

# The Future of Energy in Cook Inlet

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House Special Committee on Energy

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**Established in 2004, REAP is a statewide non-profit coalition of diverse businesses, NGOs, electric utilities and clean energy developers**

***REAP's mission is to increase renewable energy development and promote energy efficiency in Alaska.***

# REAP Programs



REAP STEM educators promote energy literacy through AK *EnergySmart* and *Wind for Schools*

REAP's Alaska Network for Energy Education and Employment (ANEED) helps build clean energy career paths across the state

Partnerships with US DoE and national laboratories bring technical assistance to rural communities across the state

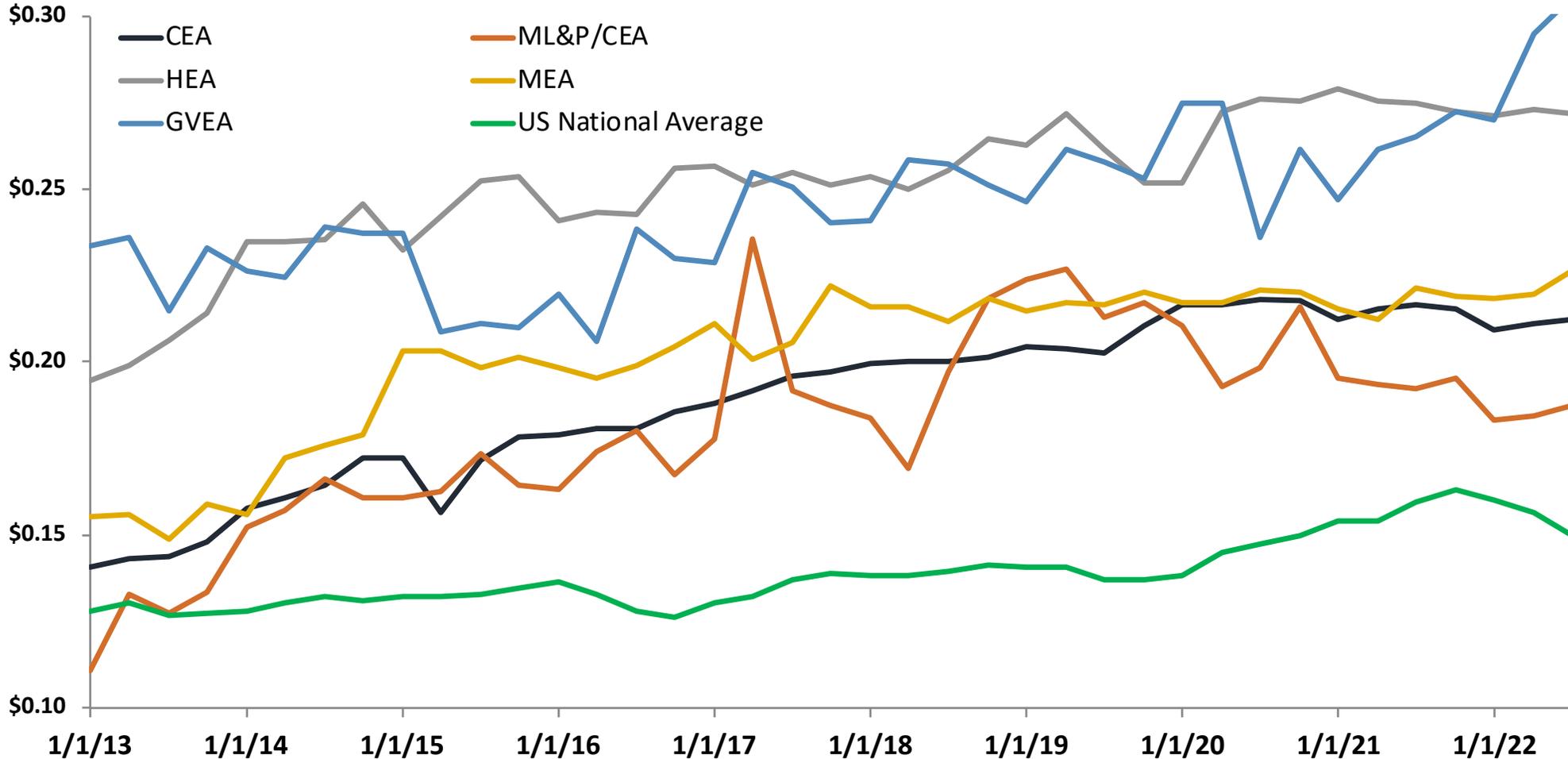
REAP's work with the *Sustainable Southeast Partnership (SSP)* assists communities in Southeast Alaska

REAP hosts a variety of conferences, energy fairs, webinars and presentations to educate the public

# Presentation Overview

- Railbelt electricity rates have been rising much faster than in the Lower 48
- Cook Inlet natural gas prices have also been rising quickly
- Meanwhile, DNR says Cook Inlet gas production will see a shortfall as soon as 2027
- *If* the Railbelt imports LNG to make up for the shortfall:
  - Natural gas costs will dramatically increase, raising rates for Railbelt consumers
  - PCE reimbursements across rural Alaska will take a steep hit
  - The volatility of electricity prices across the state will increase
- Meanwhile, renewable energy costs have fallen precipitously worldwide, making it the cheapest electricity that can be generated in most jurisdictions
- The Railbelt needs a renewable portfolio standard to diversify our sources of electricity, and accelerate the deployment of local renewable energy resources to protect consumers

