Tanana Chiefs Conference Energy Program

Dave Messier

TCC Rural Energy Coordinator

Dave.pm@tananachiefs.org

Tanana Chiefs Conference

"Stronger Together for the Next 100 Years"

The Organization

Tanana Chiefs Conference is a Tribal Consortium representing 42 federally recognized tribes, and 37 villages.

MISSION: “Tanana Chiefs Conference provides a unified voice in advancing sovereign tribal governments through the promotion of physical and mental wellness, education, socioeconomic development, and culture of the Interior Alaska Native people.”

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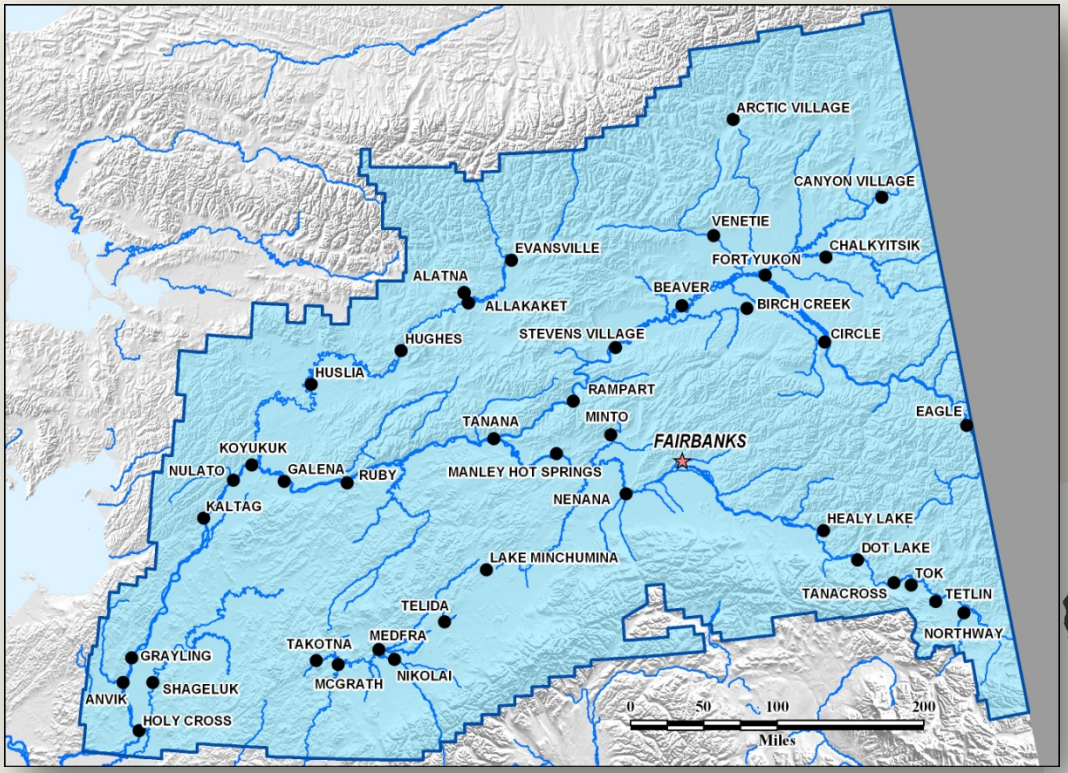
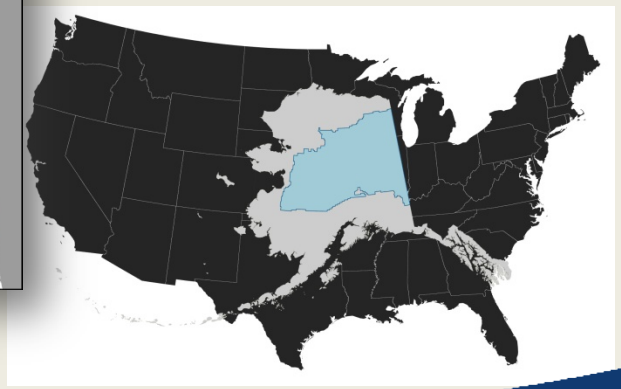
The Region



