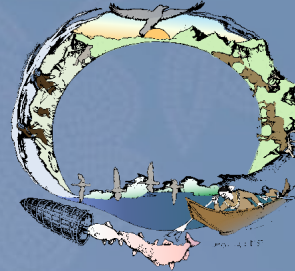




**Louden  
Tribe**



Tanana  
Chiefs  
Conference

# Community-Scale Solar Microgrid Project in Galena, Alaska

**DOE-OIE Annual Program Review**

November 20, 2024

Luis Echenique, Grants Director – Louden Tribe

Eddie Dellamary, Rural Energy Program Manger - TCC

# Do'eent'aa

- Traditional greeting in **Denaakk'e**, Koyukon Athabaskan language.
- Only 200-300 speakers left
- Critical status (one step above extinction)



# Galena, AK

- Community of approx. **500 people**
- 65% Alaska Natives (Athabaskan)
- Off-road, off-grid, 270 miles from Fairbanks
- 120 miles from the Bering Sea, 350 miles from Russia.
- Cargo transportation by barge 3-4 months a year
- Air passenger and cargo year-round
- Existing diesel power plant and microgrid.



# Galena, AK

- 2670 miles from Denver.
- Equivalent distance to Greenland, or the Panama Canal.
- **Lowest record -70 F** (January 14, 1989)
- Latitude 64.75 N, meaning 3.5 hours of “sunshine” on December 21<sup>st</sup>.

