Southeast Alaska Grid Resiliency Project (SEAGR)

#11 on REF List

SEAPA

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Fun Facts About SEAPA

2nd Largest Electric Transmission System in Alaska

Tyee: 3rd highest-yield hydro in Alaska

Services 3 Communities

2 hydro plants

175 miles of transmission

12 miles of submarine cables

180+ Giga-Watt hours/year

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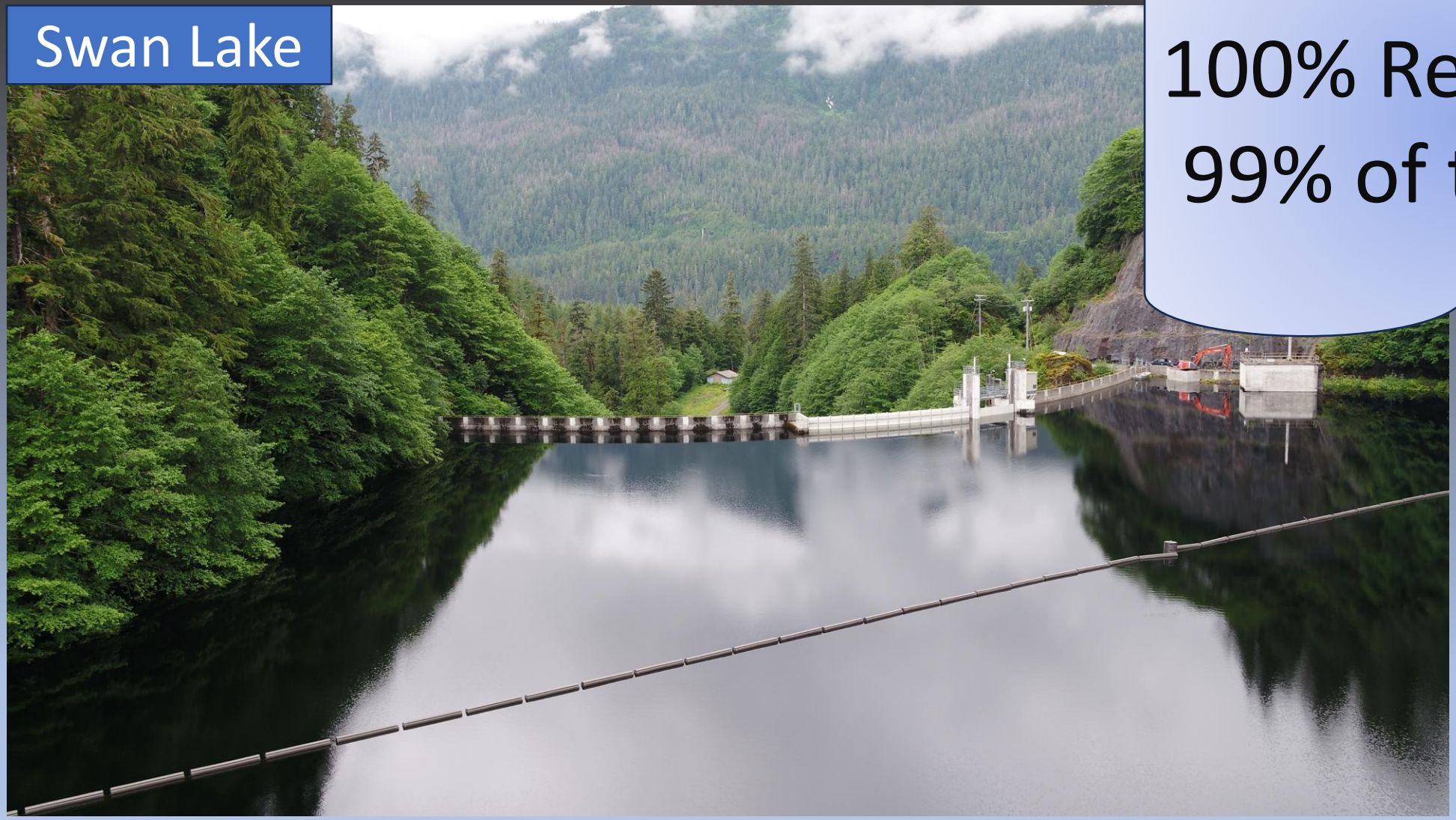
About SEAPA



