

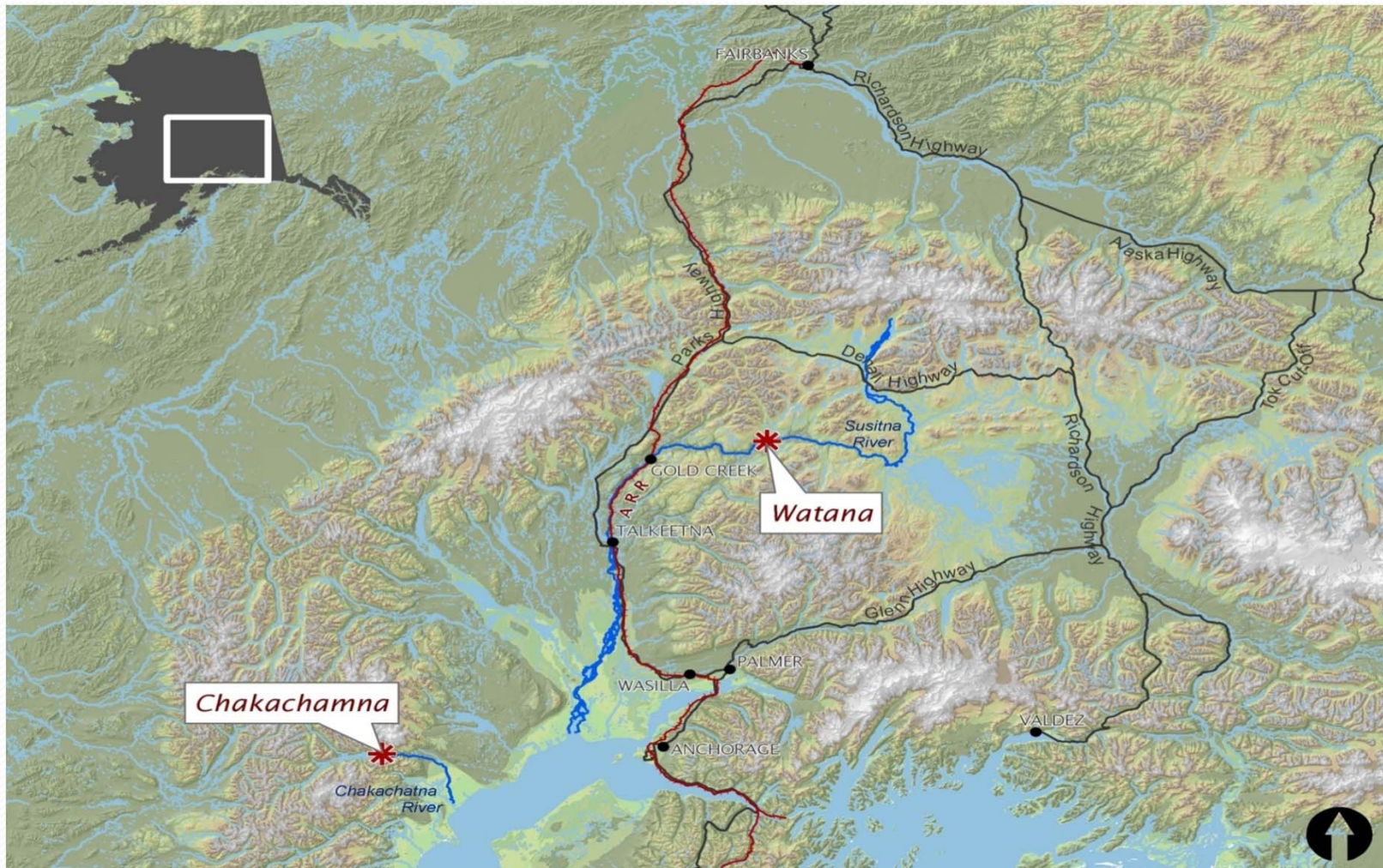
Railbelt Large Hydroelectric

The Alaska Support Industry Alliance

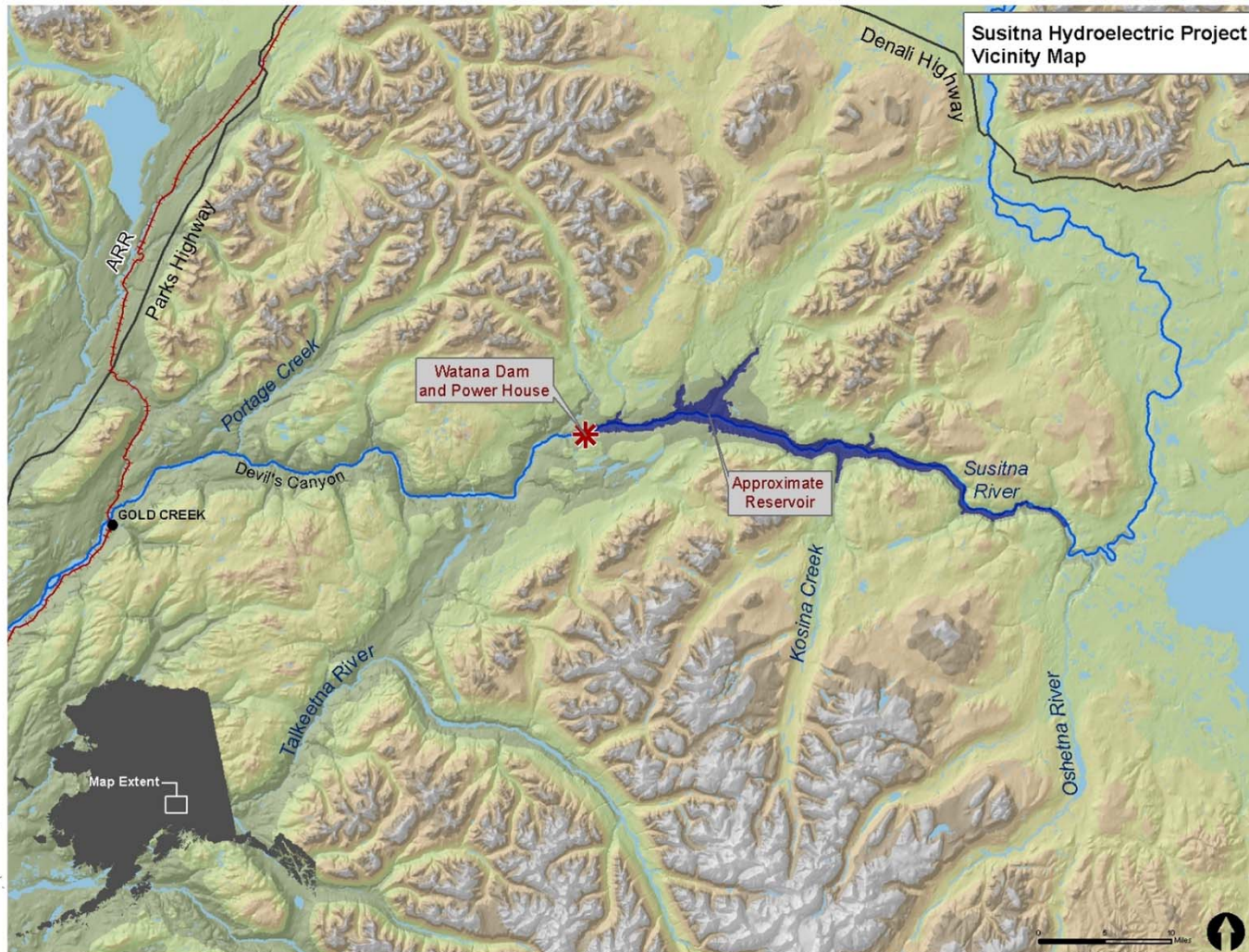
Presented by: Jim Gill, Cardno ENTRIX



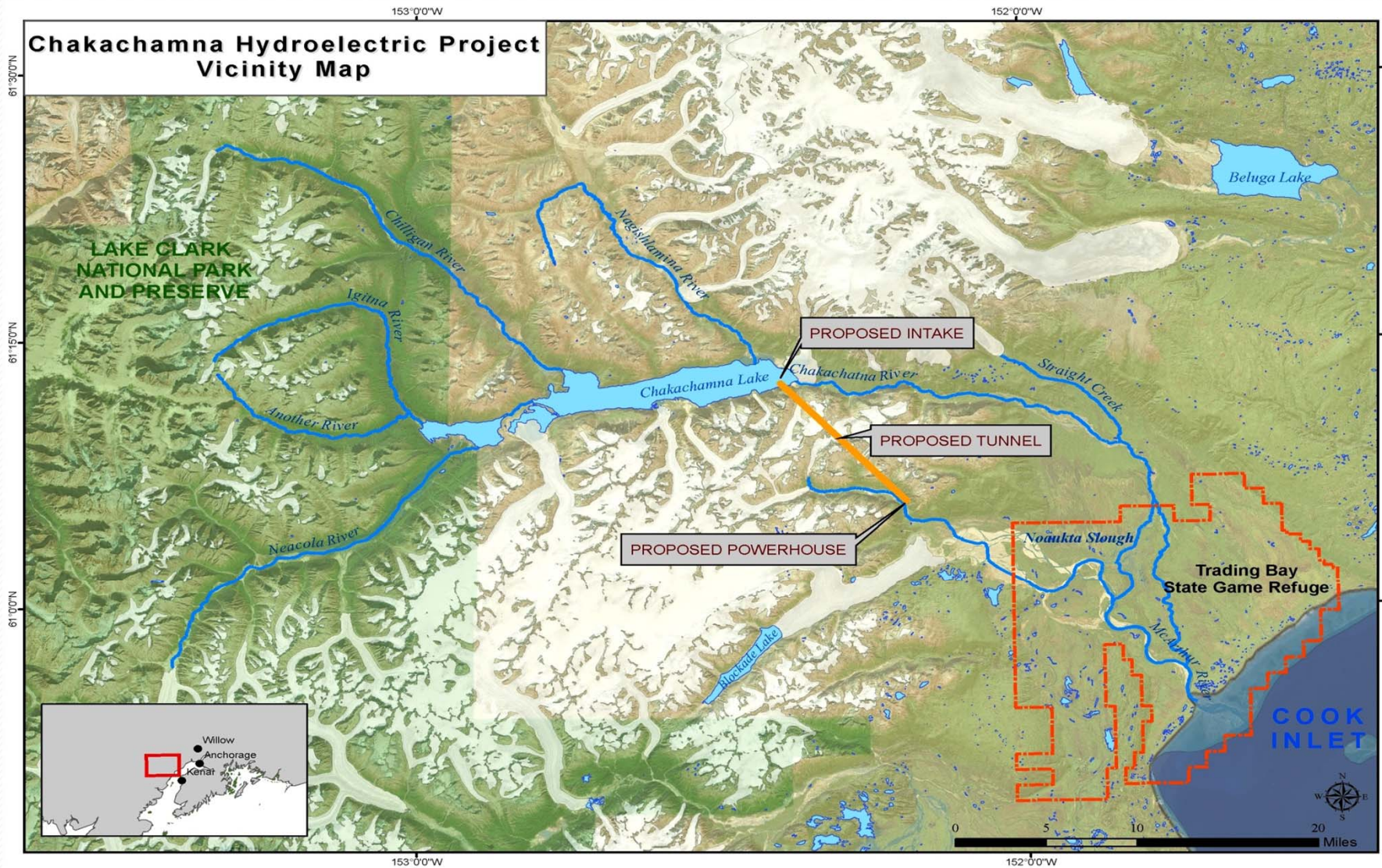
Railbelt Hydro Locations



WATANA VICINITY



CHAKACHAMNA VICINITY



Environmental:

- **Susitna**
 - Reservoir 39 miles long & maximum of 2 miles wide
 - 30 miles above significant salmon
 - Some loss of wildlife habitat
 - Minimal fisheries impacts

- **Chakachamna**
 - Significant salmon populations travel through lake to National Park
 - Several species of fish use & spawn in lake (Lake Trout, Dolly Varden, White, Salmon suspected ..)
 - Diversion of water & change of habitat in State Game Refuge
 - Adult false attraction & outmigration concerns
 - May not be able to license under FERC