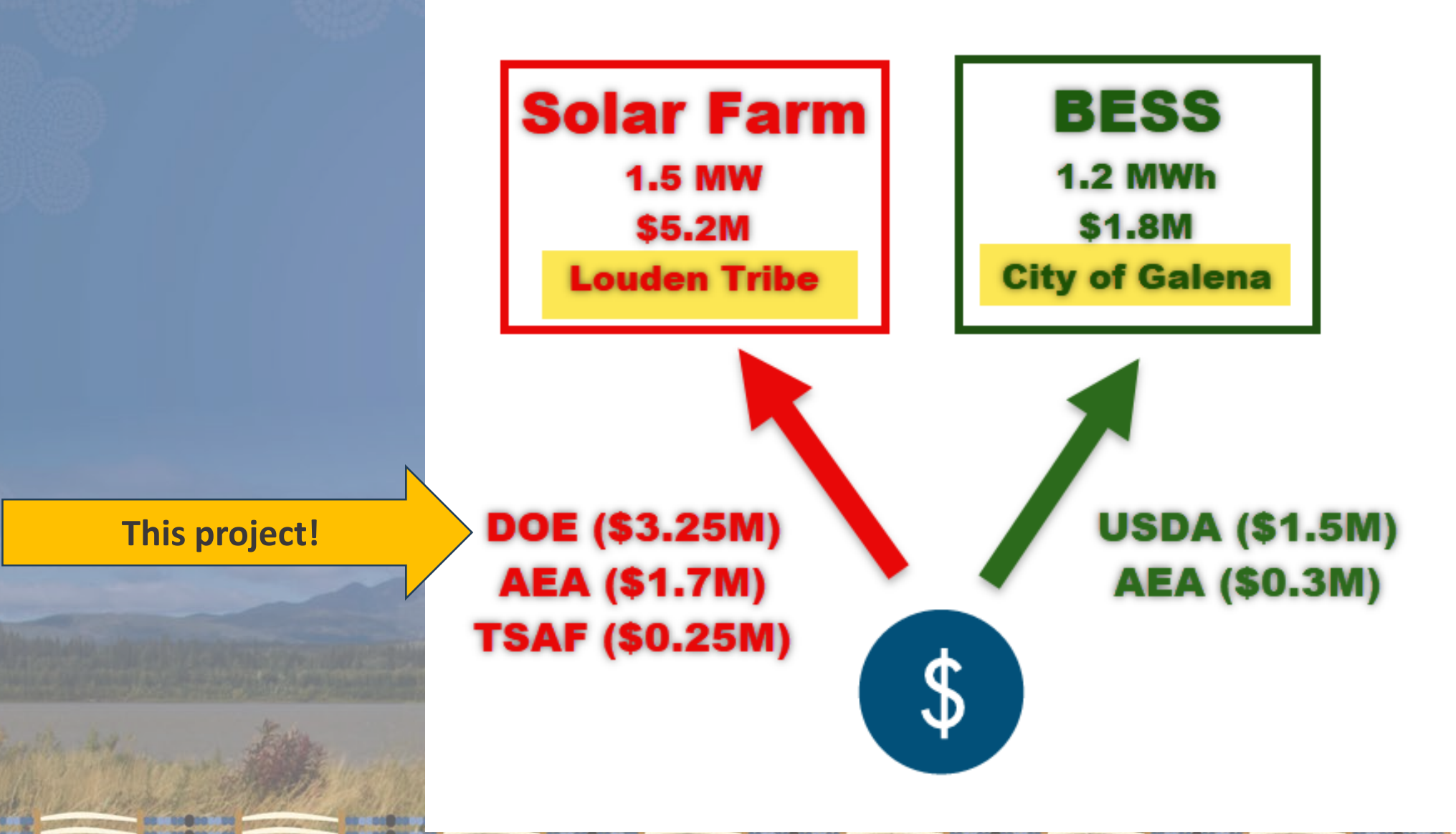


# Louden Tribe

- Federally Recognized Tribe based in Galena, AK
- Traditionally Athabascan Community
- About 1000 enrolled members, 330 living in Galena.
- Staff Size: **8 Employees**, managing > 40 Grants
- \$3-\$4M Typical year, \$10M COVID years
- Programs:
  - Housing, Transportation, Infrastructure, Culture Preservation, Social Services, Community Development, etc.

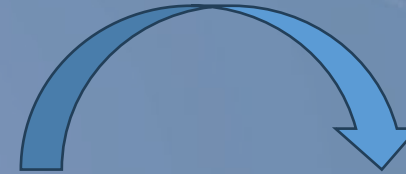


# The **Big** Picture



# The **Big** Picture

- **1.5 MW DC Solar PV**
- **1.2 MWh Battery Energy Storage System**
- Annual Production: **1,541,741.6 kWh**
- Annual Savings: **\$450,000**
- Annual Fuel Savings : **95,000 gallons**
- Total Costs of Project: **~\$7,000,000 USD**
- **diesels-off operation (>862 hr/yr)**



