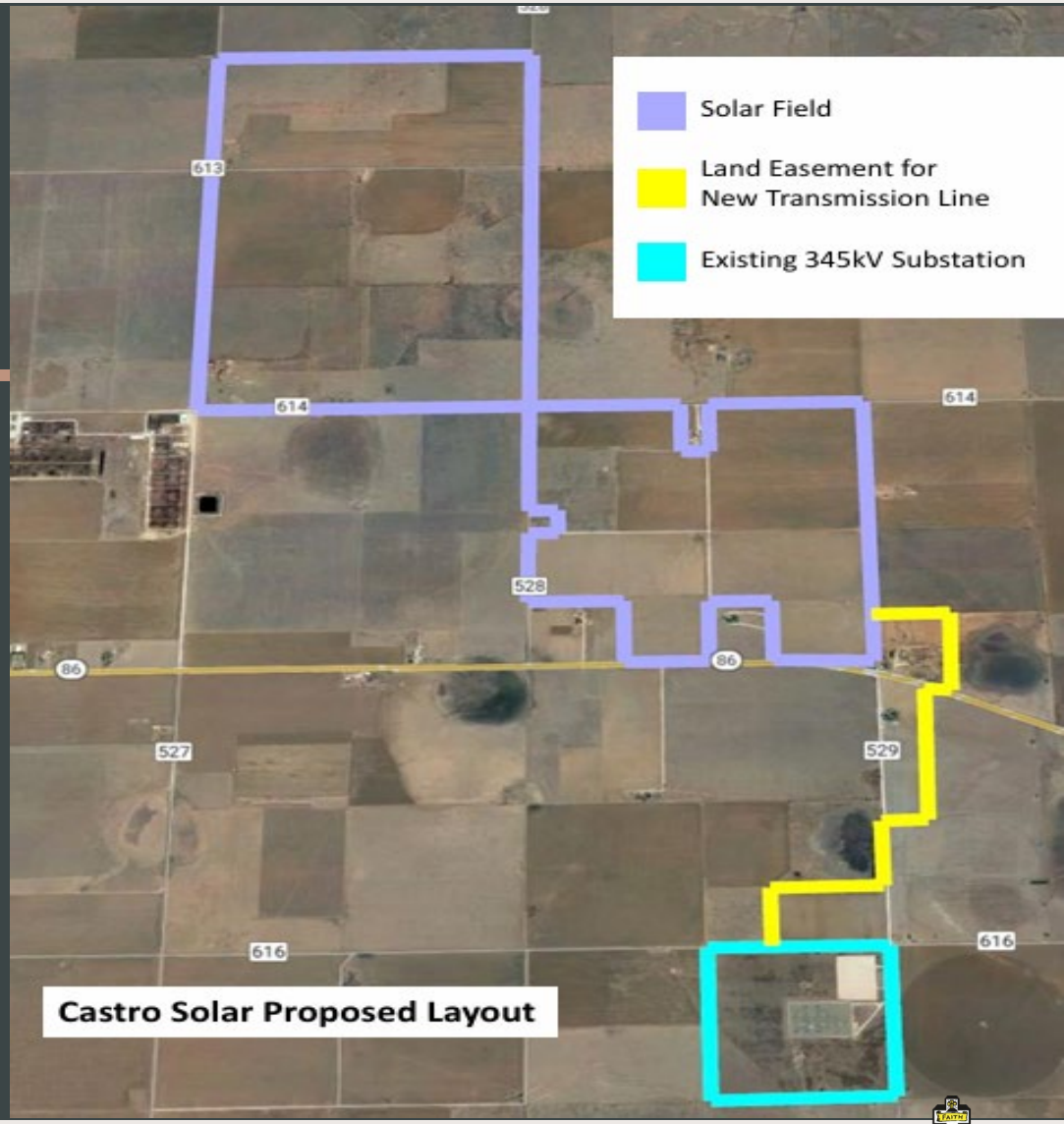
- North Atlantic salmon brood aquaculture center
  - 100% solar powered
  - Ability to feed back to microgrid
  - 4 ground-mounted heat pumps
  - Energy-efficient building design
- Energy tax credits applied
  - ITC (panels and battery storage)
  - Renewable Energy PTC



TEXAS PROJECT

Project Overview

- Located in DoE-designated energy community
- 300+ MW DC production capability
- Utilizes various DoE and IRA investment credits
  - Operation and maintenance jobs created for 25 year period
  - Preference for Native workers
- 540,000 620-watt, bifacial, mono-crystalline PV modules



REGIONAL COOPERATION

Tribal

- Wabanaki Sustainable Energy professional
  - Coordinates SE for all 5 tribes
- Wabanaki Digital Equity professional
  - Coordinates broadband
- Knowledge sharing on RE through USET

Maine

- Partner in 2 solar consortiums
  - Conducting community solar
- Partner in Solar For All
- Community Resiliency Partnership member

Financial

- Check on warehouse update
- Fix software issues
- Finish drafting solution
- Resolve budget question

Technical Assistance

- h

DOE'S IMPACT

Loan Programs Office

WÈLIWƏNI (THANK YOU)

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www.penobscotnation.org/administration/economic development