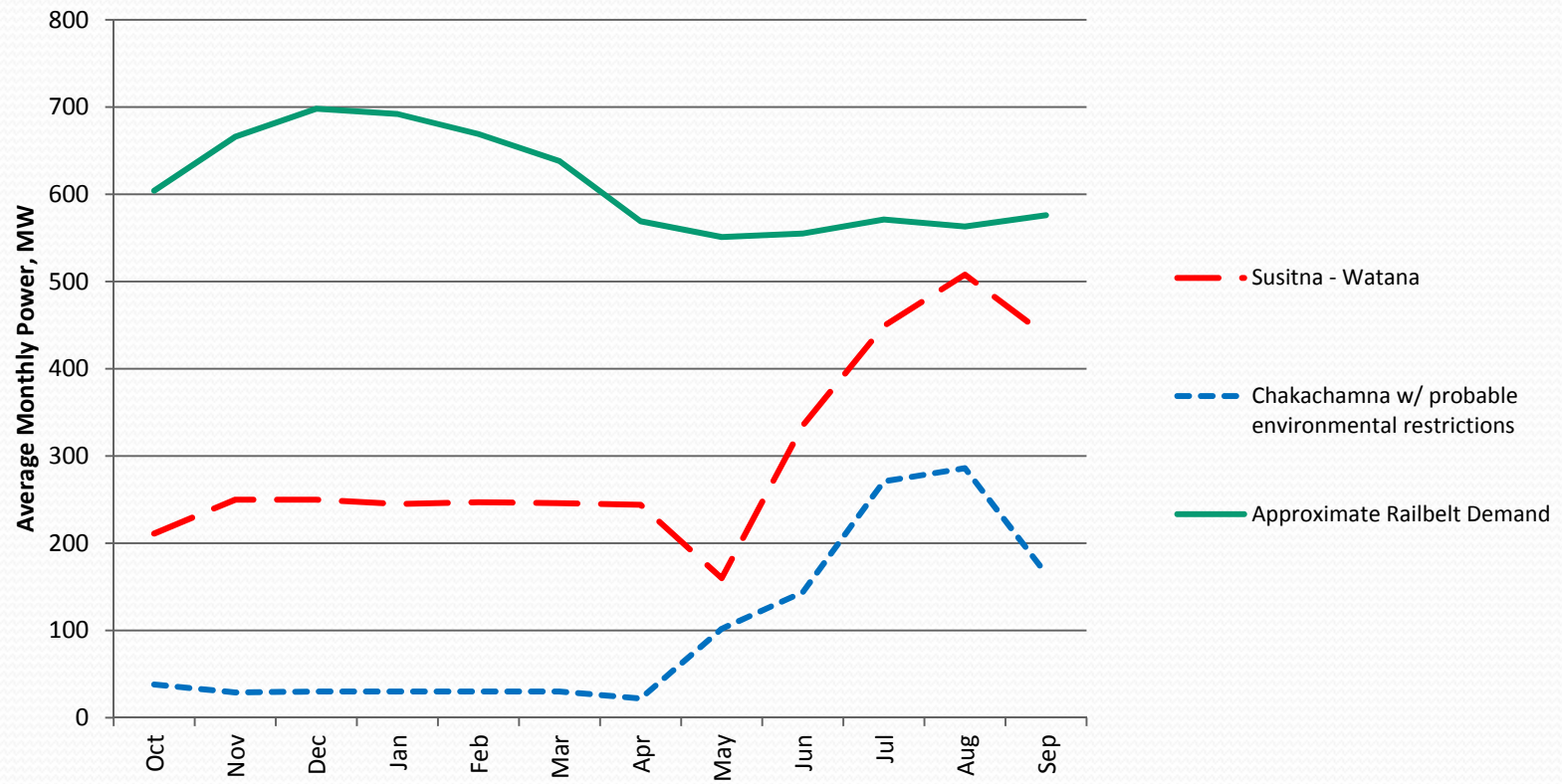
Energy:

- **Susitna**
 - **Installed capacity 600 MW**
 - **Average energy 2600 GWhr/yr**
 - **About 50% of annual railbelt energy**