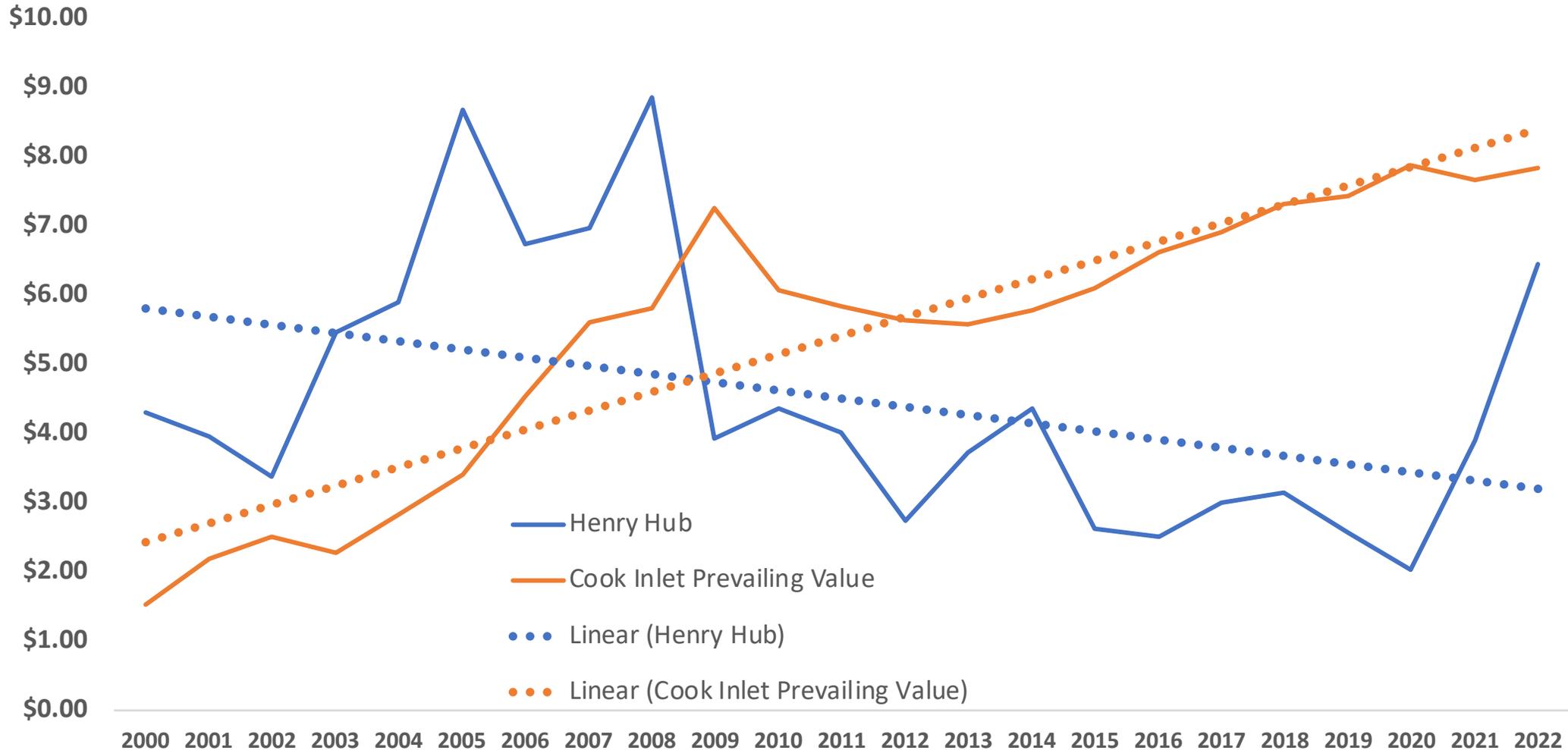
# Railbelt Residential Electric Rates Have Risen Quickly



Over last 10 years, average residential rates rose more than 3x as much in the Railbelt as in the Lower 48.

Railbelt data compiled by RCA Staff; US National Average Data from US Energy Information Agency, <https://www.eia.gov/electricity/data/browser/#/topic/7?agg=2,0,1&geo=g&freq=M&start=200101&end=202212&ctype=linechart&ltype=pin&rtype=s&maptype=0&rse=0&pin=>

