



Electrifying Alaska's Railbelt: A Generation & Transmission History

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From Tidewater to Golden Heart



“First completed mile of the Alaska Central Railway and headquarters building, Seward, Alaska, June 1904.”
John E. Ballaine Photograph Collection. PH Coll 1185, University of Washington Libraries, Special Collections, AWC1153.

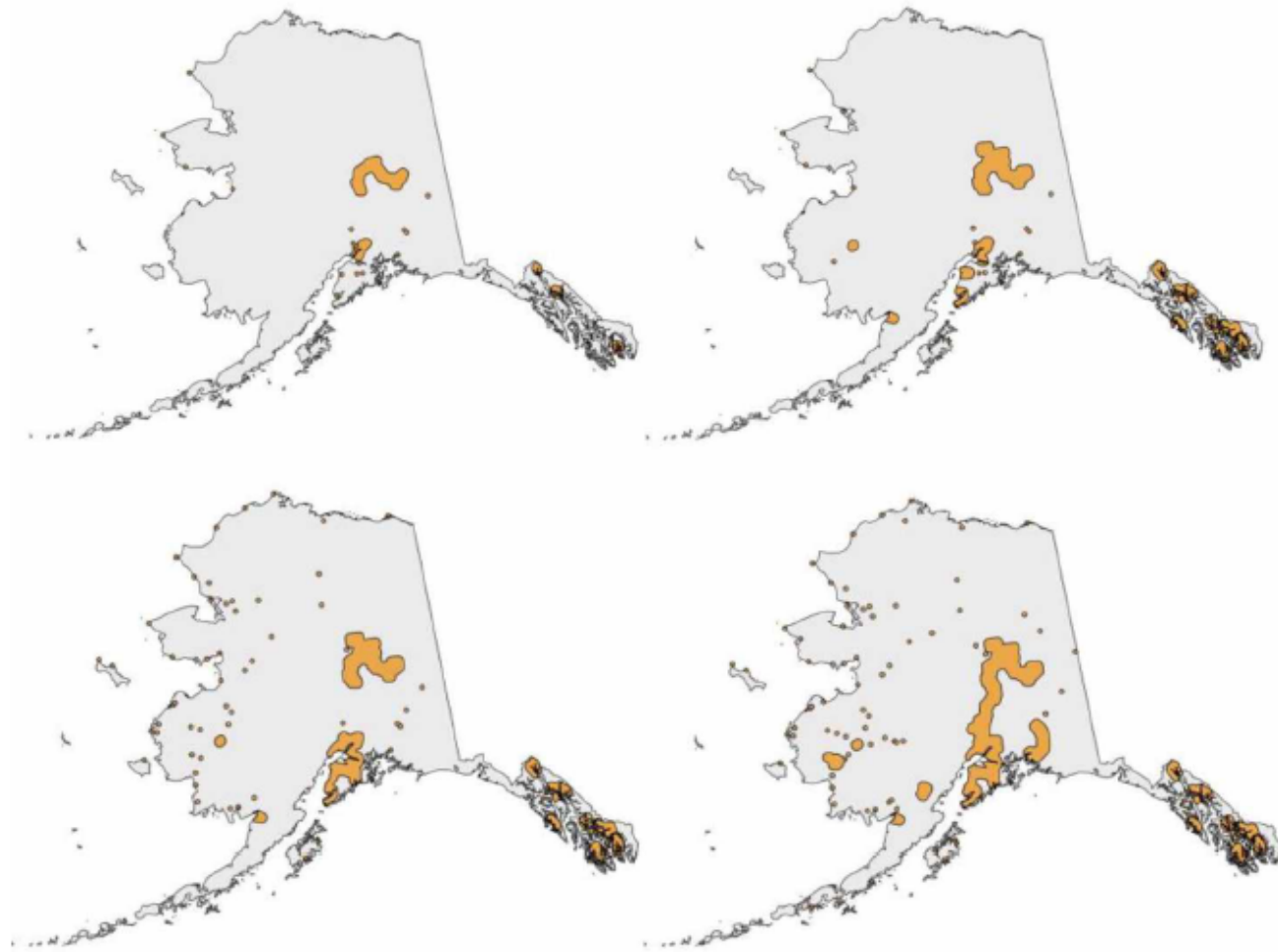


Figure 2.1. Electric grid build-out in Alaska. From upper left going clockwise: 2a) Alaska electric grid infrastructure in 1930; 2b) Alaska electric grid infrastructure in 1950; 2c) Alaska grid infrastructure in 1970; 2d) Alaska electric grid infrastructure present day. Source: Alaska Center for Energy and Power, UAF.