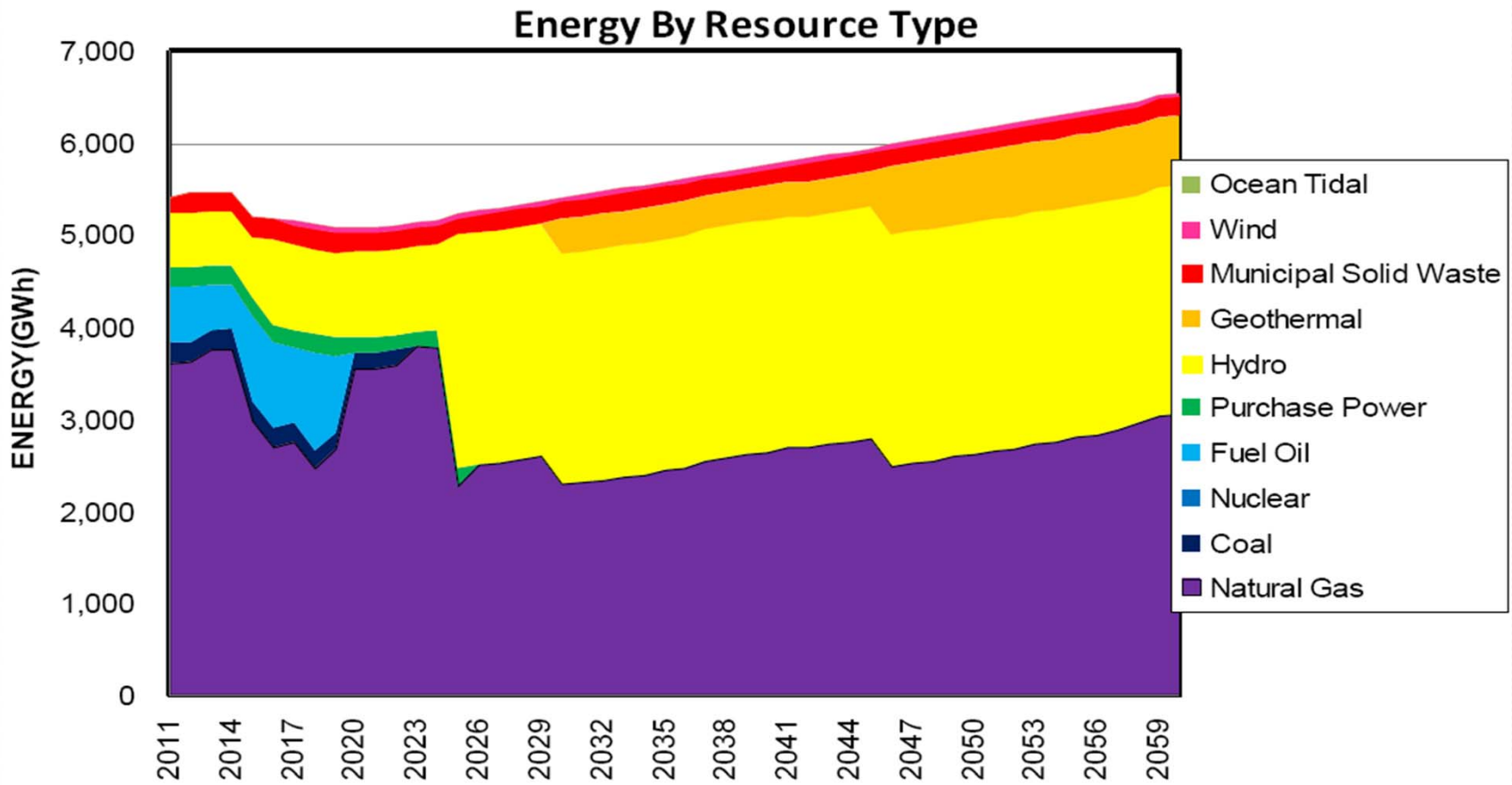
- **Chakachamna**
 - **Installed capacity ~300 MW**
 - **Average energy 860 – 1100 GWhr/yr**
 - **About 20% of annual railbelt energy**

RAILBELT DEMAND

Alaska Railbelt Demand and Hydropower



Railbelt Energy:



B&V RIRP
2009

Estimated Cost of Power:

Estimated Cost of Power Comparison						
Project	Estimated Construction Cost	Finance Amount (50%)	Rate	Term (years)	Annual Energy (GWhrs)	Cost per kWhr
Susitna Embankment	\$4.5B	\$2,250M	6%	30	2600	\$0.063
Susitna RCC	\$3.6B	\$1,440M	6%	30	2600	\$0.05
Chakachamna	\$2.9B	\$1,440M	6%	30	860	\$0.12

Estimated cost does not include O&M and utility distribution costs.

Bradley Lake Hydroelectric



Example of embankment dam

Al Wehdah (Jordan) Hydroelectric



Example of a Roller Compacted Concrete (RCC) dam

Susitna Timeline:

- **Licensing**
 - **3.5 years - Prepare and file Final Application for License**
 - **3 years – FERC Processing and follow-up**
- **Construction**
 - **4.5 years Construction**

11 years until startup

Susitna Next Steps:

- **Tentative Public Meetings**
 - Fairbanks - February 24
 - Talkeetna - February 28
 - Palmer - March 1
 - Anchorage – March 2

- **Engineering & Environmental Studies**
 - Mapping
 - Gap Analysis
 - Geotechnical
 - Working Groups
 - Land Owners
 - Access
 - FERC Preliminary Application Document
 - FERC Draft Study Plan
 - Evaluate dam and powerhouse type



Susitna Benefits

- **Greater than 100 year life**
- **Expandable for future growth**
- **Predictable, secure, clean, low cost energy**
- **Provides dispatchable energy**
- **Investment in Alaska Infrastructure**
- **Alaskan jobs and funds stay in-state long term**
- **Hydro necessary to achieve States 50% renewable statewide energy policy**
- **State participation can make energy same cost as existing and lower in the long term.**