# Cook Inlet and US Natural Gas Prices, \$/Mcf



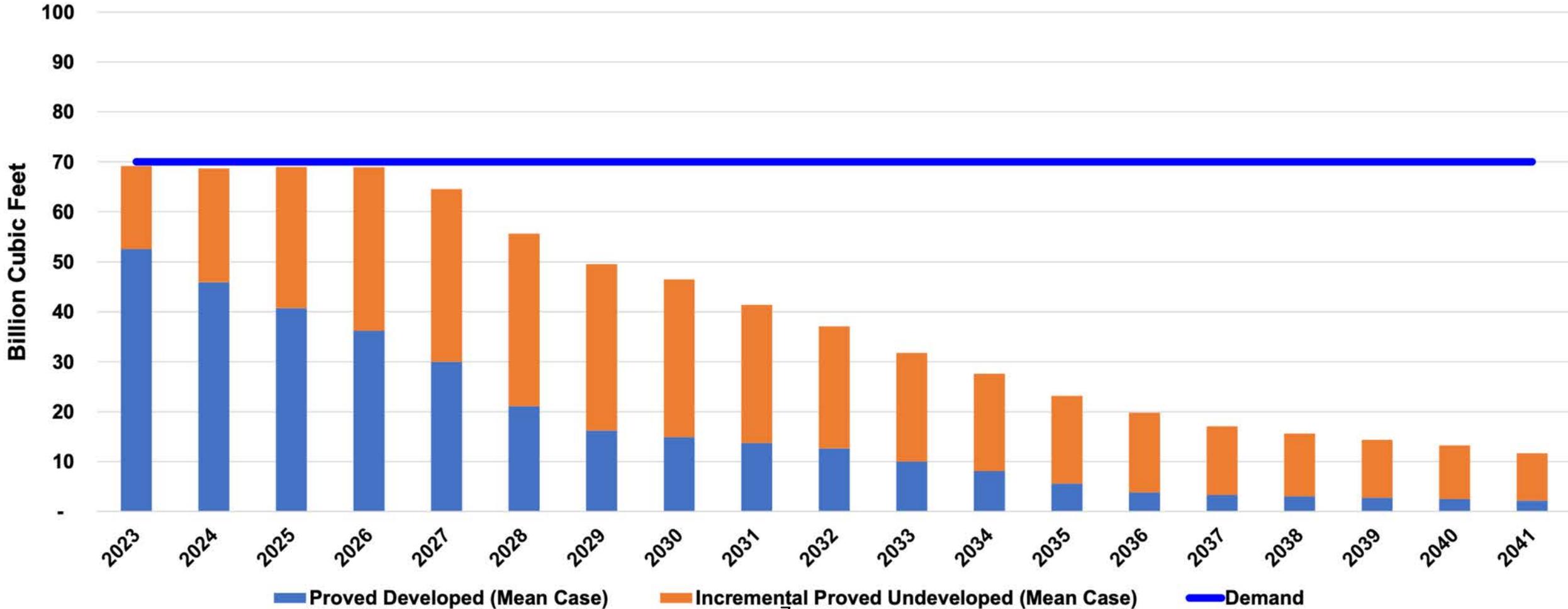
Over last 10 years, Cook Inlet gas prices rose more than 3x as much Henry Hub prices.

Cook Inlet data from Alaska Department of Revenue, <http://www.tax.alaska.gov/programs/oil/prevailing/cook.aspx>  
 Henry Hub data from US EIA, <https://www.eia.gov/dnav/ng/hist/rngwhhdA.htm>