100% Renewable
99% of the time

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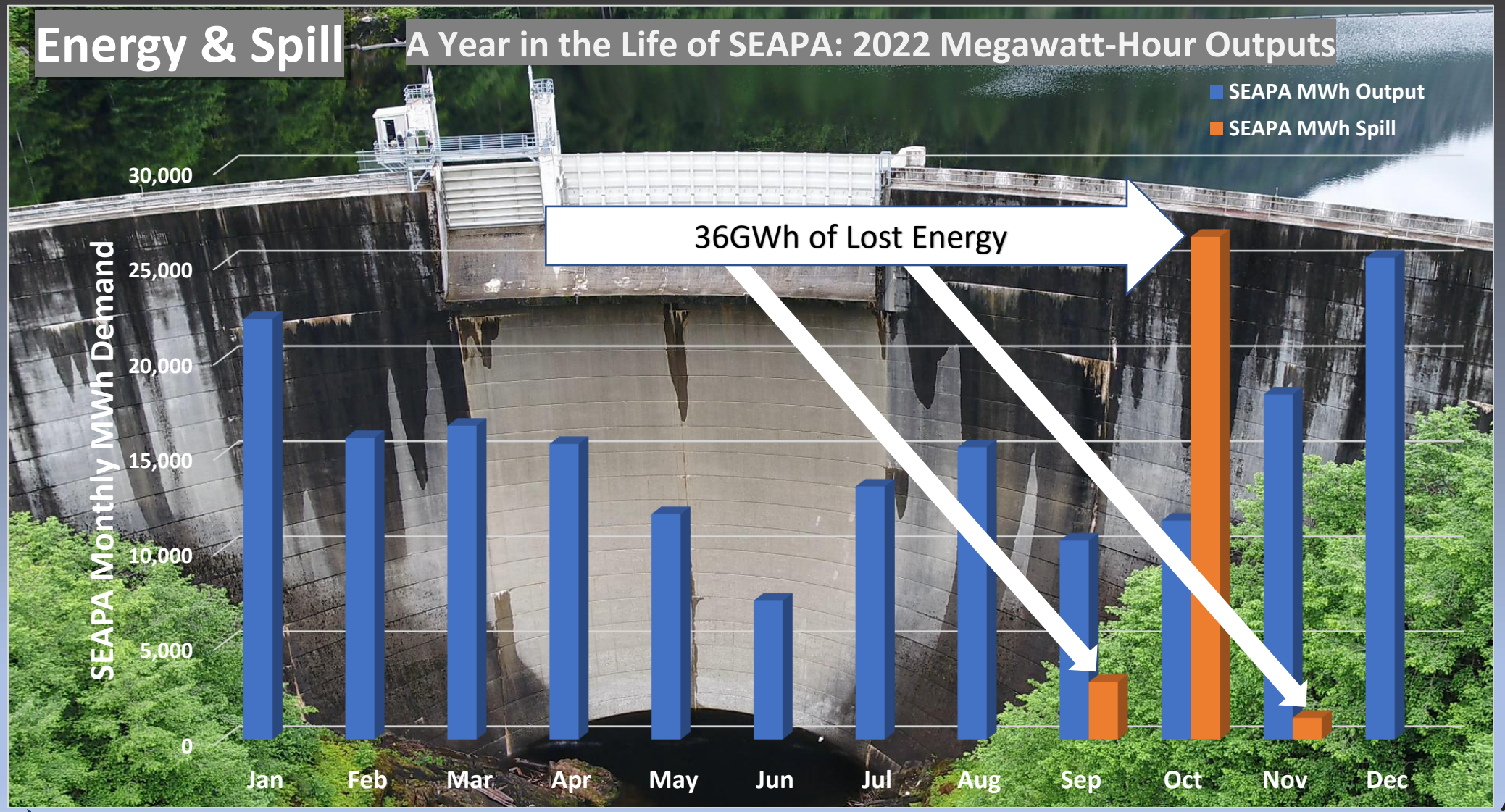
Trend Analysis - Energy

Energy & Spill



GWh Energy is 200+GWh

~180GWh Dispatched in 2022

Average Spill between 20GWh – 30GWh

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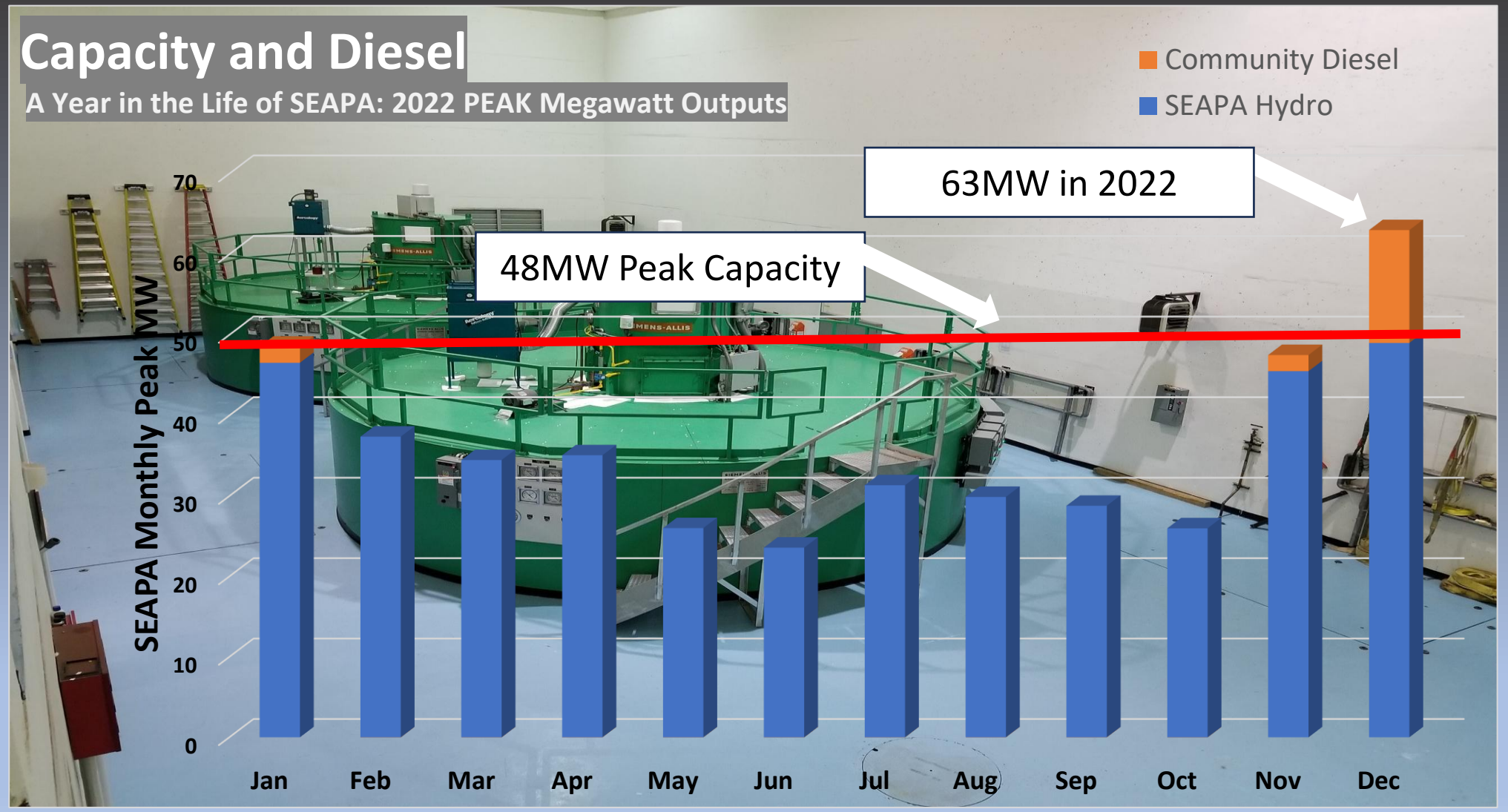
Trend Analysis - Capacity