- 235,000 Square Miles
- 37% of the State
- Extreme Subarctic
- Majority off road system



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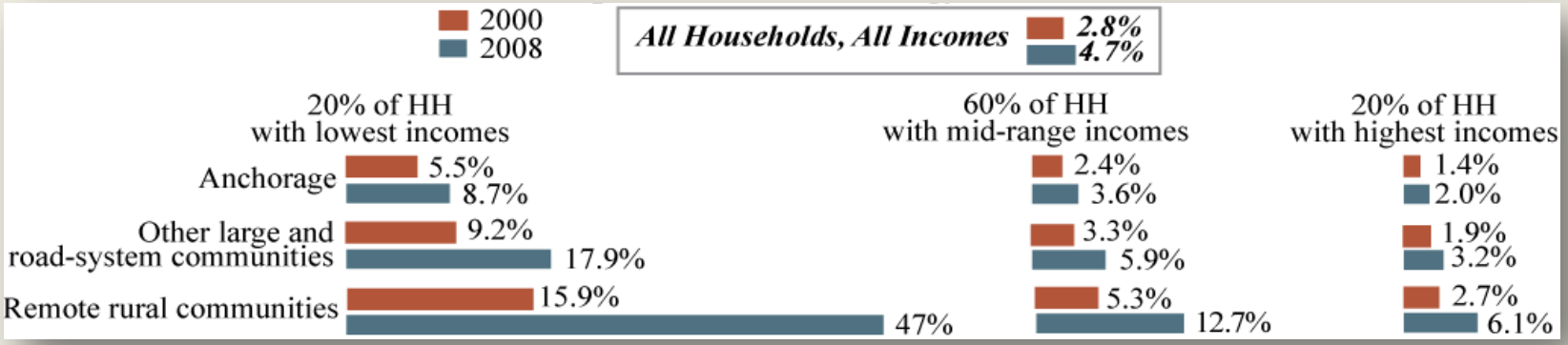
The Challenges

- Outdated Infrastructure mostly built in the 1960s – 1980s
- Brain Drain from villages to big cities
- Majority off road system
- Avg. Village load is about 100-150 people, ~75kW load
- Roughly the size of Texas, fewer miles of road that Rhode Island

Estimated Median Share of Income Alaska Households Spend for Home Energy Use (ISER)



TCC Energy Program Goals

1. Reduce the cost of Energy in Rural Alaska
2. Build Capacity in Rural Communities
3. <u>DO NOT get overwhelmed by the enormity of the challenge</u>