“Golden Eras” of Railbelt Generation & Transmission Buildout

1916-1929

AK Railroad & coal access, FE Co & Eklutna, first HV transmission

1952-1962

5x DoD CHPP plants, Eklutna & Kenai hydro, Kenai-ANC 69 kV

1975-1984

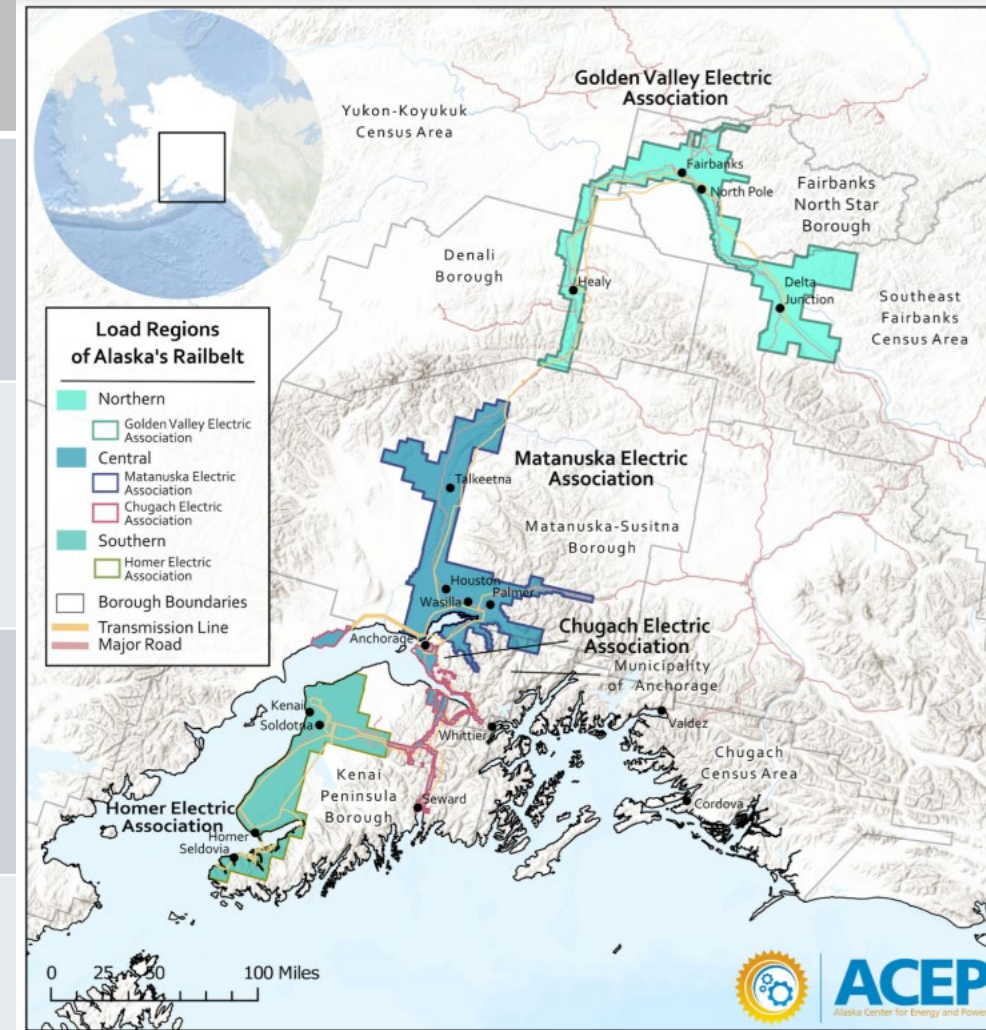
Pipeline Boom: 784 MW oil & fossil gas generation buildout