PEAK 48MW

Proportional to Lake Levels

63MW were needed to cover Diesel

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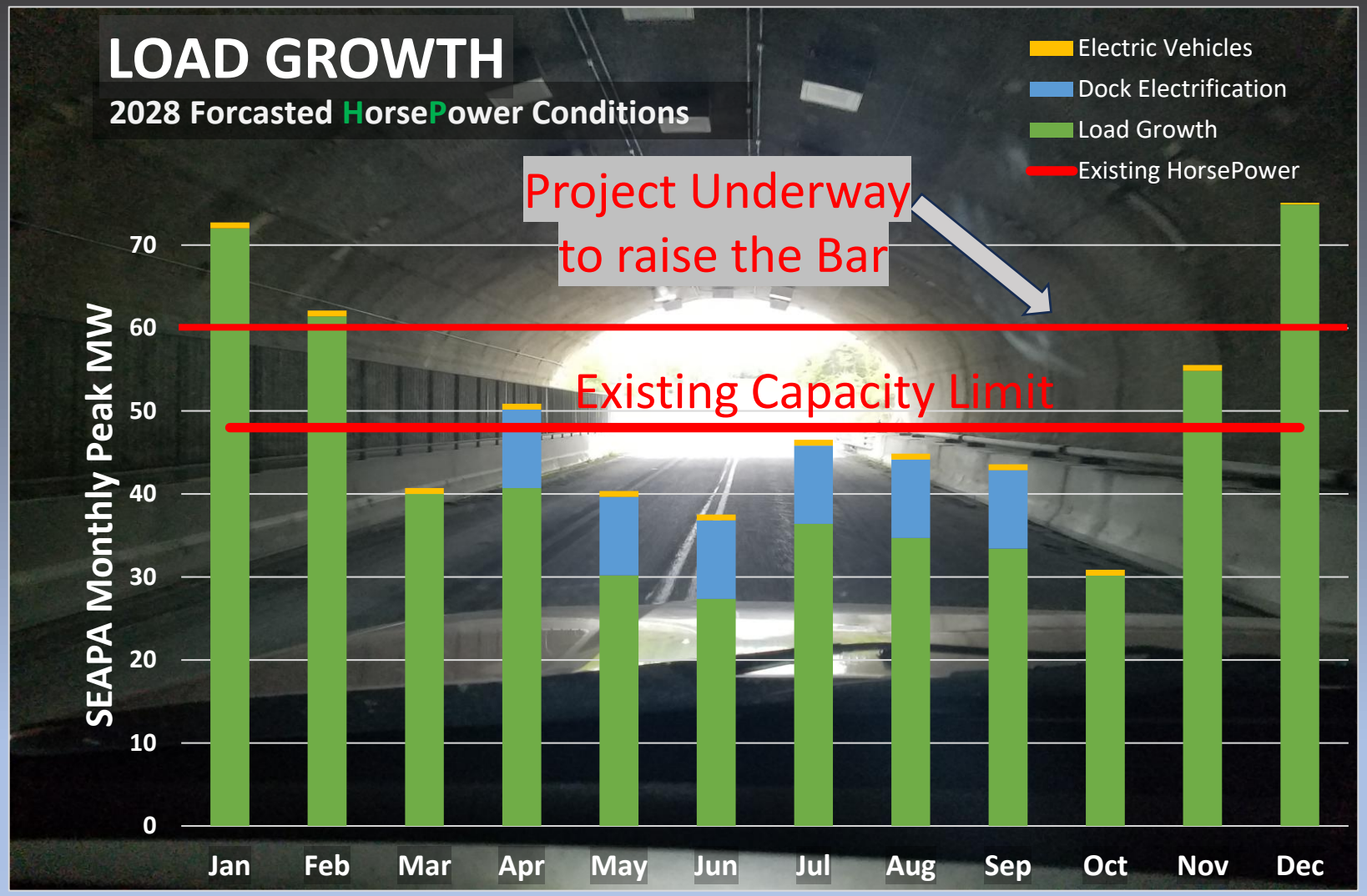
Load Growth – Capacity

FUTURE



Forecasted Capacity Growth is 2.52%

Heat Pump conversions dock electrification and electric vehicles

Increase MW from 48MW to 60MW (16,000HP)

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Load Growth – Why?

