DOE Tribal Energy Webinar

July 29, 2020
NANA Region Age Distribution

Who We Are

• NANA was entitled to 2.2 million acres and $44 million in cash.
NANA REGION Introduction

Energy Projects in the NANA Region

NOT FOR NAVIGATION Date: 7/6/2016
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A Remote Region

- No roads connect communities
- 61% more expensive than Anchorage
- High cost goods and fuel
NANA’s Energy Vision

• The energy vision for the NANA Region is to be 50 percent reliant on alternative energy sources, both renewable and non-renewable.

• 10 percent decrease of imported diesel fuels by 2020
  ✓ We are on-track to meet this goal, in part thanks to DOE and significant community effort

• 25 percent decrease of imported diesel fuels by 2030

• 50 percent decrease of imported diesel fuels by 2050
<table>
<thead>
<tr>
<th>Location</th>
<th>Gas/G</th>
<th>Stove Oil/G</th>
<th>Kwh (1-500) PCE</th>
<th>Kwh (&gt;501) NO PCE</th>
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<td>Kotzebue</td>
<td>$5.88</td>
<td>$5.92</td>
<td>$0.18</td>
<td>$0.45</td>
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<tr>
<td>Ambler</td>
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<td>$10.04</td>
<td>$0.21</td>
<td>$0.61</td>
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<td>Kobuk</td>
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<td>$9.27</td>
<td>$0.21</td>
<td>$0.60</td>
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<tr>
<td>Shungnak</td>
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<td>$8.50</td>
<td>$0.21</td>
<td>$0.60</td>
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<td>Kiana</td>
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<td>$5.67</td>
<td>$0.20</td>
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<td>Noorvik</td>
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<td>$5.64</td>
<td>$0.20</td>
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<td>Selawik</td>
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<td>$6.36</td>
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<td>Buckland</td>
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<td>$6.15</td>
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<tr>
<td>Deering</td>
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<td>$0.71</td>
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<td>Kivalina</td>
<td>$5.10</td>
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<td>Noatak</td>
<td>$9.26</td>
<td>$9.26</td>
<td>$0.21</td>
<td>$0.75</td>
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</table>
Covid-19 Pandemic Impacts

- Fewer planes
- Less jobs
- Higher food prices
- Increased sense of urgency on energy and food security
NANA’s Village Energy Program

History

1. 2007 DOE IE Grants – NANA Strategic Energy Plan (SEP), NANA Wind Resource Assessment Plan (WRAP), NANA Geothermal Assessment Plan (GAP)


3. NANA Wind Resource Assessment Plan (WRAP) – Wind data collection lead to the Northwest Arctic Borough (NWAB) installing wind turbines in Deering and Buckland. Wind turbines funded by the State of Alaska (for Deering and Buckland).

4. NANA Geothermal Assessment Plan (GAP) – Report completed. Heat resource too far from the villages. (Cost of transmission line)
Energy - What We’ve Learned So Far

NANA/NWAB Role in energy for our region

1. Project development, including stakeholder coordination
2. Grant writer/fund seeker – innovative approaches
3. Advocating for change in State and Federal policies
4. Infrastructure planner
5. Communicating NWALT (NorthWest Arctic Leadership Team) energy priorities to stakeholders
6. Update Energy plan
7. Research arctic-appropriate technologies (e.g., heat pumps-NWAB, batteries, solar, diesels-off)
8. Regional Energy Authority/Joint Action Agency
DOE Inter-Tribal Technical Assistance Grant

- Department of Energy has awarded NANA $495,460 to create an Inter-Tribal Network in the Northwest Arctic
- 3-year effort (began in October 2016), now revised to 5 years
- Local capacity building and economic development
- Regional Coordination for all 11 communities
- Other AK Regionals also received grant (with potential for cross regional collaboration), including in Bering Strait & Calista regions, attendance at ESC meetings in Kotzebue
Department of Energy Solar Grant

- Department of Energy has awarded NANA $1M to install community solar arrays in Deering, Buckland, and Kotzebue; Requires $1M cost share ($200K Deering & Buckland, $610K Kotzebue)
- Kotzebue Electric Association to finance the $600K cost share for the project (NWAB VIF)
- NANA & KEA to form Joint Venture to show ownership of solar equipment during grant period, JV agreement signed.
- Both Deering & Buckland using Village Economic Development Committee (VEDC) $ for their cost share
- Solar Arrays operational. Worked with Boxpower, Alaska Native Renewable Industries, and the villages. Funders include DOE, NANA VEDC, NWAB VIF, KEA Ratepayers
Department of Energy Solar Grant

- Buckland Community Solar array is operational, but still needs performance monitoring & communication integration
- Completion Date - Dec 2019
- First BoxPower installation in Alaska
- Modified foundation & racking based on site-specific needs
- Community training and major in-kind contributions
Department of Energy Solar Grant

• Deering Solar Array Installation complete
• Contributes to significant diesel generator-off operation with wind turbine, energy storage batteries and controls
• Supersacks, gravel, & duckbill foundation/anchoring
• Single 50 kW inverter
• Maximum local hire via Ipnatchiaq Electric, Tribe, City
USDA High Energy Cost Grant

- NANA selected for High Energy Cost Grant – $1.6M to install energy storage batteries and controls in Deering and Buckland
- USDA completed environmental review
- ABB Control system and SAFT batteries operational in Buckland & Deering
- Working with IES, ABB, Saft, KEA, DeerStone, NWAB for system integration
- Allows for high penetration renewables (wind & solar) to turn diesels off when enough renewable energy available
- Also controls electric boiler for additional diesel displacement
USDA High Energy Cost Grant – Breaking Trail

• First (and second!) utility scale wind-solar-battery-diesel hybrid system in rural AK
• Diesels-off in Buckland on July 24, 2019 & in Deering on October 11, 2019
• Expect Significant Fuel Savings
• Developing Institutional and Financial Structures to Monetize Fuel Savings
• Still Need to Address heating diesel engines and powerhouse under long-duration diesels-off (good problem to have!)
• Enables high penetration & high quality renewable generation, like wind and solar energy, without destabilizing the system
Upcoming Energy Projects

- USDA High Energy Cost Grant (HECG) – Install community solar array and energy storage batteries in Shungnak and solar in Kobuk
- BIA Tribal Energy Development Capacity – Continue formation of Joint Action Agency
- Submit DOE grant application for solar and energy storage batteries for Noatak
- Support for all other villages in region
We couldn’t have done this on our own, it’s people working together that made this happen!

Taikuu!