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TCC Energy Model

1. Collect Data and Plan!

2. Efficiency First!

3. Renewable Energy
(BIOMASS! SOLAR!)

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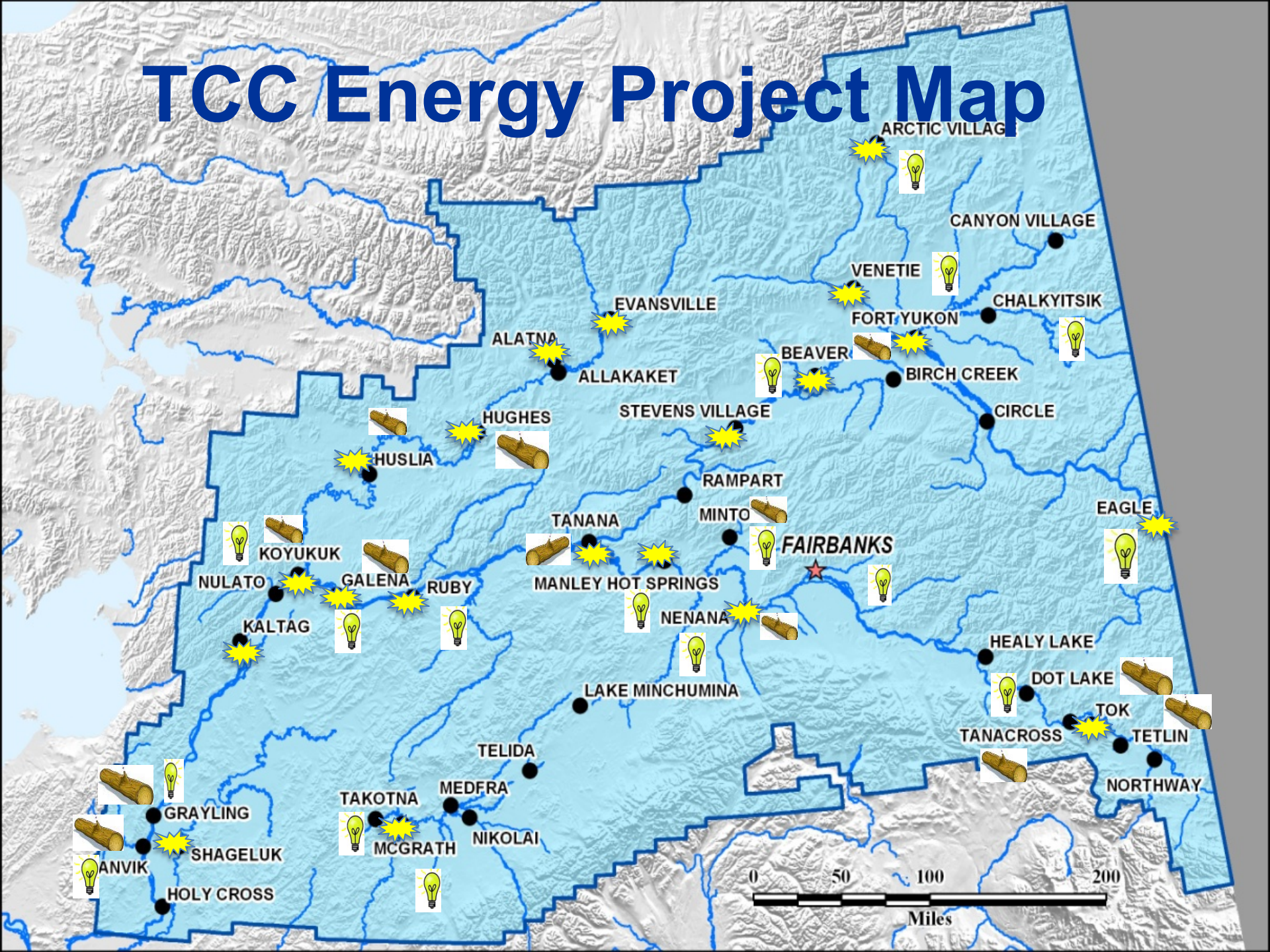
TCC Energy Project Map



Past Projects "Portfolio"

- DOE- 18 kW solar array, Fort Yukon Tribal Energy Program, $128k
- DOE - START Weatherization projects Minto/Koyukuk $500k
- DOE- High penetration 150kW solar pv array in Hughes - $623k
- DOE- Inter-Tribal Tech Assistance Providers Network TCC $1 mill
- VEEP Energy Efficiency in McGrath, Minto $200k /ea
- Diesel Generator Loan – Arctic Village $100k
- Anvik and Minto Biomass Projects $650k
- RACEE Projects in Holy Cross, Ruby, Galena, $1.2mill
- Northway Transmission Project
- Manley Hot Springs Village Council Interconnection Project

Lakeview Lodge

Leveraging Outside Expertise: Minto, Alaska

April 2013 – Had a check signed and about to be put into the mail to purchase a Biomass Boilers:

Problems:

1. No historical energy use data
2. Poorly insulated building
3. Tribe was going broke on heating/electric bills

Lake View Lodge : During Efficiency Work

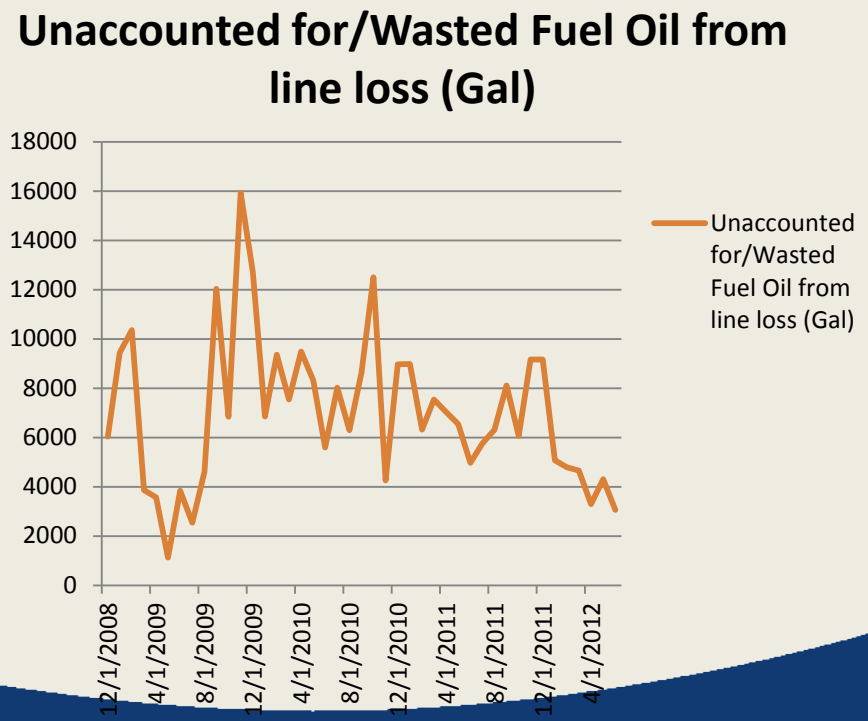
Minto Alaska START Successes

1. All local labor used to renovate building
2. LED lighting installed throughout
3. Upgraded Thermostat/boiler system
4. Additional Insulation in Attic, walls and floors
5. Biomass CORRECTLY SIZED FOR THE HEATING LOAD
6. Building can be FULLY UTILIZED by tribal staff!
7. **Estimated 50% reduction in Energy Use**

Why the heck did I mention this?

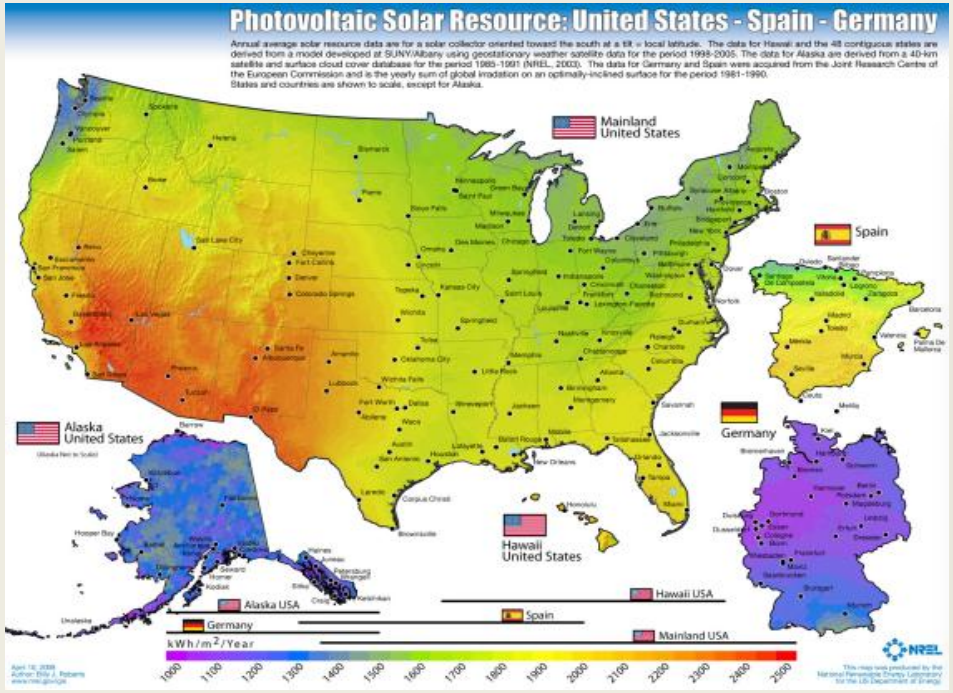
….b/c this is the approach we are taking on energy and the **Dept of Energy Tribal Energy Program has helped us get there**