Cost of Energy

70-80% of residential energy consumption is for heating

In 2016, 72% of Southeast Alaskans heated homes with fuel oil (diesel)

In 2023, the percentage has dropped to 50%

NO PCE for Southeast

Cost Comparison

Anchorage

1 Therm of Heat (100,000 BTU's)

Natural Gas: $1.06 (Enstar's Website)

Ketchikan

1 Therm of Heat (100,000 BTU's)

Fuel Oil: $3.24(bill)

305% of Anchorage

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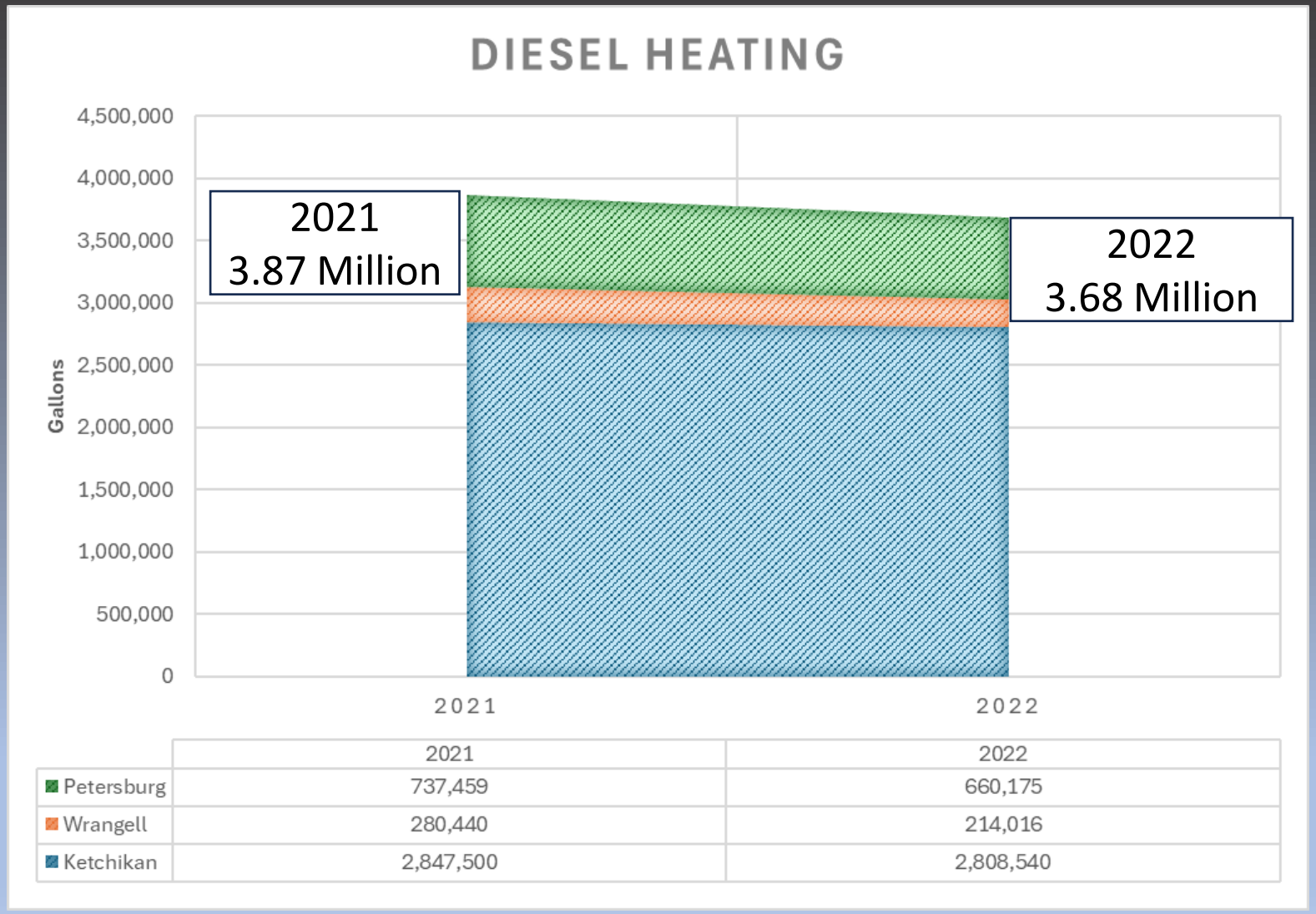
Trend Analysis – Diesel Heating



	2021	2022
Petersburg	737,459	660,175
Wrangell	280,440	214,016
Ketchikan	2,847,500	2,808,540

3.7M Gallon's cost $18.5M to residents at $5/Gal

Heat Pump equivalent costs per displaced gallon was $1.9

Savings: Over $11.5M per year

$38M EPA Heat Pump Grant will accelerate

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Diesel Heating Calculations

Overview

36GWh of Energy required to convert Fuel Oil Heating to Heat Pumps

=

36GWh spilled Energy in 2022

Existing Fuel Oil Boilers

$4 - $5 per gallon of Diesel Fuel Oil

Heat Pump Systems

$1.9 per equivalent gallon of Diesel Fuel Oil

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New Generator at Tyee

FUTURE

In 1984, Tyee was built with provisions for another generator (Skeleton Bay)