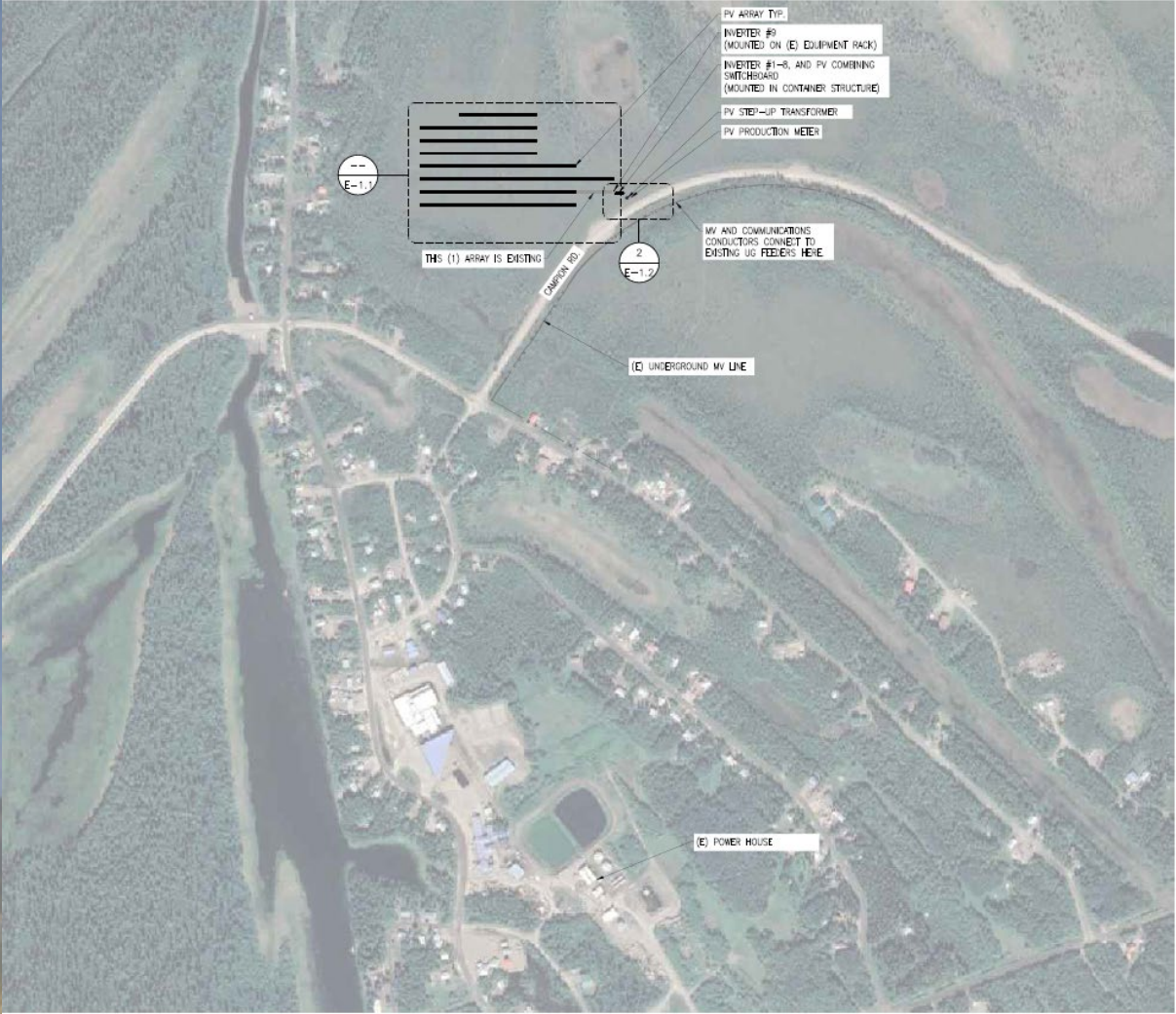
# Galena Solar Project

- Solar Photovoltaic (PV) Array :
  - **1.5MW**
  - 2270 bifacial panels - 550 W
  - ~10 acres.
  - Funded by DOE and AEA (\$4.95)
  - Integration with microgrid.
- Foundation/racking style
  - ground screws (adjustable)
  - 10'6" @ 43 degree tilt
  - SEG, Inc. has begun to make American Made modules (Houston, Texas)





# Galena Solar Project



# Pilot Project

- Funded by TSAF in **2023**
- TCC as Grantee and leading agency
- **50 kW** (1 rack, ~90 panels)
- Transformer
- Connection to grid
  
- Main purpose:
  - Smooth the learning curve
  - **De-risk the larger project**
  - Promote internal coordination and communication