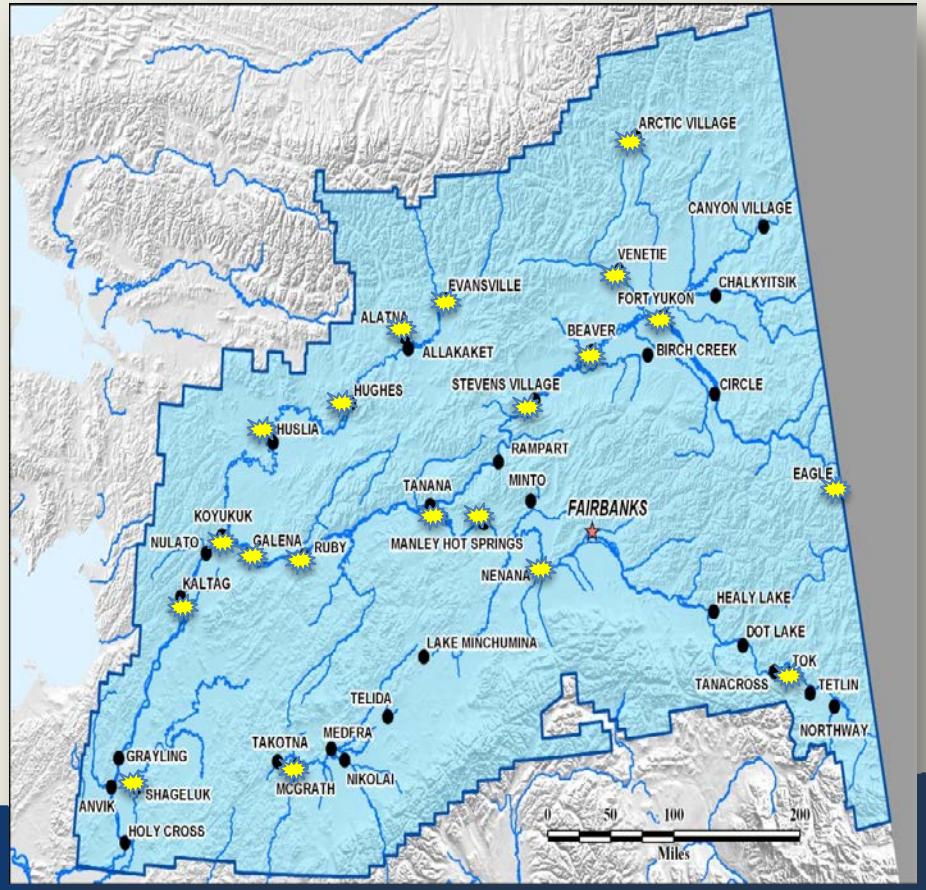
1. Attacking Utility Line Loss
2. Utility Maintenance
3. Energy Efficiency
4. Renewable Energy



Largest Solar PV array North of the Arctic Circle (in Alaska)

Solar in Alaska Vs. Germany





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18 kW Solar PV Array On Tribal Office