Increase Tyee Capacity by 50%

Increase SEAPA Total Capacity by 25%

Increase Contingency

Increase Resiliency

Low Hanging Fruit

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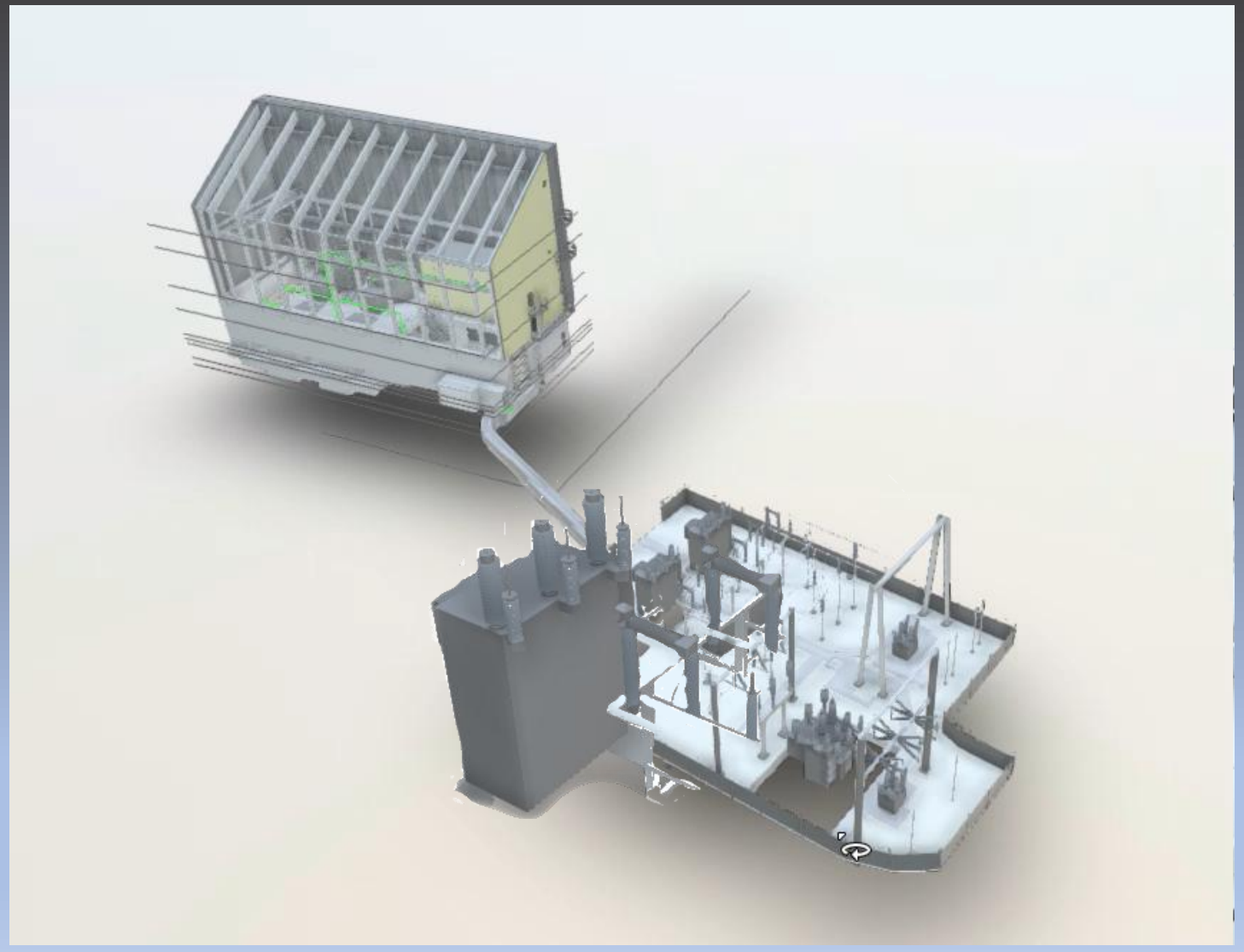
30,000 Foot View



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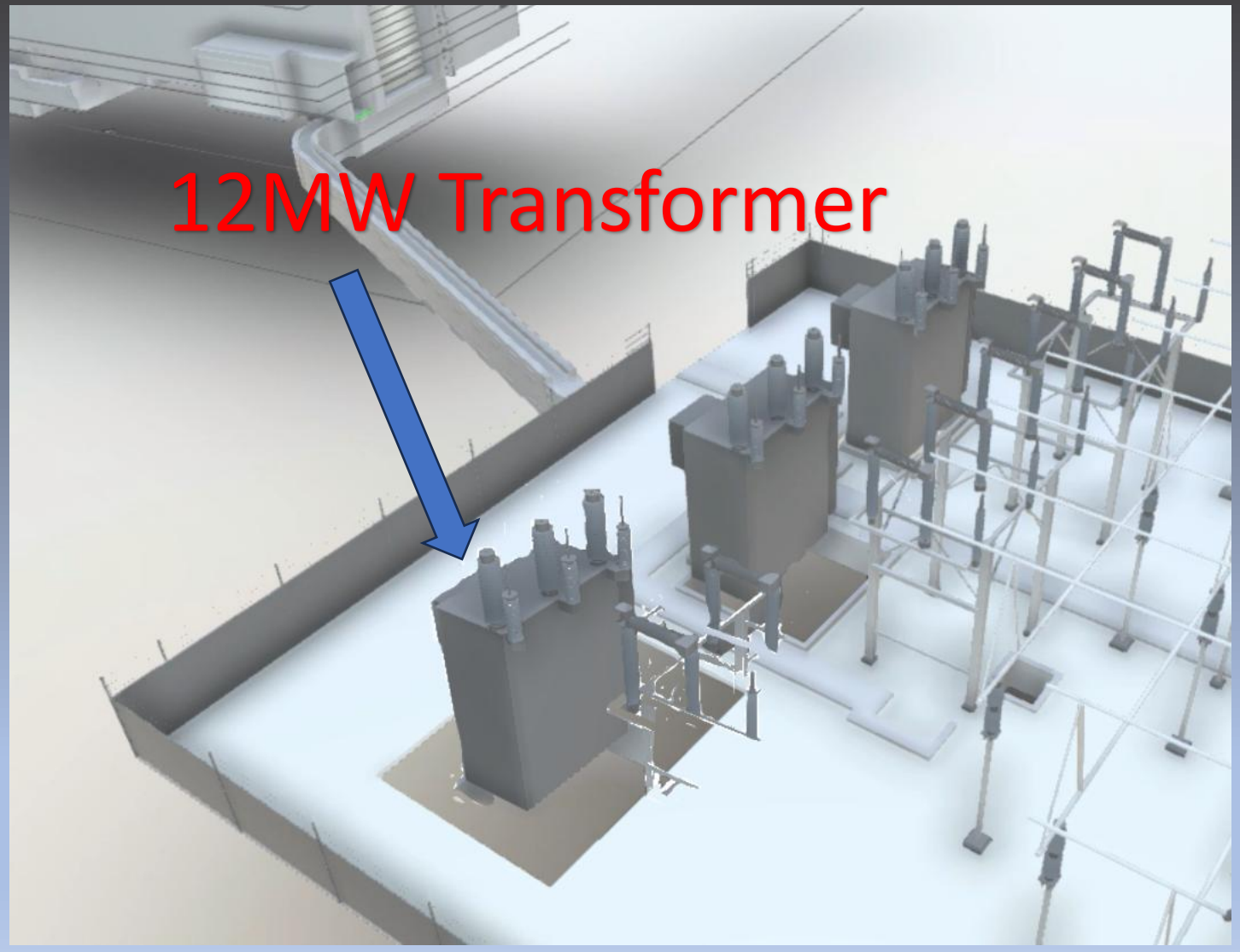
30,000 Foot View



