# KNUTSON CREEK HYDRO PROJECT

ALASKA LEGISLATURE – HOUSE ENERGY COMMITTEE

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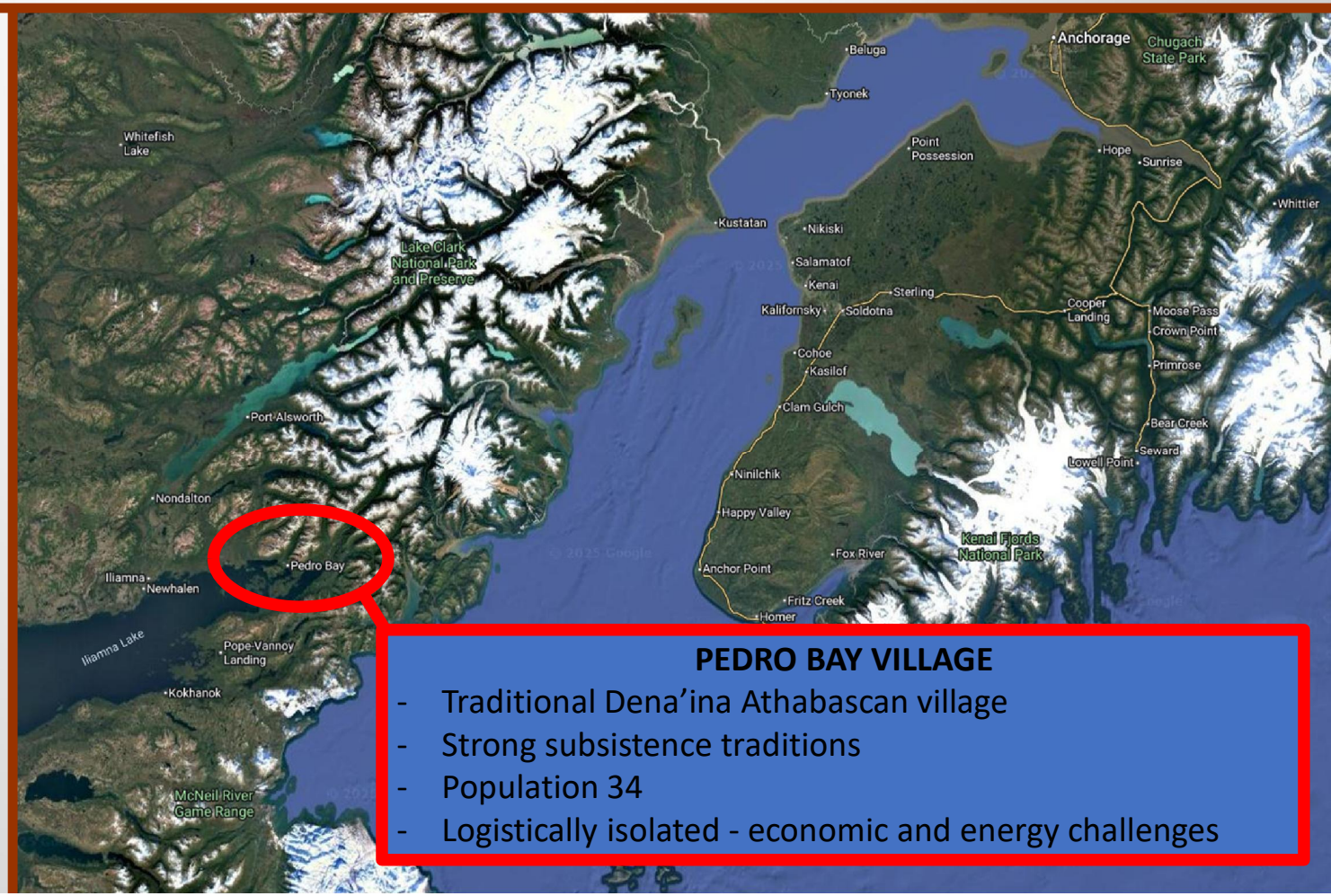
TRIBAL ADMINISTRATOR – PEDRO BAY VILLAGE