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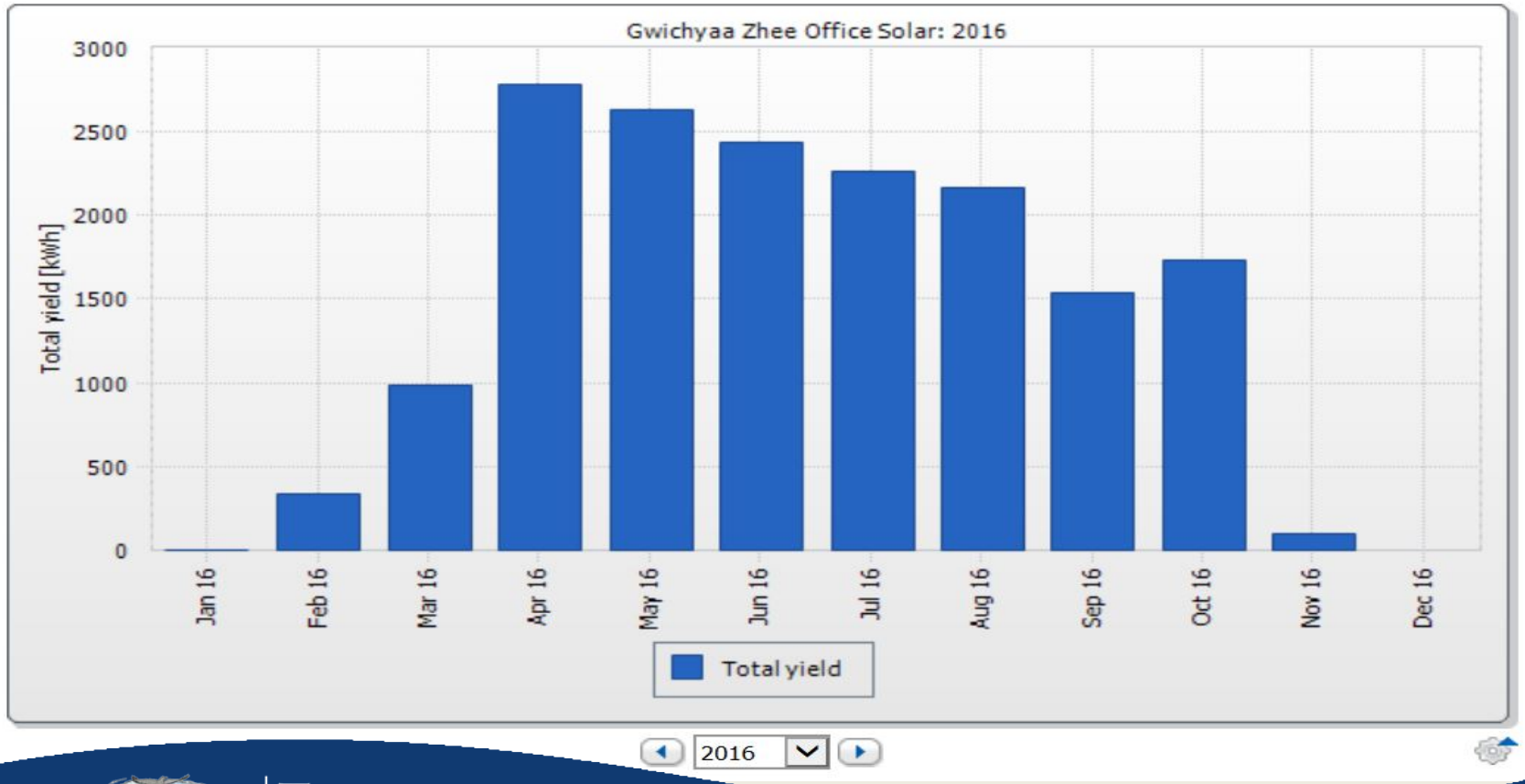
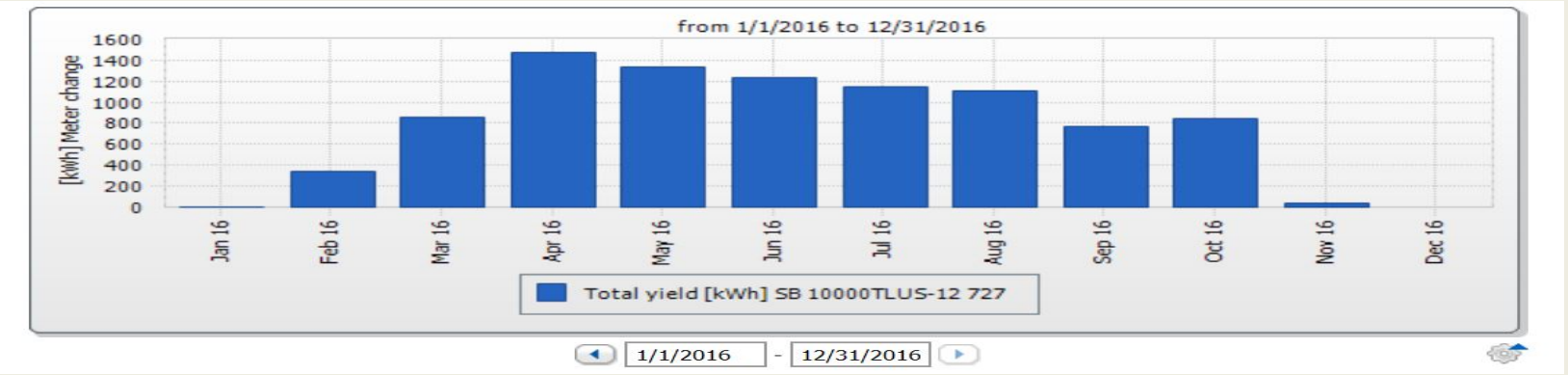
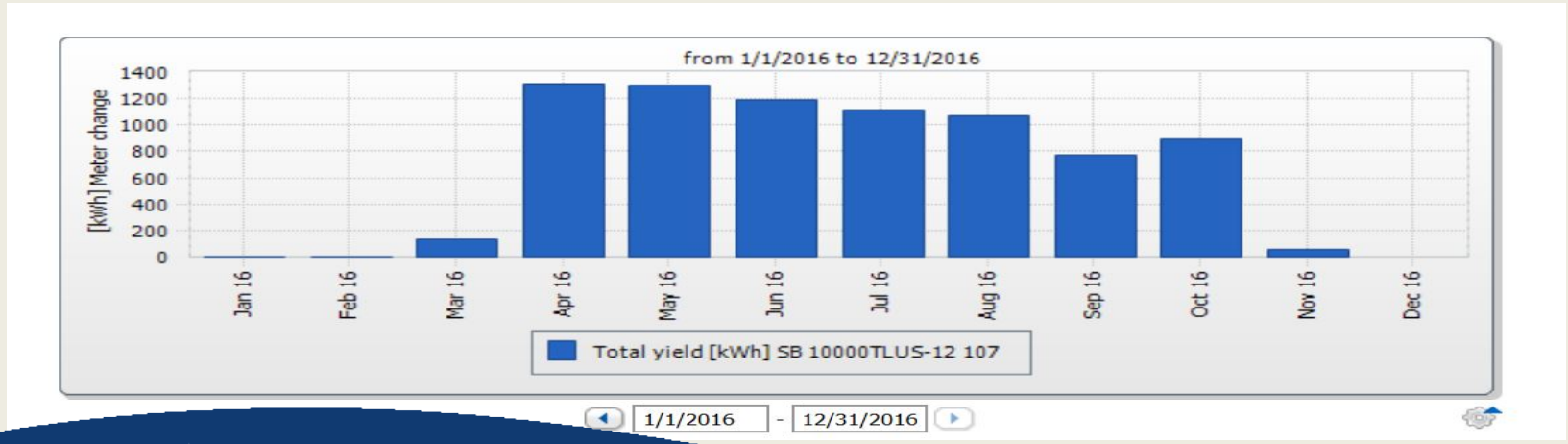