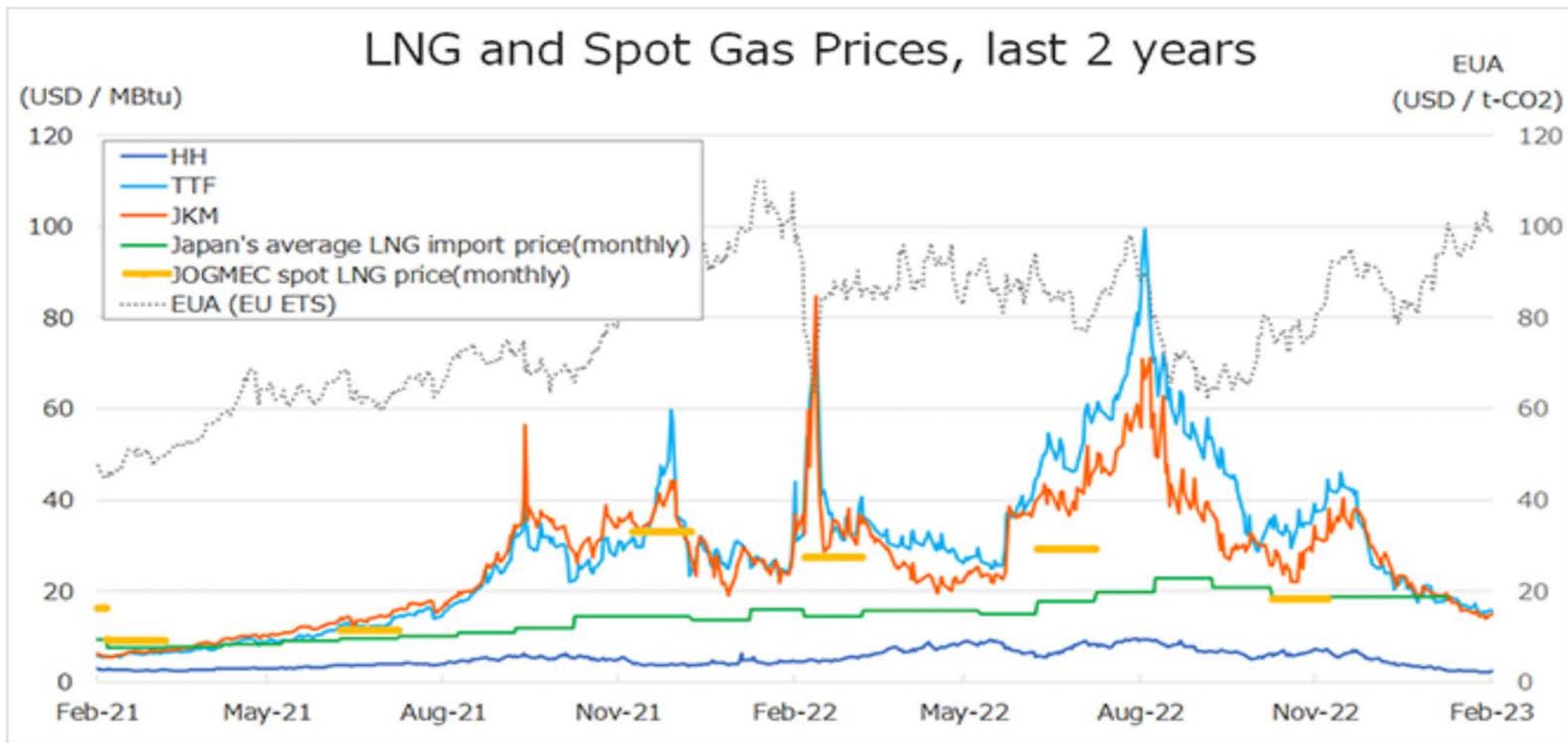
# FORECAST PROVED DEVELOPED & PROVED UNDEVELOPED



**Cook Inlet Gas**  
**Proved Developed & Proved Undeveloped (Truncated Mean Case)**

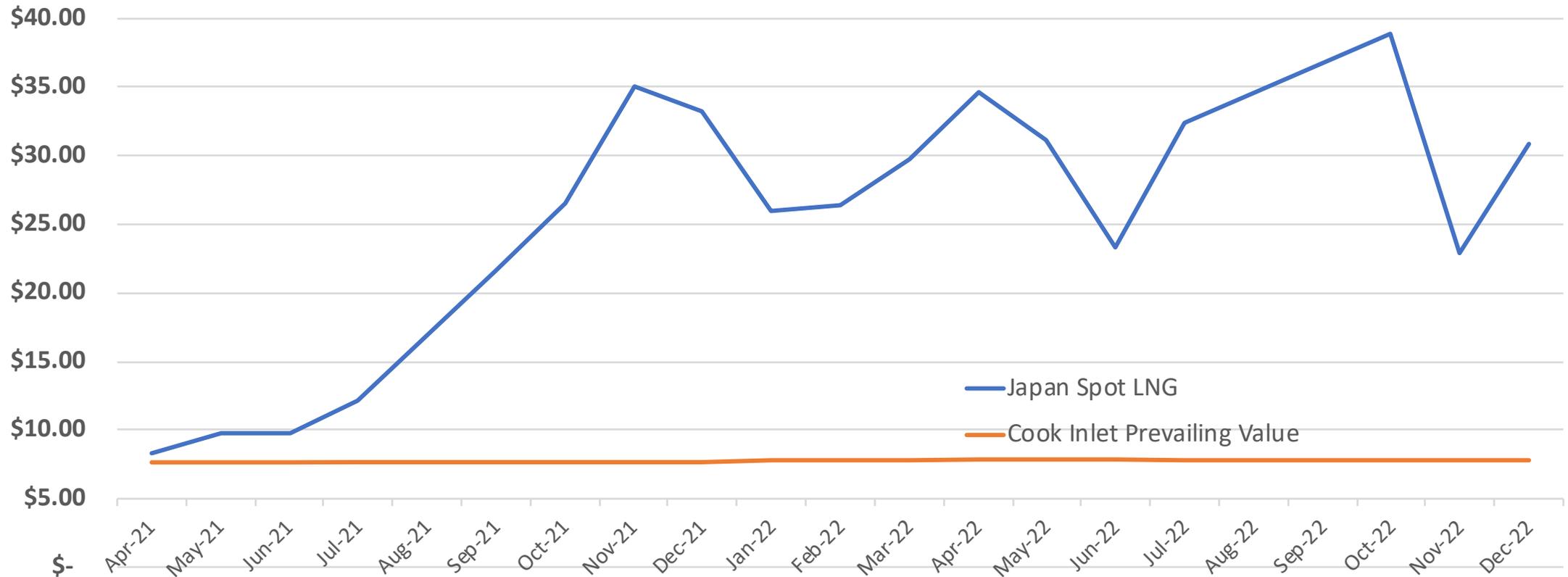


# World LNG Spot Prices Are Volatile



Source: [https://oilgas-info.jogmec.go.jp/nglng\\_en/1007907/1009652.html#link01](https://oilgas-info.jogmec.go.jp/nglng_en/1007907/1009652.html#link01)