*Knutson valley looking toward Knutson Bay, Lake Iliamna. April 2012.*

# PRESENTATION OVERVIEW

- Pedro Bay Village
- Local Energy Needs
- Project Overview
- Project Status




**PEDRO BAY VILLAGE**

- Traditional Dena'ina Athabascan village
- Strong subsistence traditions
- Population 34
- Logistically isolated - economic and energy challenges

# PEDRO BAY VILLAGE PRIORITIES

## PRESERVE HERITAGE, TRADITIONAL VALUES, AND STRONG COMMUNITY

- Protect local subsistence resources
- Build sustainability
- Improve local economic and energy security
- Encourage families to live in / return to Pedro Bay

# LOCAL ENERGY PROFILE

## EXISTING DIESEL-FIRED GENERATION

## LOGISTIC CHALLENGES – AIR OR SEA?

- State gravel airstrip
- Sea via Bristol Bay / Kvichak River / Lake Iliamna
- Sea via Cook Inlet / Williamsport Road / Lake Iliamna

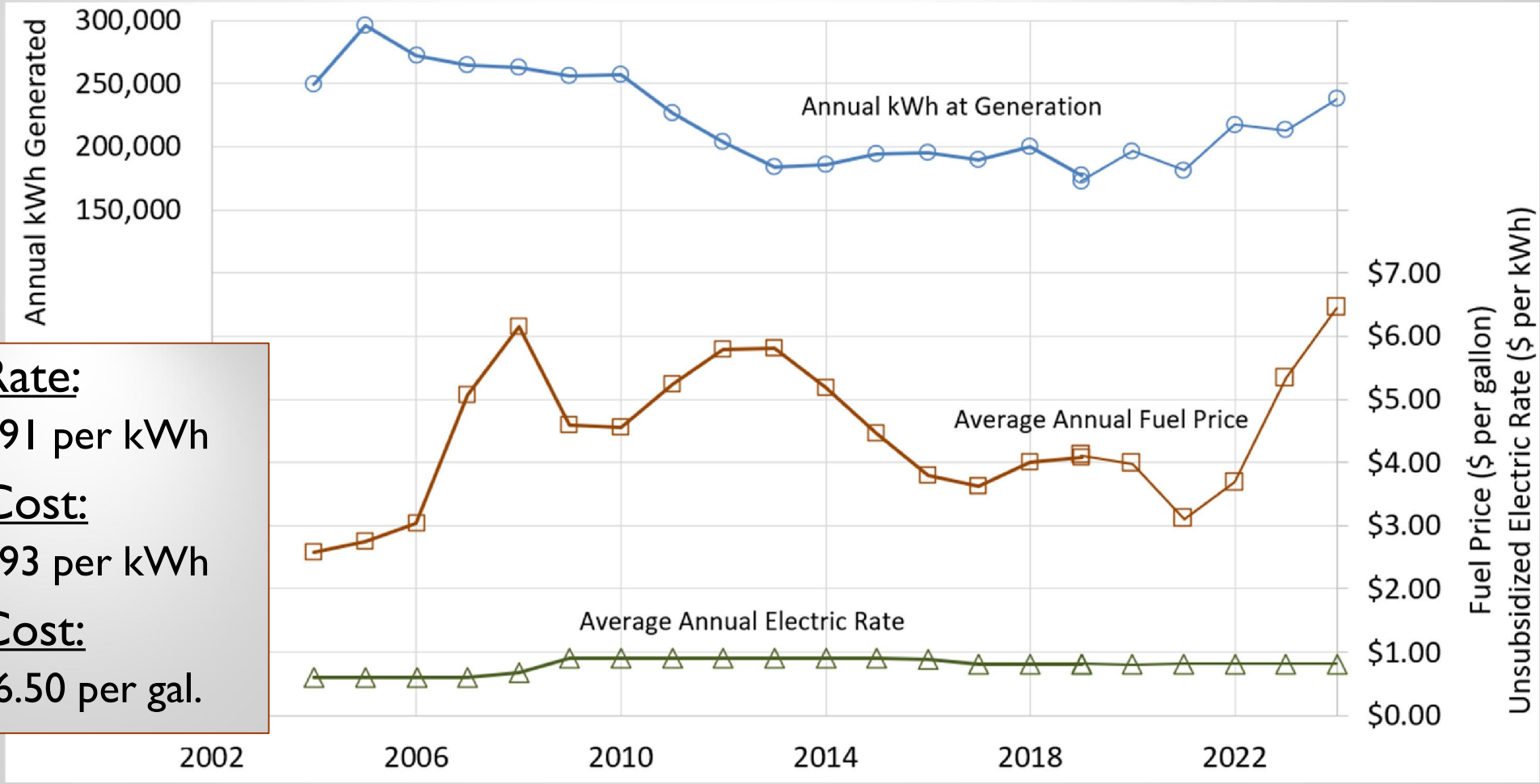
Low volumes / Few carriers / Primitive infrastructure / Transshipments → EXPENSIVE!