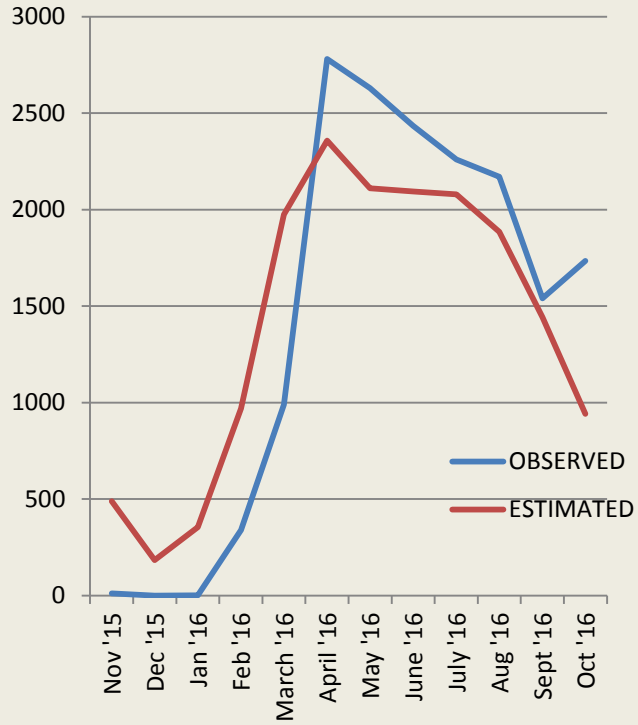
Why the difference between inverters? (~1000kWh per year)