1985-1991

“Bradley Belt”: Alaska Intertie & Bradley Lake hydropower

2012-2016

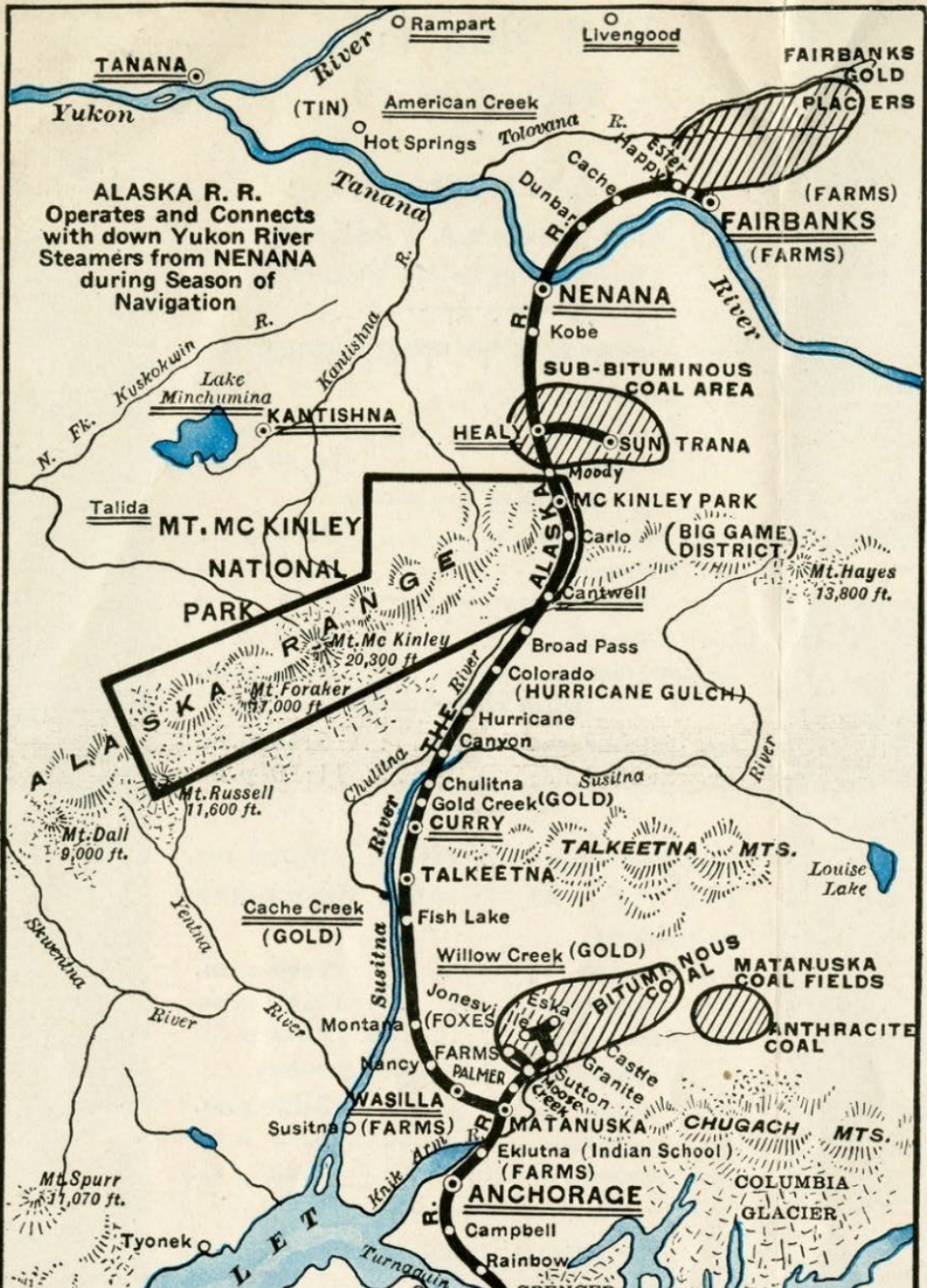
660 MW: Fossil and landfill gas, utility-scale wind, Healy 2 restart



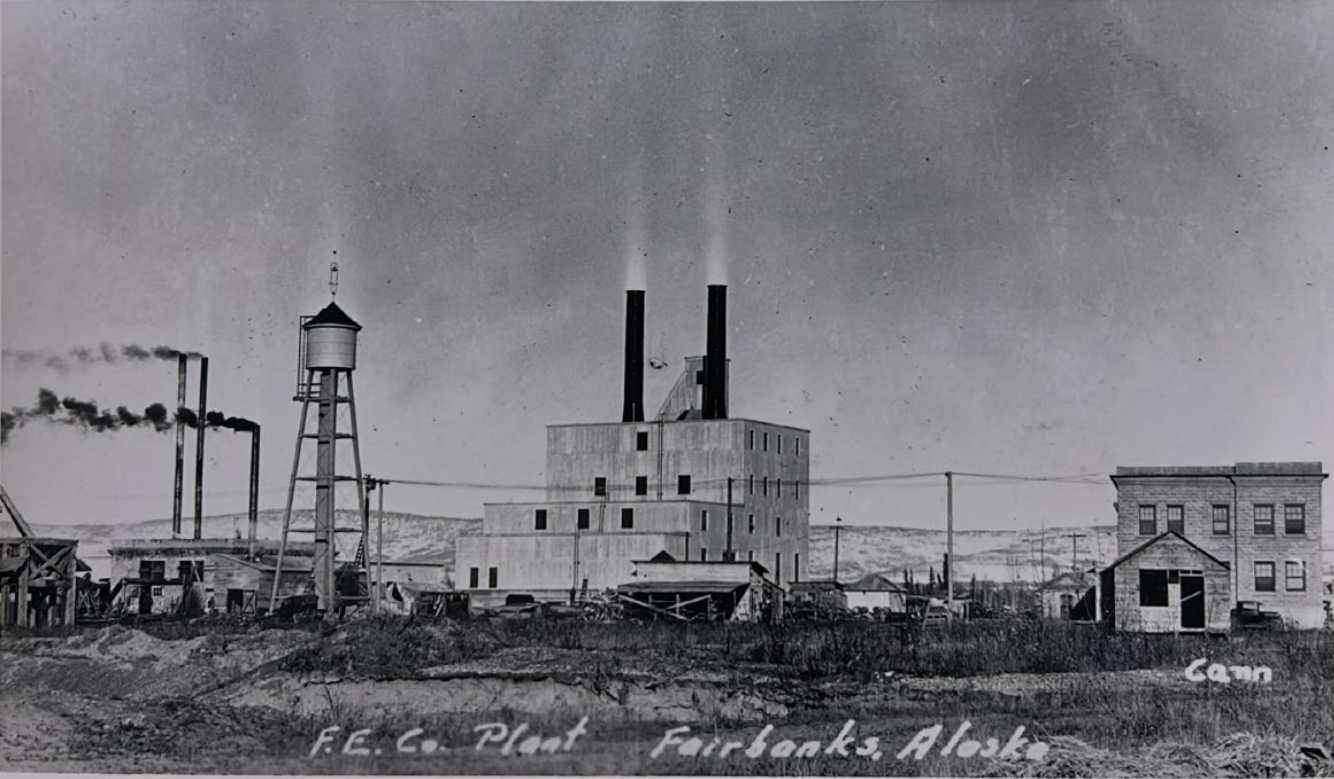
We Can Build Big Things When the Stars Align