→ Fuel often flown-in from Kenai Peninsula

## VULNERABILITIES

- Fuel supply insecurity *(can we even get fuel delivered?)*
- High price and price volatility for fuel *(economic uncertainty for homes/businesses)*
- Risk of spills *(environmental, cultural, and economic risks)*

# LOCAL ENERGY PROFILE




**Max Rate:**
$0.91 per kWh

**Max Cost:**
$0.93 per kWh

**Fuel Cost:**
~$6.50 per gal.

# LOCAL ENERGY SOLUTIONS

## SOLAR / WIND

- Fast to deploy
- Limited diesel displacement (Good resource? Night time? Cloudy days? Dark winters?)
- Life-cycle (20 year life? Backhaul / replacement?)

## HYDRO

- Proven rural Alaska technology
- High diesel displacement (diesel relegated to full backup status for this project)
- Long Life (numerous 50 to 100+ year-old hydro equipment still running in rural AK)
- Long development timeline
- High capital cost

# KNUTSON HYDRO OVERVIEW

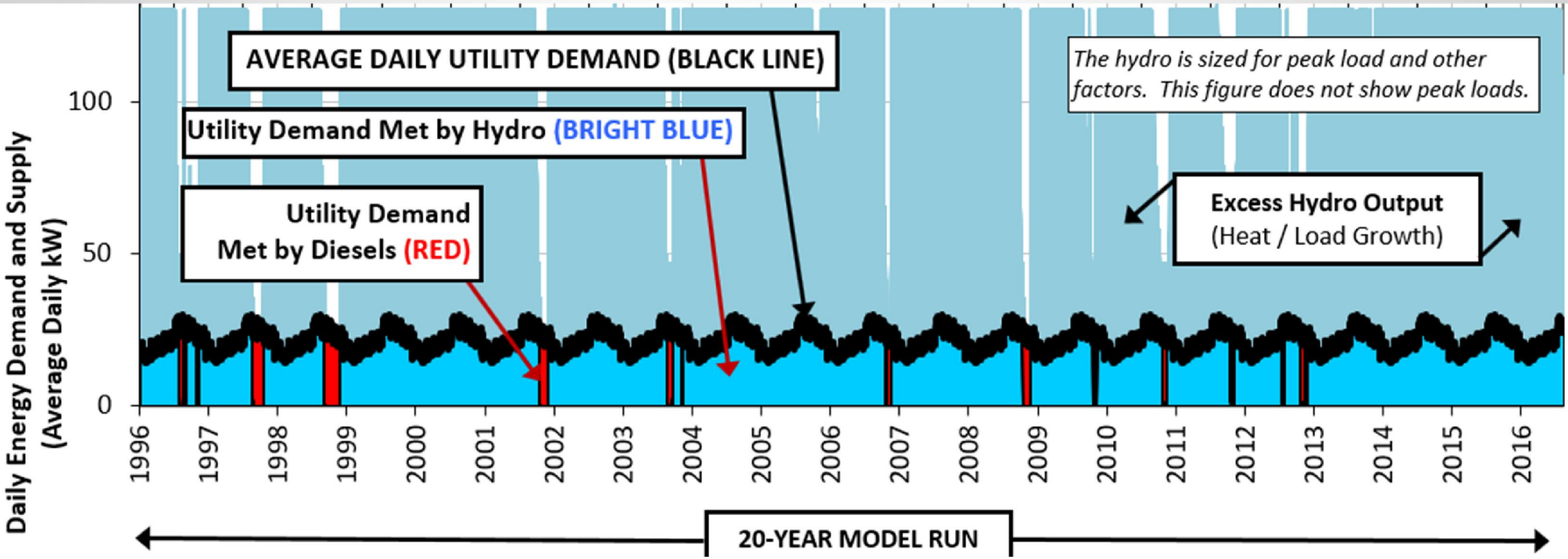
## LOCAL CLEAN AND SUSTAINABLE ENERGY SOLUTION