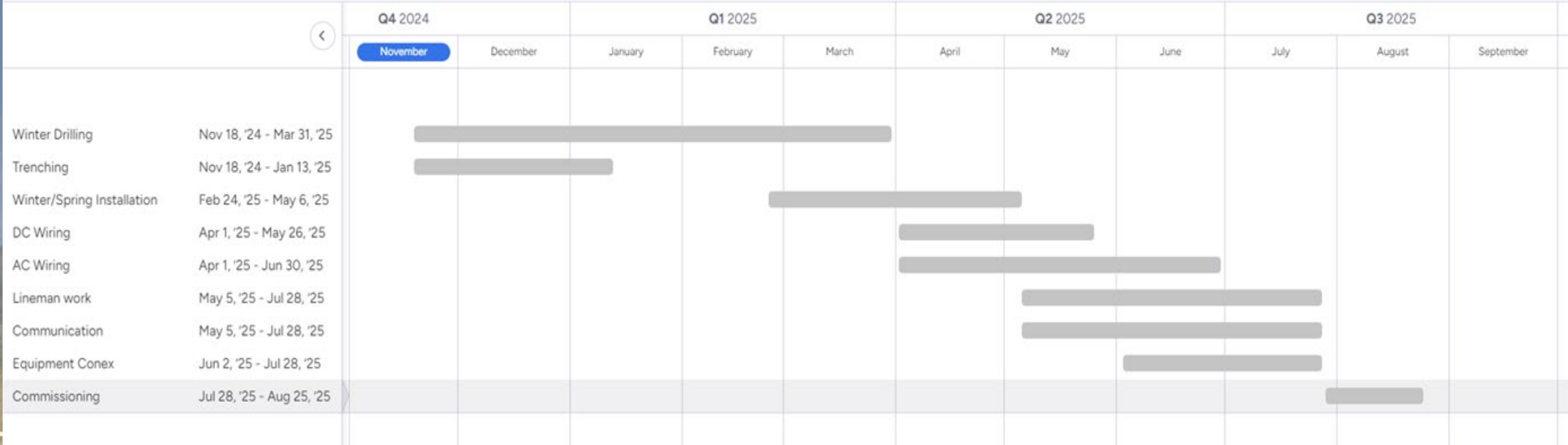
# Pilot Project

- Acquired **knowledge and experience** to be leveraged in the future.
  - Technical
  - Logistics
  - Environmental
  - Legal
  - Tax Credits Opportunity
  - Local workforce development
  - Consolidated community Power Plan
  - Formation of Independent Power Producer
  - Coordination and communication among entities

# Construction Update

- Screws and Panels in Galena
- Two contracts awarded (Installation & Electrical)
- Racking didn't make it to the barge. Extra costs expected

- Drilling to start on November/ December.
- Expected commissioning: Fall 2025
- On budget



# Construction Challenges & Success in Remote Alaska

- Logistics:
  - Barge: \$/lb ~ \$0.35/lb (June- early September)
  - **Fly-In: ( \$1 - \$1.5/lb )** = ~4 times as expensive than barge
  - Ex. 160,000 didn't make it to barge season 2024. (**extra \$150,000**)
- Long Lead time items (+40 weeks for transformers)
- **Environmental** Considerations: Tundra & wetlands
  - winter-work required
  - US ACOE permit required, in addition to all three agencies.
- Remote location means a **narrow construction window**, higher costs, lack of local capacity.

# Administrative Challenges For Small Organizations

- **Lengthy Pre-Award Process (9 months)**
  - Months of negotiations since pre-award
  - Multiple budget revisions
  - Limited flexibility to modify project/budget
- **Vendor Approval Process (~3 months)**
  - Conflicts with Construction/Transportation window (June – Early September) → Huge Increase in Costs if work done outside of Summer Months
- **Capacity**
  - Tribe's capacity is limited: 6 employees for 40 grants
  - City Administrative Capacity is Limited : 3 admin employees for all City tasks



# Administrative Challenges for Small Organizations

- **Cash Flow**
  - Challenge for small Tribes and Contractors
  - VIPERS adds an extra layer of complexity
- **2 Organizations, 3 grants**
  - Coordination of multiple funding agencies is not easy.
  - Project has to comply with all of them.
  - Communication among funding agencies is limited.
- **Capacity and administrative burden.**
  - Lots of time dedicated to the submission, negotiation, reporting, financial and coordination with other agencies and entities.