Map for Alaska
Railroad brochure, late
1940s or early 1950s.



The Alaska Engineering
Commission's 900 KW
Steam plant in 1916.
University of Washington
Special Collections.



F.E. Co. Plant Fairbanks, Alaska



68 RC Million Dollar Gold Dredge Ester

Electrified Mining in Fairbanks

Railbelt military power projects, 1941-1961

- Ladd/ Ft. Wainwright – ~27 MW coal
- Fort Richardson – 38.6 MW coal/ gas)
- Elmendorf AFB – 23.5 MW coal/ gas)
- Eielson AFB – 10 MW coal
- Ft Greely—20 MW nuclear
- Clear AFS –22.5 MW coal
- Ft. Wainwright – Eielson AFB - Ft. Greely 34.5kv Transmission

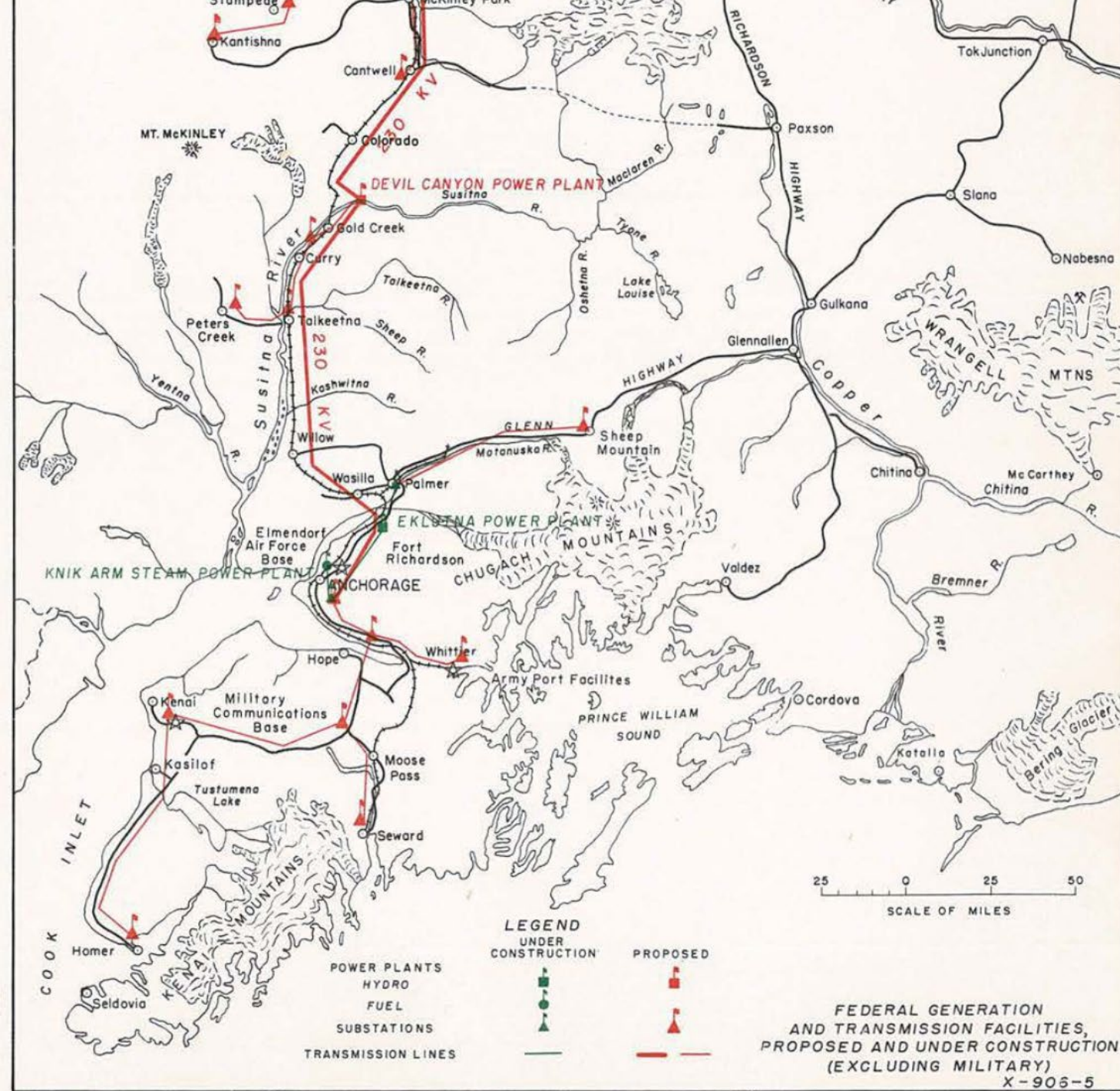


Hydrolines: The Dream of a High-Voltage Railbelt Grid



Above: "View Looking Southwest Near Homer", 1955-1961

Left: Joseph M. Morgan, "Susitna River Basin: A Report on Potential Development of Water Resources in the Susitna River Basin of Alaska", Bureau of Reclamation, August 1952.

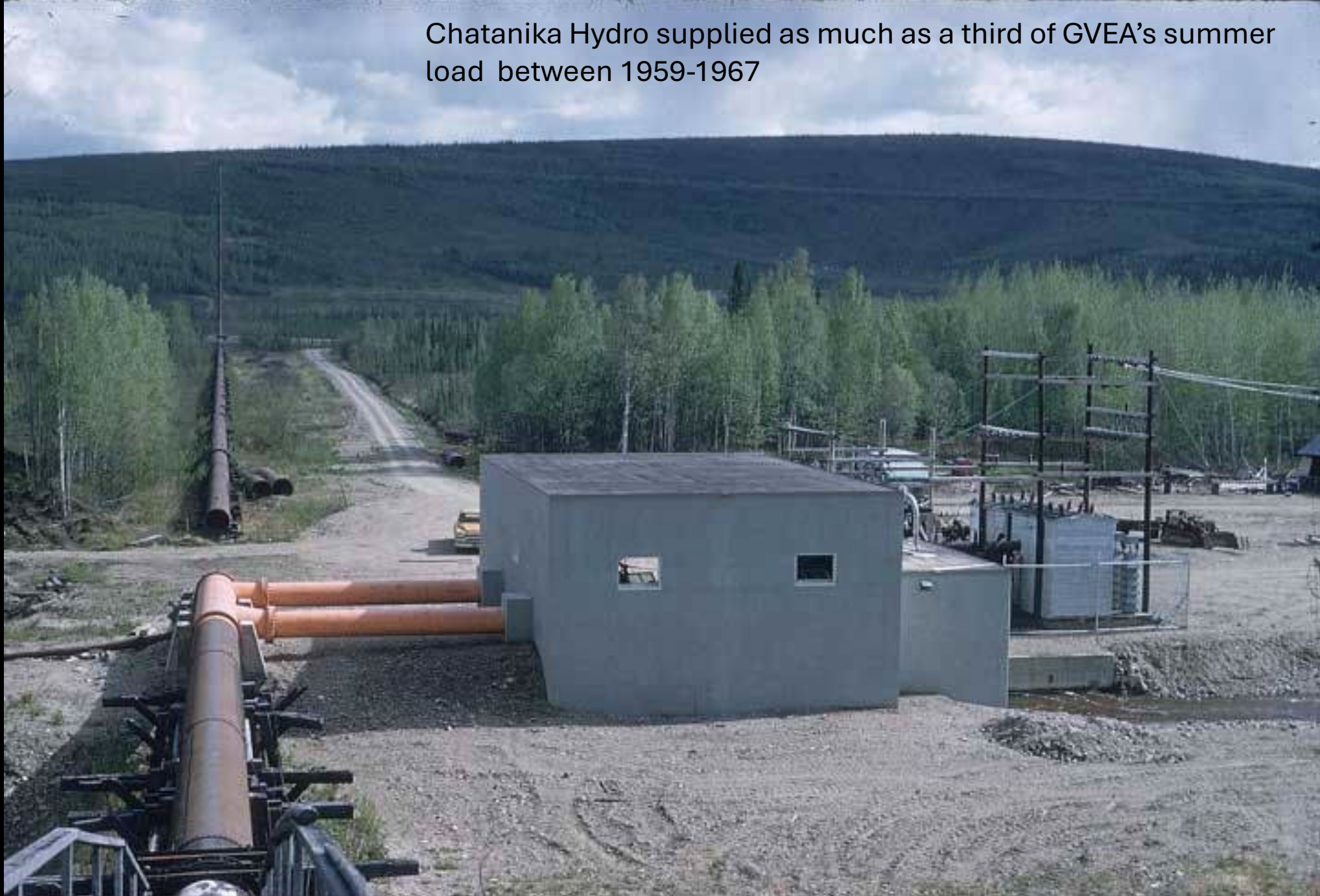


Renewables have Provided Half Our Power Before




Constructing the power tunnel for the Eklutna hydroelectric plant, 1951-1954. →

Chatanika Hydro supplied as much as a third of GVEA's summer load between 1959-1967