- Run-of-River Hydro Operation (no storage)
- Divert up to 11.5 cubic feet per second
- ~6,400 foot long ~24-inch diameter pipeline
- 205 feet of elevation drop (pressure head)
- 125 kW Powerhouse
- ~9,700 feet of underground power and communications
- ~12,500 feet of total roads / trails
- **MEETS ~96% ANNUAL UTILITY DEMAND**
- **SUPPORTS ELECTRIC HEAT / LOAD GROWTH**

# KNUTSON HYDRO PERFORMANCE

**Hydro Will Serve 96% Utility Demand**

- Spring low flows (includes releases for fish habitat)
- Hydro maintenance outages
- Monthly diesel use to keep diesel plant healthy



# KNUTSON HYDRO LAYOUT

## TIMELINE

**2008-09: Reconnaissance**

**2010-13: Feasibility**

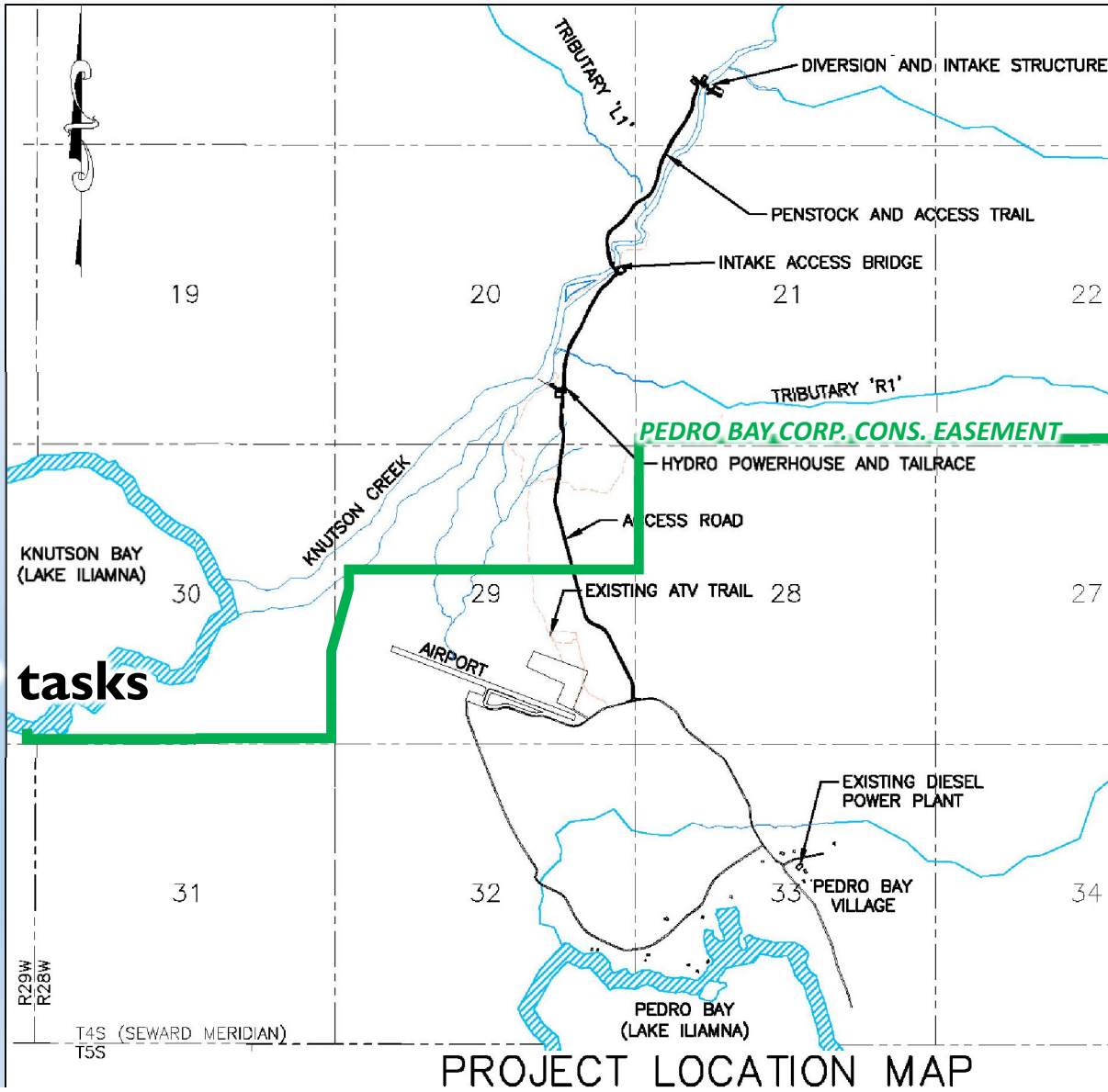