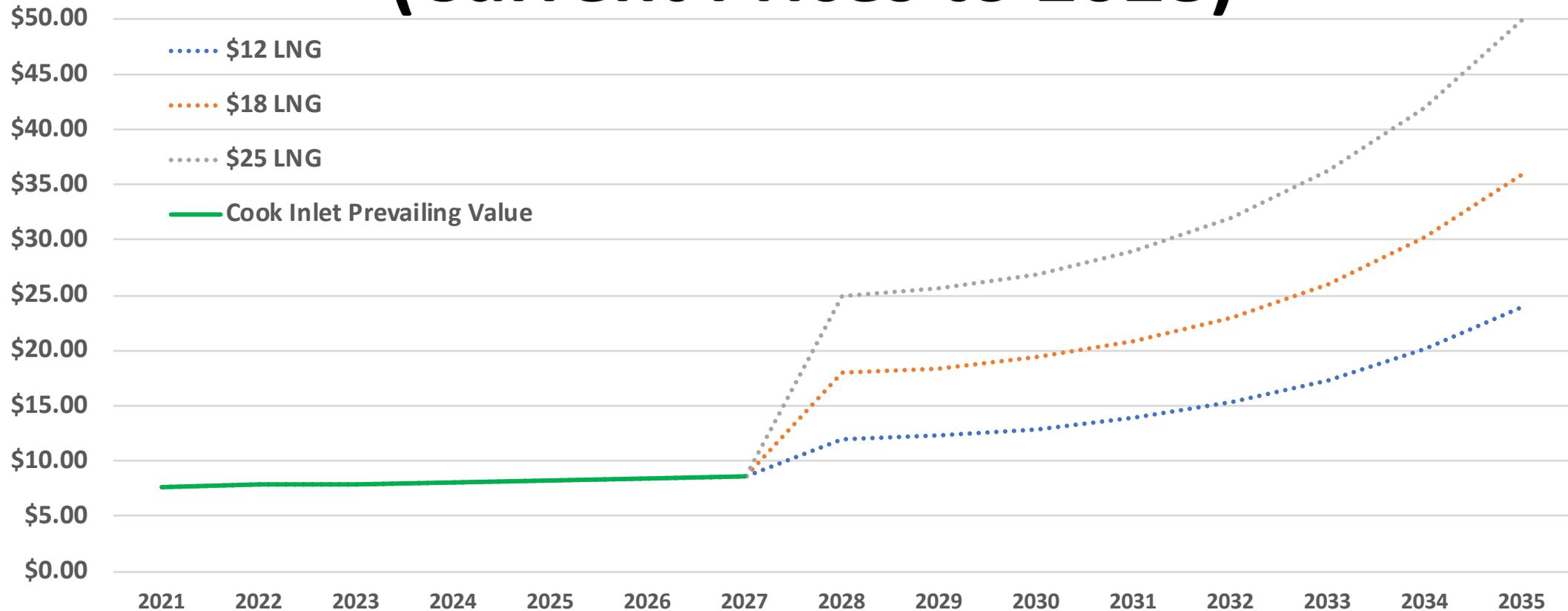
# Japanese LNG import spot price versus Cook Inlet average gas prices (\$/Mcf)



Japan spot prices: [https://oilgas-info.jogmec.go.jp/nglng\\_en/datahub/dh2023/1009626.html](https://oilgas-info.jogmec.go.jp/nglng_en/datahub/dh2023/1009626.html)

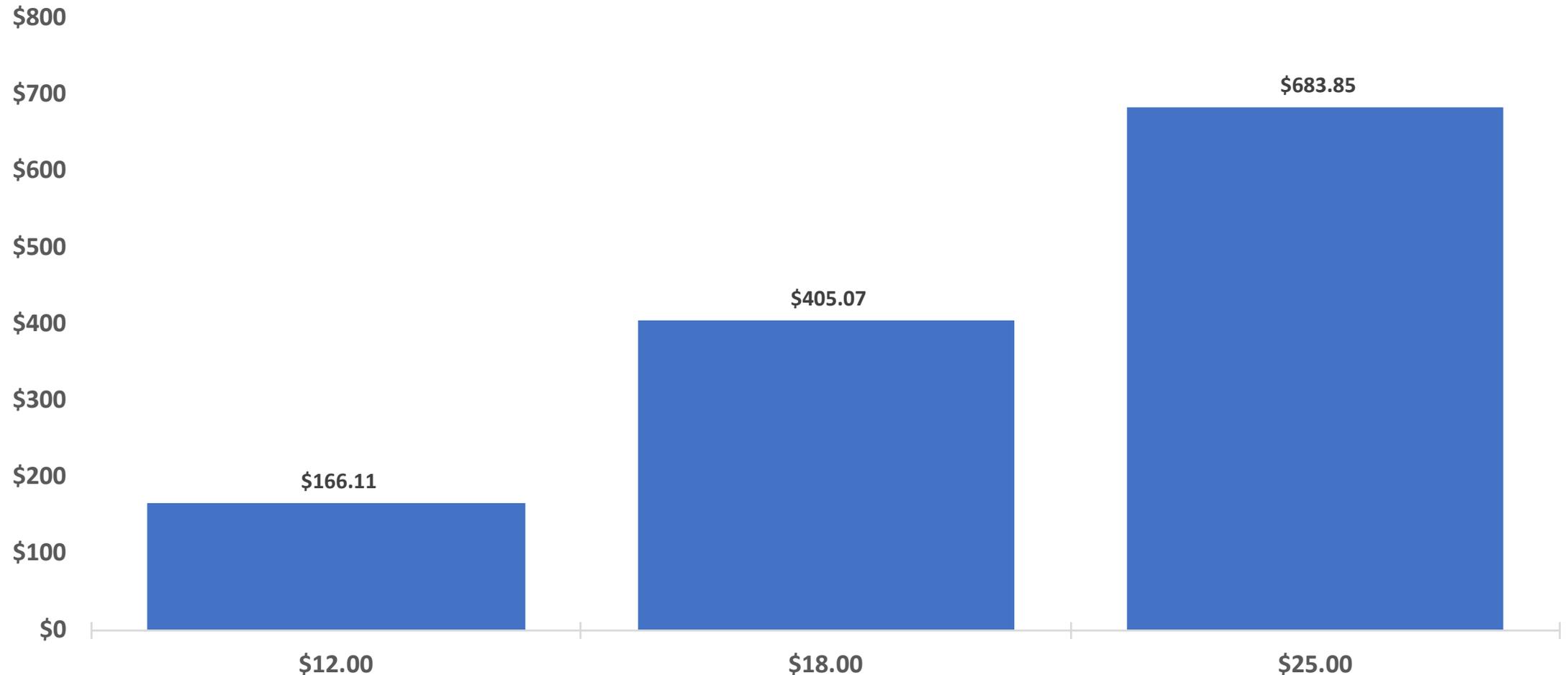
Cook Inlet Price: <http://www.tax.alaska.gov/programs/oil/prevailing/cook.aspx>

# Average Imported LNG Price Scenarios (Current Prices to 2028)



Chugach staff presentation to its board recently assumed \$12 and \$18 natural gas price to justify the reasonableness of continuing to evaluate the Dixon Diversion Project. Chugach Staff assumed 2.5% annual inflation.