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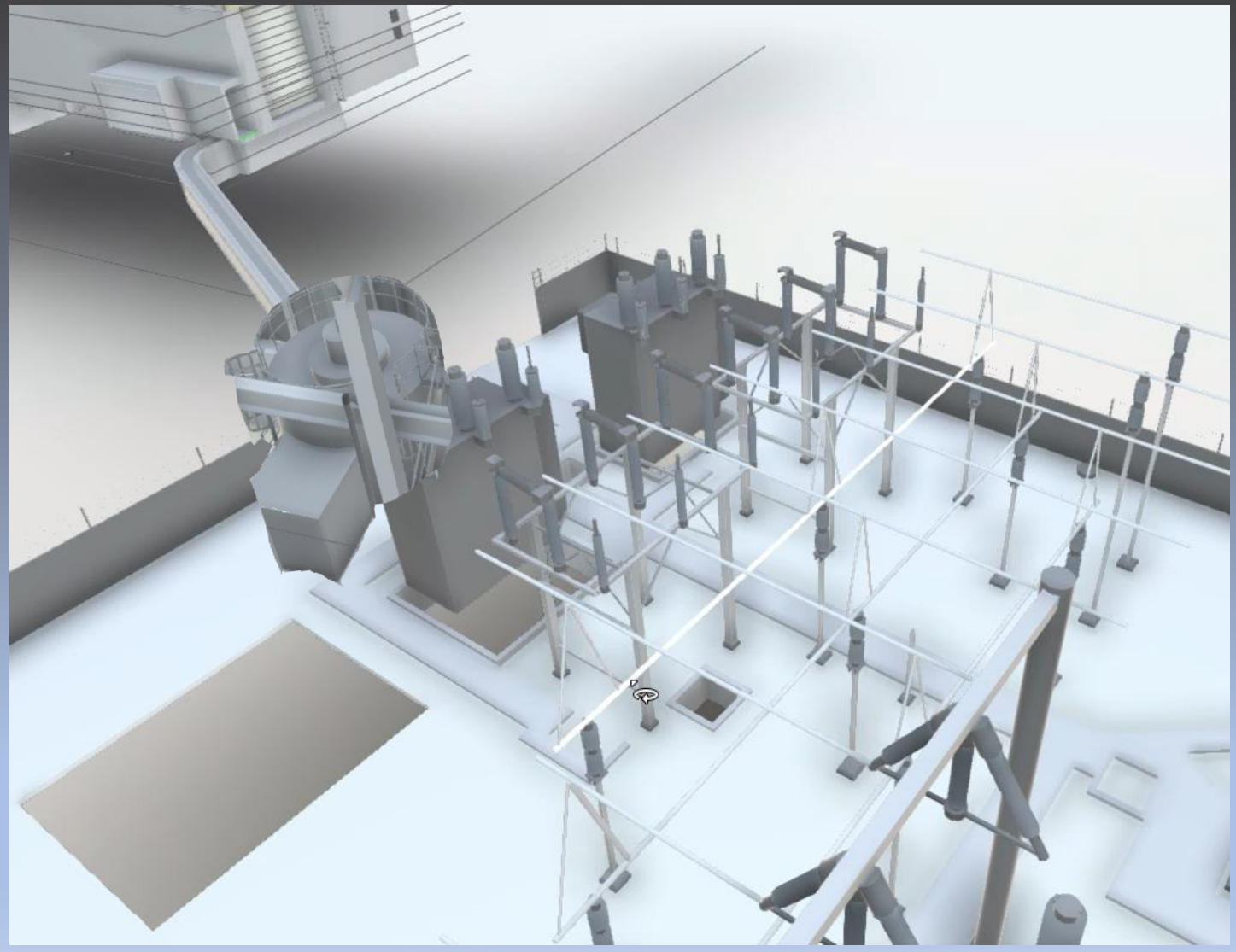