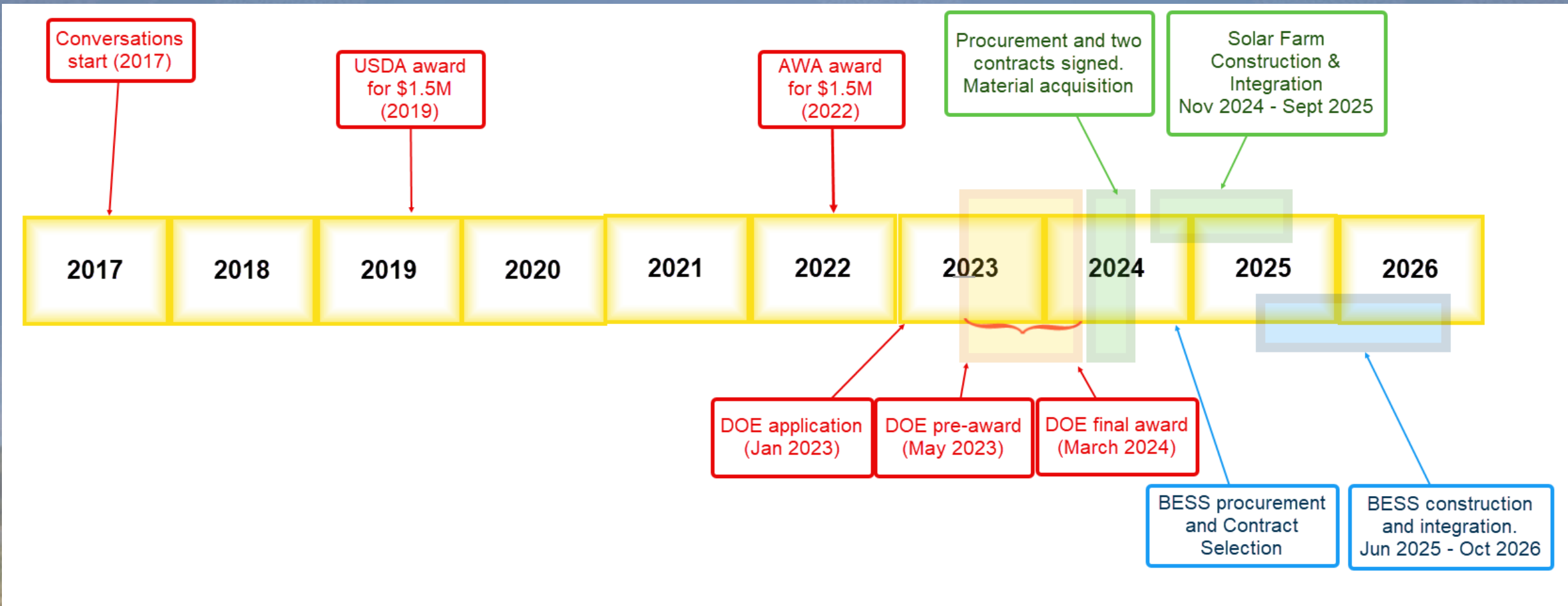


# Suggestions & Lessons Learnt

- Never underestimate the power of **politics**, even in small communities.
- **Overestimate times**, when possible
  - The initial conversations for this project started in 2017!
  - Bureaucracy in funding agencies, vendors, and even internal; logistics, payments, etc... never will come *faster* than expected
- Maintain **communication** fluid
  - We have weekly technical meetings and bi-weekly leadership meetings.
  - Louden Tribe, Deerstone Consulting, SEGA, Tanana Chiefs Conference, City of Galena
- Invest in looking for **assistance**.
  - NREL & Tanana Chiefs Conference had been instrumental in this project.
- When possible, **collaborate**



# Timeline



# Basee'

- Eddie Dellamary – [edward.Dellamary@tananachiefs.org](mailto:edward.Dellamary@tananachiefs.org) 907-347-1700 or 907-452-8251 ext 3279
- Luis Echenique - [luis.echenique@loudentribe.com](mailto:luis.echenique@loudentribe.com)