# Impact of Three Possible LNG Import Prices on Annual Household PCE Reimbursements



# Importing LNG Should Not be the Answer

When asked what the option for natural gas would be if the AK LNG project does not go forward, Railbelt Utility Managers all had the same answer for the Senate Resources Committee:

*“I think that option is going to be importing LNG.”* **Arthur Miller**, Chugach Electric Association

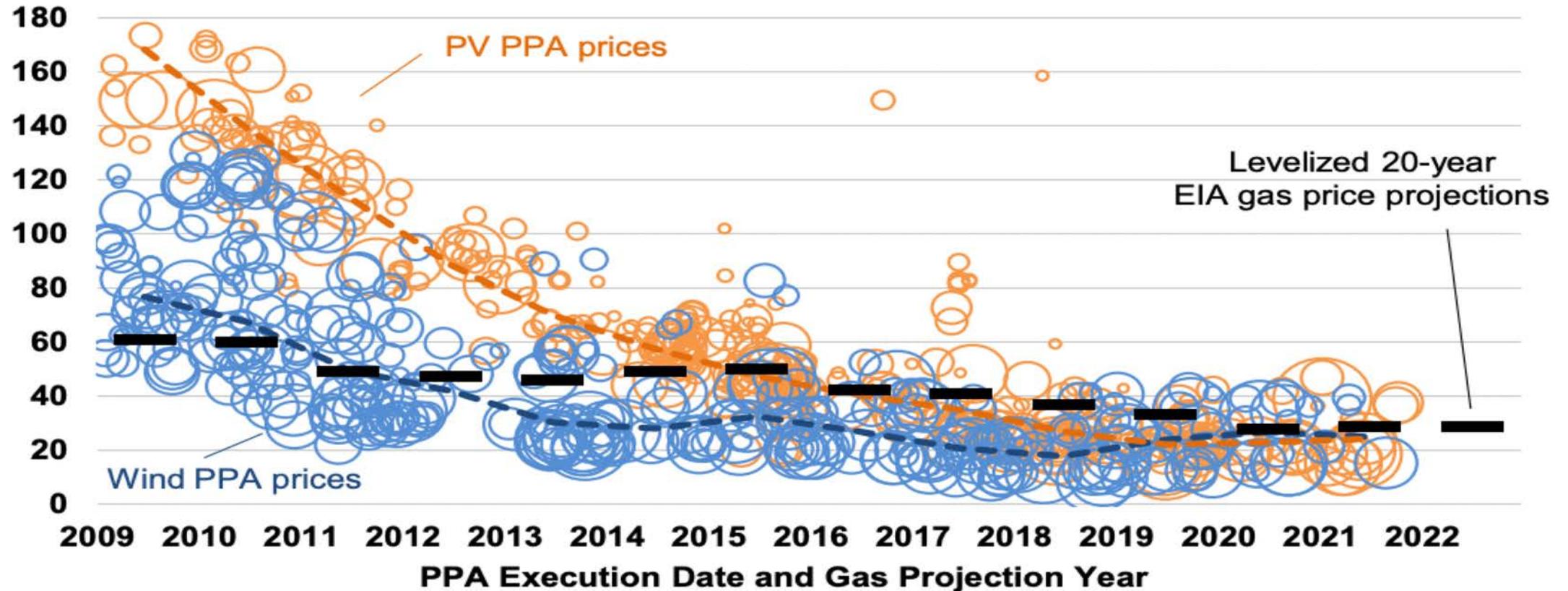
*“LNG import is going to be the answer.”* **Tony Izzo**, Matanuska Electric Association

*“I think whether I want to say it out loud or not, at some point, imports will be part of the transition plan from everything I've heard so far.”* **Brad Janorschke**, Homer Electric Association

*“I have been steadfast in looking at my three peers here and saying we are in this together and so if it is imported natural gas, so be it.”* **John Burns**, Golden Valley Electric Association