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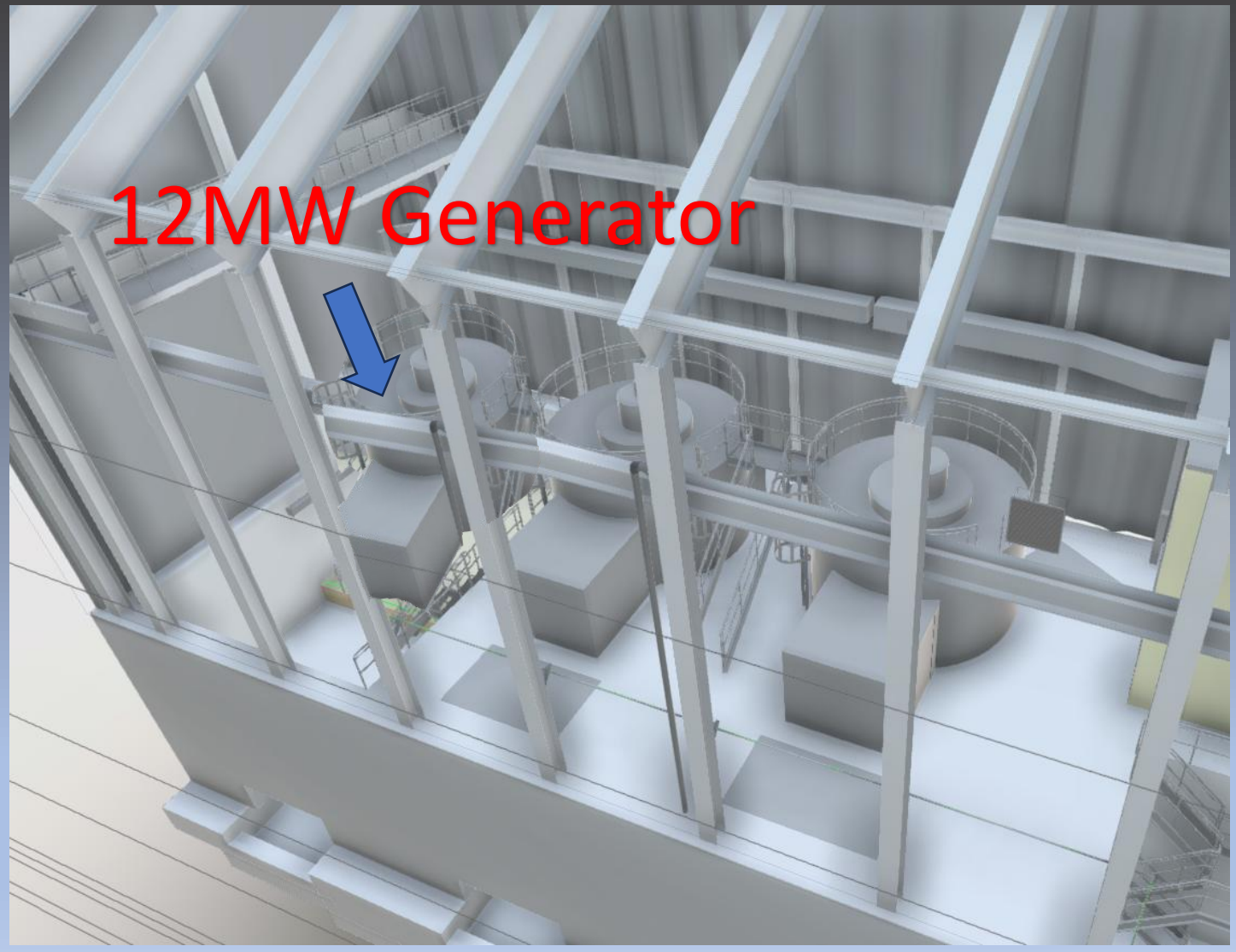

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Permitting Progress

Nov 2024: SEAPA was designated as FERC's non-federal representative for consultation with stakeholders such as SHPO, USFS, USFWS, NOAA and others.

Dec 2024: Stakeholder consultation resulted in 100% support of the project, recognizing no environment impact.

Jan 2025: With written endorsements from stakeholders, SEAPA received a waiver of second stage consultation from FERC.

Feb 2025: Final Application submitted, in expedited review at FERC

Anticipate approval from FERC in Q3, 2025

Design/Procurement Progress

Nov 2024: 100% procurement design specification complete

Feb 2025: 90% construction specifications and drawings complete

Mar 2025: Bids due for Generator, Transformer and Ancillary Equipment

Jun 2025: Anticipate final construction design to integrate successful bid and solicit RFP's for Construction