Archives, University of Alaska, Fairbanks



*The Bradley
Lake Dam in
2014 (Ian
Dickson/
KTOO)*

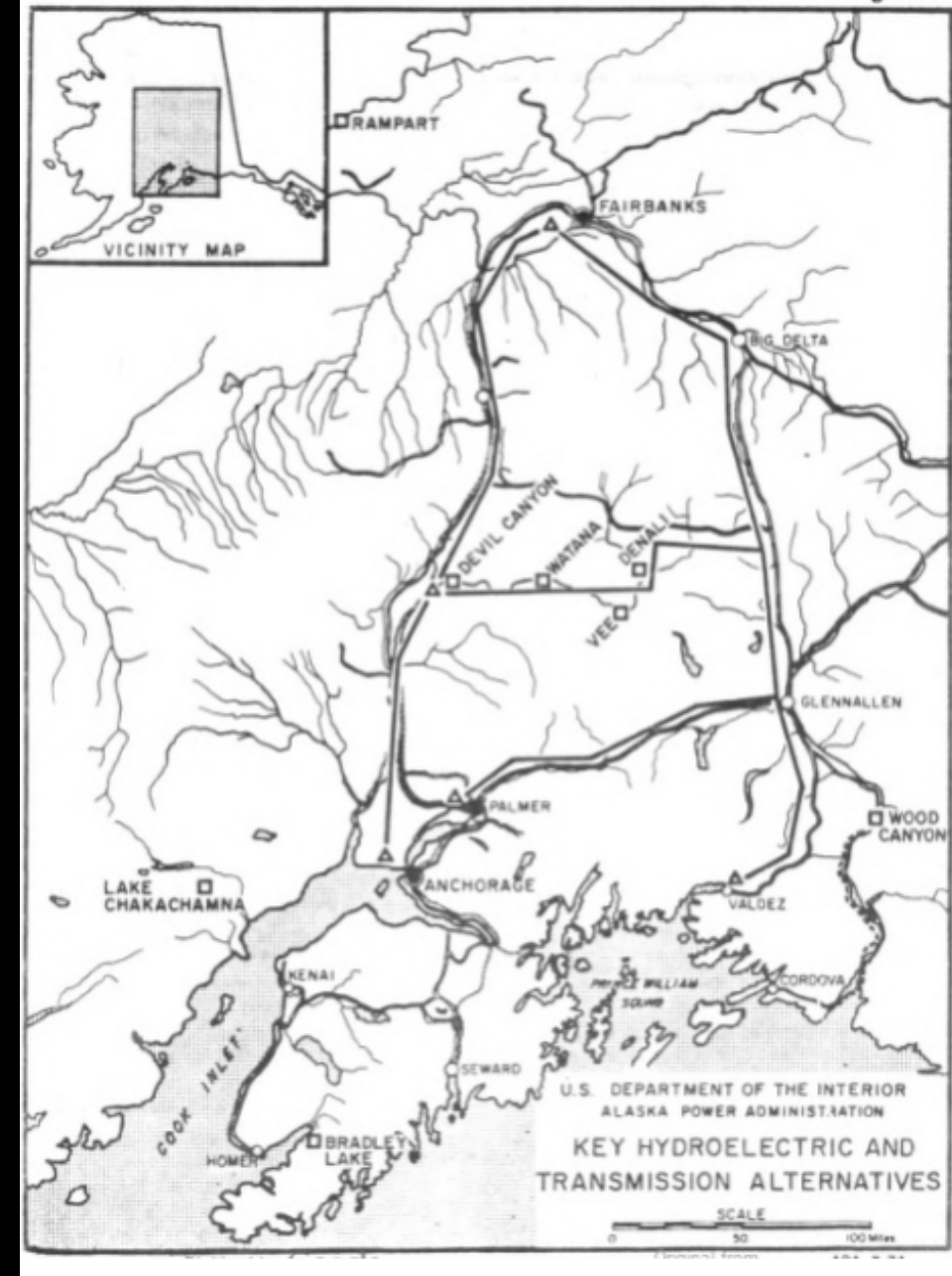
**We've Been Most Successful When Building Right-Sized Facilities
Commensurate with Alaska's Economy and Population**

A wide-angle photograph of the Cook Inlet in Alaska, showing several offshore oil and gas platforms. The platforms are large, complex structures with multiple levels and cranes, supported by thick, dark legs. They are scattered across the calm, blue water. In the background, a range of mountains is visible under a clear sky. The overall scene is serene but industrial.