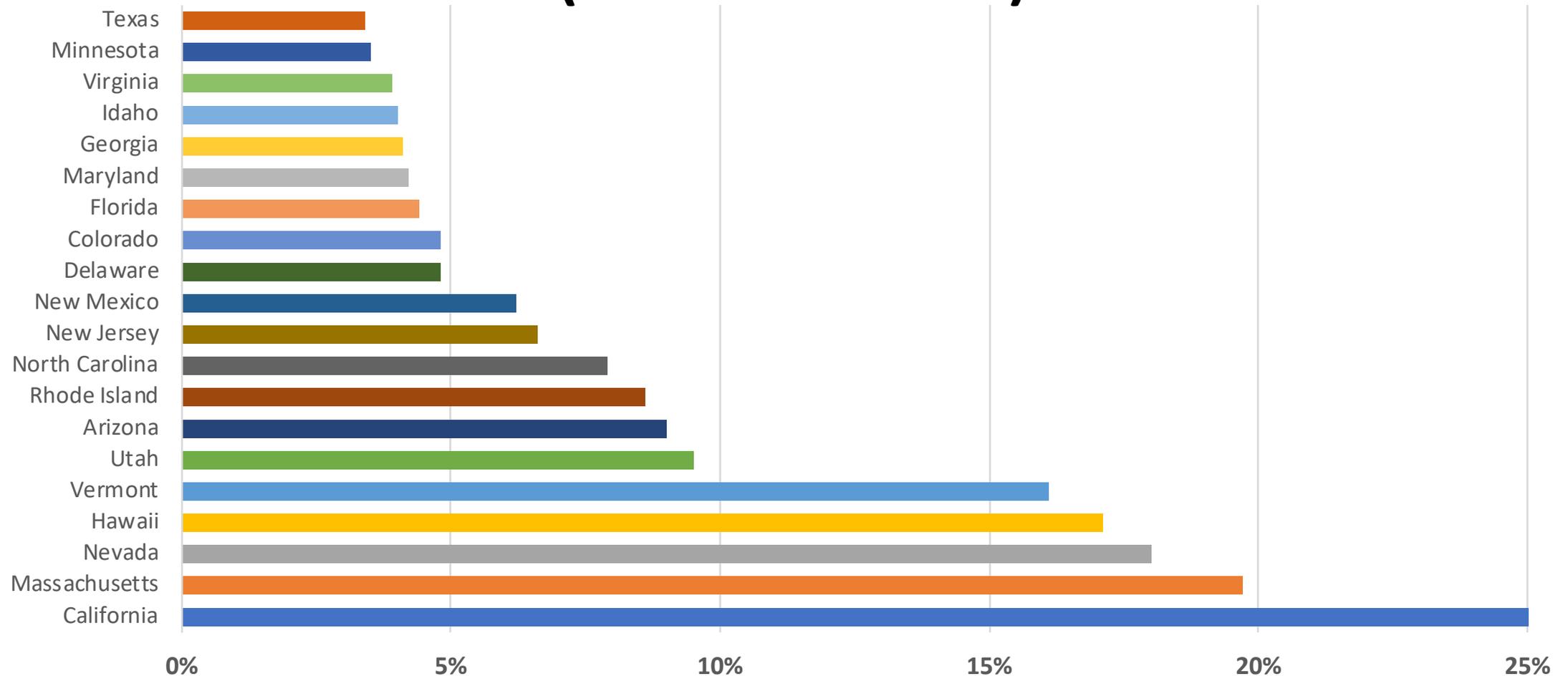
# Costs of Wind and Solar Electricity Power Purchase Agreements (PPA)

Levelized PPA and Gas Price (2021 \$/MWh)



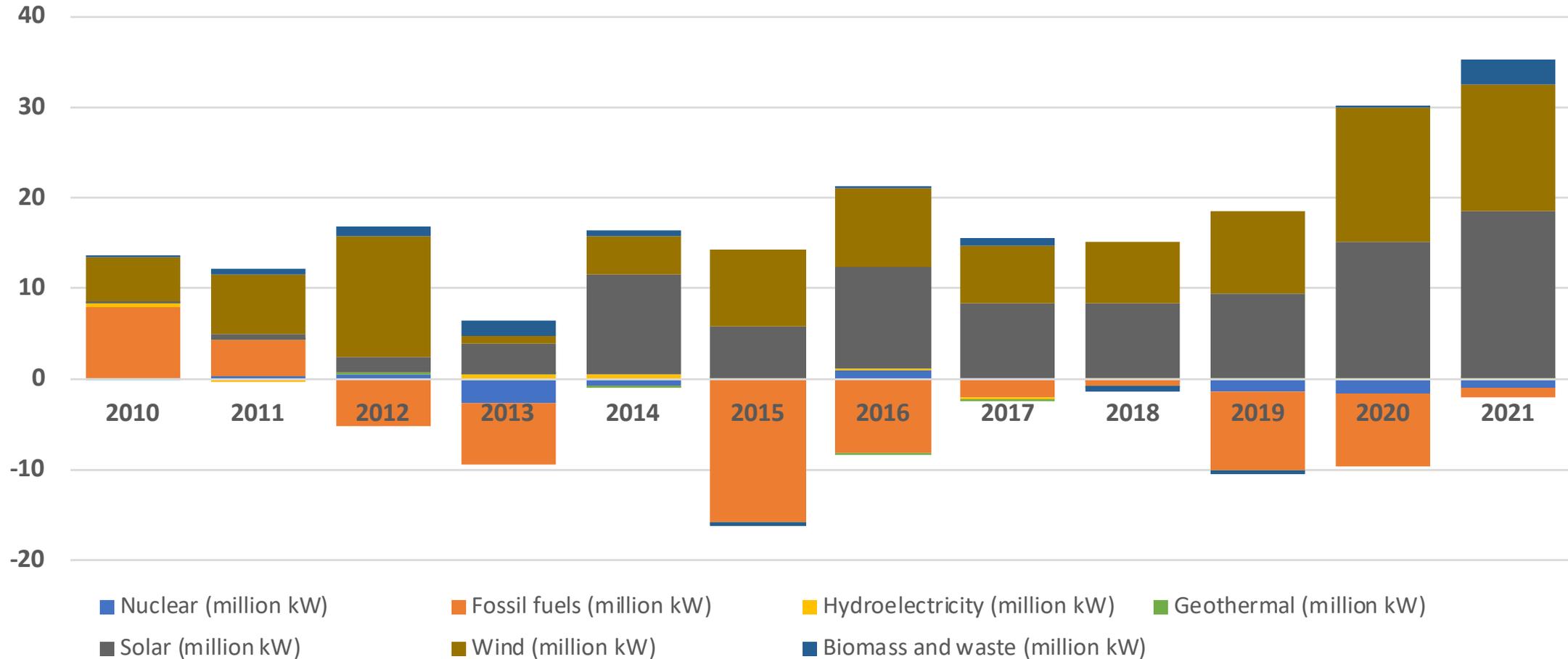
Source: Lawrence Berkeley National Lab, "Utility-Scale Solar, 2022 Edition" <http://utilityscalesolar.lbl.gov>