18 kW Solar PV Array On Tribal Office

"....If you don't got data, you don't got nothin"



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18 kW Solar PV Array On Tribal Office

RESULTS: Tribal Office Energy Use

BEFORE

Average Electrical Cost ‘13- ‘14: $19,927

Heating Fuel Used ‘13: 2,098 gal

AFTER

Electrical Cost ‘16 (Nov/Dec Estimated): $6,416

Heating Fuel Used ’16 (Estimated): 1,200 gal

ELECTRIC COST 68% ↓ **Fuel Use 35%** ↓


Arctic Village Solar Training

Solar on Clinics

- Manley Village – 6kW
- Ruby Clinic – 5kw
- Koyukuk Clinic – solar ready!

Ruby Health Clinic

Status
Unknown Error

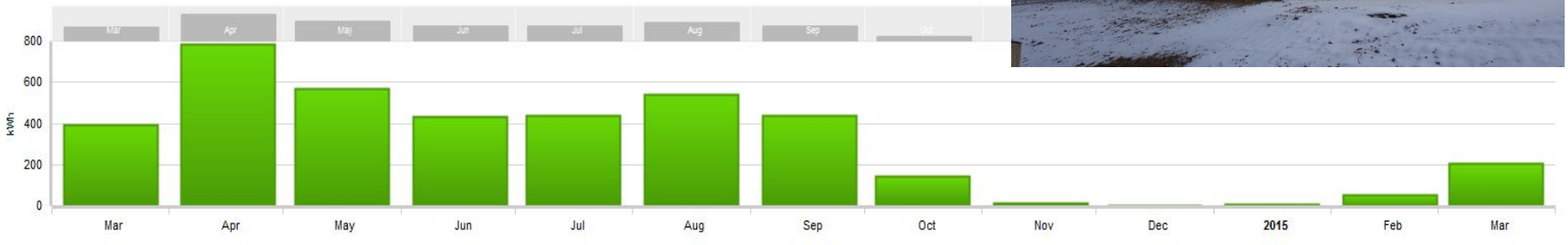
Power Right Now
--
kW

Energy Generation
TODAY
0.0
kWh
LIFETIME
4.0
MWh

Yahoo! Weather
near Ruby, AK United States
22 °F
Fair
Atmosphere
Humidity: 59%
Pressure: 2.48 '
Visibility: 10.00 mi
Wind
Speed: 9.00 MPH
Direction: 80

Energy

1D 7D 30D 12M WTD MTD YTD



Regional Energy Planning

- AEA Funded Interior Energy Plan
- Energy Stakeholders:
  - Tribes
  - School Districts
  - City Governments
  - Utilities
  - Corporations
- There is no “one-size-fits-all” approach

2016-2021 DOE Award

Interior Athabascan Energy Capacity Building Network (IAECBN – we're working on hats and t-shirts)

1. 5 years of funding for an additional energy staff member
2. Modeled after the Kodiak "Forum" and the Northwest Arctic Borough Energy Working Group
3. Hoping to set new construction standards for public buildings by working with CCHRC and IRHA
4. Funding to Support more planning and projects in the pipeline
5. Support to complete case studies and broadcast our projects
6. **Funding to complete additional line loss study/mitigation**

Imagine where we can go…

- Reduced Reliance on Imported Diesel Fuel
- New homes that burn 130 gal of fuel oil/yr ?
- Utility Cooperatives that can support each other
- Decreased Electric Rates
- Tribal Renewable Portfolio Standards
- Sustainable energy future for our villages

It Takes a Village…

Thank you DOE, Office of Indian Energy for being our Village!

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