The Gas Shortage is the Biggest Energy Disjuncture the Railbelt has Ever Faced

Offshore oil and gas
platforms in Cook Inlet.
(Nathaniel Herz/Northern
Journal)

Transmission and Power Pooling are the Keys to Unlocking Alaska's Most Efficient & Prosperous Energy Future



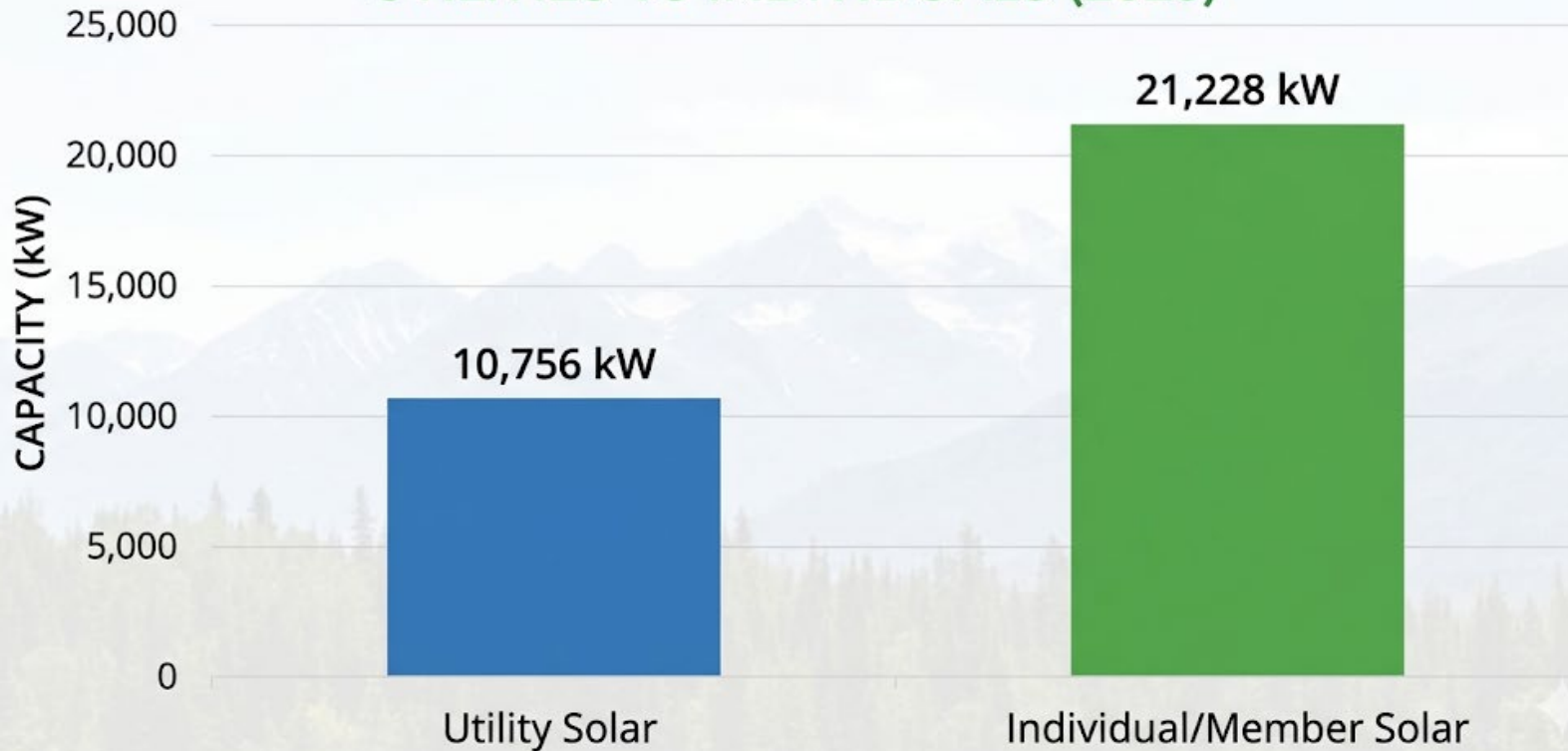
Left: Alaska Intertie (AEA)

Above: 1974 Power Survey, "Transmission Alternatives"

Empower Individual Alaskans and We Deliver

Railbelt Solar Capacity

UTILITIES VS INDIVIDUALS (2025)



<u>Solar Facility / Category</u>		<u>Rated Capacity (KW)</u>
GVEA Solar Farm		563
Willow Solar Farm		1200
Houston Solar Farm		8500
CEA Net Metered Community Solar		493
	Utility Total	10756
TCC Community Solar		999
GVEA Member Net Metering		5934
MEA Member Net Metering		3958
CEA Member Net Metering		6185
HEA Member Net Metering		4152
	Individual Total	21228