Construction Schedule

Procurement	25-Apr	Procurement of Generator, Transformer and Ancillary Equipment
Final Fabrication of Generator and Turbine	Jun-26	OEM engineering and fabrication of the actual generator and turbine package is required.
Final Fabrication of 12.5MVA GSU Transformer	Jun-27	OEM engineering and fabrication of the Generator Step-up Transformer (GSU) is required to sync the new generator to the electrical grid.
U3 Transformer/Structure	Oct-26	Installation of buswork, switches, transformer pad, oil containment and the transformer is required to install the transformer that will sync the generator to the grid.
Powerhouse structural and second stage Concrete	Dec-26	Rebar, concrete, flooring, penstock mounts, stairs and generator mounts are required to install the generator and turbine.
Piping (all mechanical piping)	Dec-26	Mechanical piping to provide cooling and hydraulic controls are required to install the generator and turbine.
Turbine Shut-off Valve	Jan-26	A shut-off valve is required to install the generator and turbine with 600psi of pressure in the penstock for shutdowns and maintenance of the generator and turbine.
Turbine-rotating parts and bearings and shaft	Jan-26	Bearings to support the turbine and weight of the generator are required for installation of the generator and turbine.
Turbine- nozzle piping	Jan-26	Turbine nozzles and piping is required for the generator to rotate once installed to produce energy from the water in the penstocks.
Governor	Jun-27	A governor is required to control the speed of the generator to maintain 60hz on the electrical grid and not overspeed.
Exciter	Jun-27	The exciter is required for the generator to provide and maintain voltage on the electrical grid.
Controls, protective relays, misc. wiring	Jun-27	Control and protective relays are required for operating the generator and to protect the generator from failures.
Buswork switch gear & Unit Breaker	Jun-27	Buswork and a breaker is required to connect the generator to the GSU transformer.
Turbine Bypass Valve & Air	Jun-27	The turbine bypass valve is required to equalize pressure between the 600psi penstock and the turbine nozzles to prevent water hammering and failure of the penstock
Commissioning	Dec-27	Commissioning is required

Financial Outlook

	Jan-24	Jun-24	Jan-25	Jun-25	Jan-26	Jun-26	Jan-27	Jun-27	Dec-27
SS&15kV SWGR DESIGN	$265,131								
TURB/GEN DESIGN		$858,837							
TURB/GEN LICENSE	$272,468								
TURB/GEN PROCURE			$300,000	$1,500,000		$4,000,000			
XFMR PROCURE			$100,000	$500,000		$400,000	$200,000		
SS&15kV SWGR CONST			$4,737,139						
TURB/GEN CONST				$600,000	$2,000,000	$4,400,000 $3,100,000			$1,000,000

KEY	
SEAPA CASH/ITC	
Round 16/17/18 REF	
Other Grants (Bonds?)	
DOE SEC 247 Grant	

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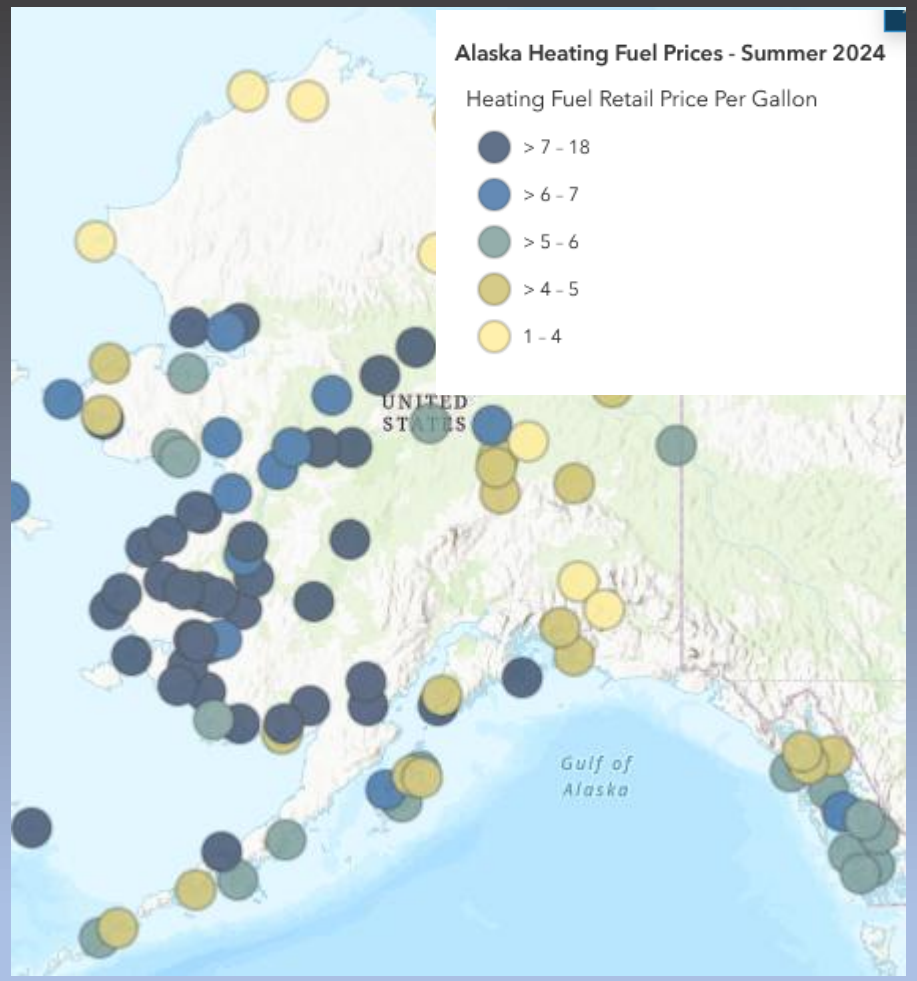
Importance of the REF

Department of Community and Regional Affairs (DCRA)



Federal Match: Department of Energy Grants

Since Inception, displaced over 100M Gallons of Diesel (Approaching $1B into Alaskan Economies)

Operational Budgets increase yearly due to inflation, Energy is a fundamental factor of inflationary costs

A program for all Alaskans, from Nome to Ketchikan

Fully Funded Cost: 0.3% of a balanced $6.5B Budget

$$\frac{\$21{,}214{,}676\ (REF)}{\$6{,}500{,}000{,}000\ (Budget)} = 0.3\%$$

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Questions/Discussion