**2014-22: Design/Permitting**

**2023-25: Funding & Final D/P tasks**

## CONSTRUCTION

**Phase I: 2026(?)**

**Phase II: 2027(?)**



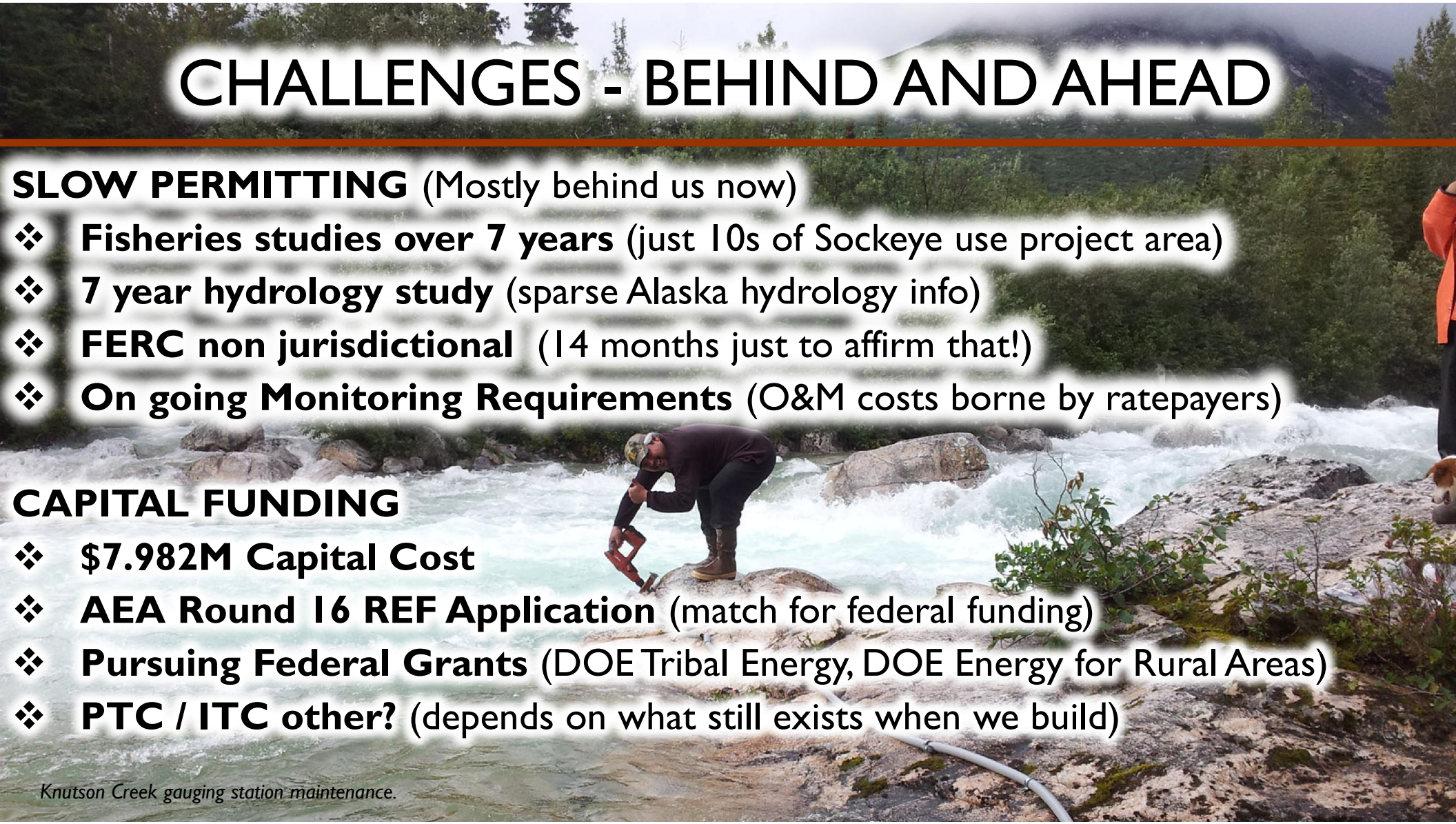
# CHALLENGES - BEHIND AND AHEAD

**SLOW PERMITTING** (Mostly behind us now)

- **Fisheries studies over 7 years** (just 10s of Sockeye use project area)
- **7 year hydrology study** (sparse Alaska hydrology info)
- **FERC non jurisdictional** (14 months just to affirm that!)
- **On going Monitoring Requirements** (O&M costs borne by ratepayers)

**CAPITAL FUNDING**

- **$7.982M Capital Cost**
- **AEA Round 16 REF Application** (match for federal funding)
- **Pursuing Federal Grants** (DOE Tribal Energy, DOE Energy for Rural Areas)
- **PTC / ITC other?** (depends on what still exists when we build)



*Knutson Creek gauging station maintenance.*

# THE PATH AHEAD

## UPCOMING MILESTONES

- Secure Capital Funding
- Construction
- Operation

## RESULTS

- Better economy through local jobs + lower / stabilized electric rates
- Boost to village's sustainability and security
- Protects and enhances local resources
- Completed project is self-sustaining

## THE TAKEAWAY

- Is it all worth it? **Every community with an old hydro says YES!**

*Pedro Bay Airport.*


*Sockeye returning to the mouth of Knutson Creek at Knutson Bay, Lake Iliamna. August 5, 2014.*