Over the past decade, individual Alaskans and non-profits on the Railbelt have installed twice as much solar as Utilities

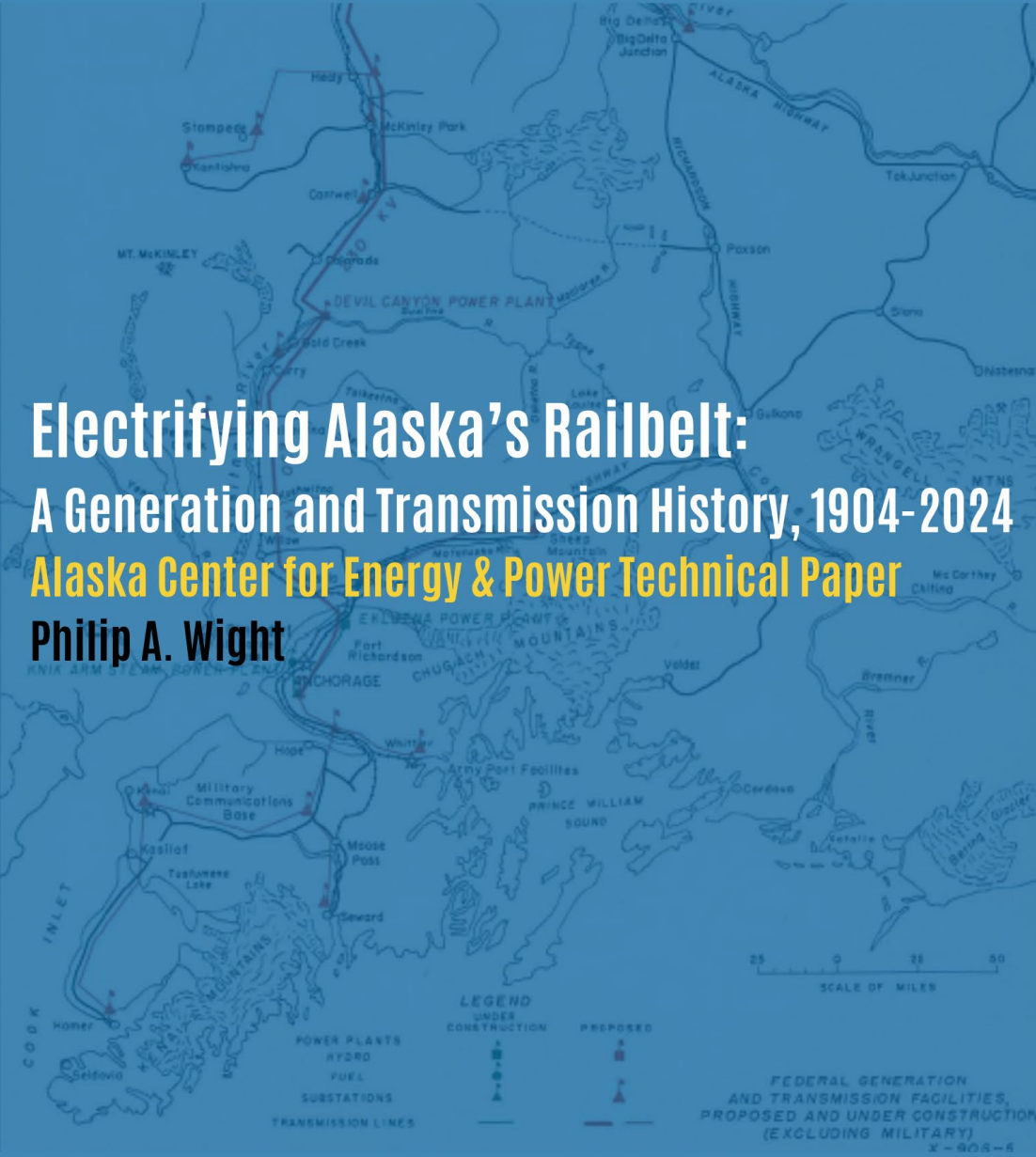
Historical Lessons:

- 1)The Grid is a Team Sport
- 2)We Can Build Big Things When the Stars are Aligned
- 3)Renewable Electricity Has Provided Half Our Power Before
- 4) We Have Been Most Successful When Building Right-Sized Projects
- 5)The Gas Crisis is the Biggest Energy Disjuncture We've Ever Faced
- 6)Transmission & Power Pooling Are the Keys to Unlocking Energy Efficiency & Prosperity
- 7)Empower Individual Alaskans and We Deliver

Thank You

Questions?

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**Electrifying Alaska's Railbelt:
A Generation and Transmission History, 1904-2024**
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