# Percentage of Net Generation from Solar in 2022 (Selected States)



Data from "Utility-Scale Solar, 2022 Edition"; <http://utilityscalesolar.lbl.gov>

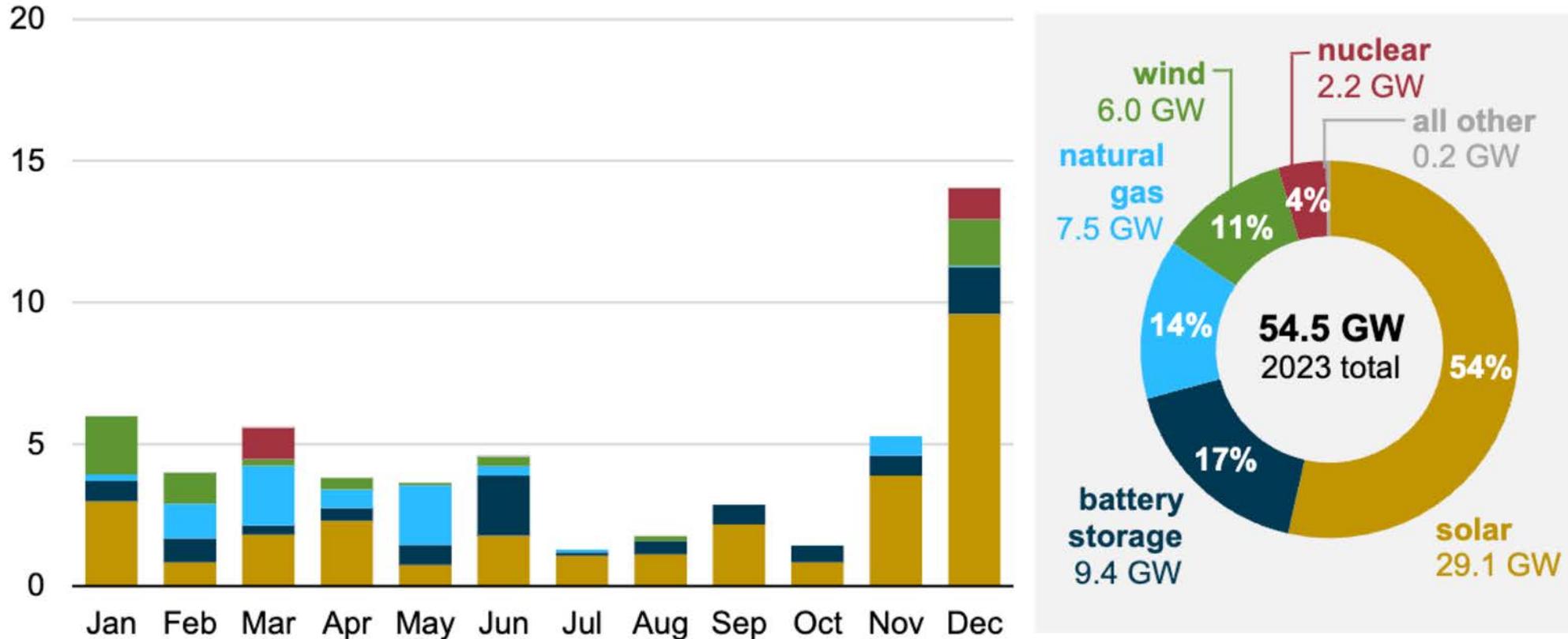
# U.S. Net Capacity Additions by Source (Gigawatts)



Source: US Energy Information Administration

# U.S. 2023 Planned Capacity Additions (Gigawatts)

U.S. planned utility-scale electric-generating capacity additions (2023)  
gigawatts (GW)



Source: U.S. Energy Information Administration, Preliminary Monthly Electric Generator Inventory, Dec 2022

# “Avoided Cost”

- “Avoided Cost” is an electric utility industry term of art.
- It refers to the **cost of generation** that a utility avoids when it purchases electricity from a third party.
- Avoided cost is composed of fuel and O&M costs attributable to the “last” MWh generated.
- A utility’s “avoided cost” is the *most expensive* power it would otherwise generate over a given interval of time.
- If the cost of renewable energy is less expensive *over the life of a project* than the utility’s avoided cost, then consumers will be better off with the renewables.
- **MEA’s Willow solar power purchase agreement (PPA) was justified by the RCA based on the utility’s avoided cost at the time the PPA was signed.**

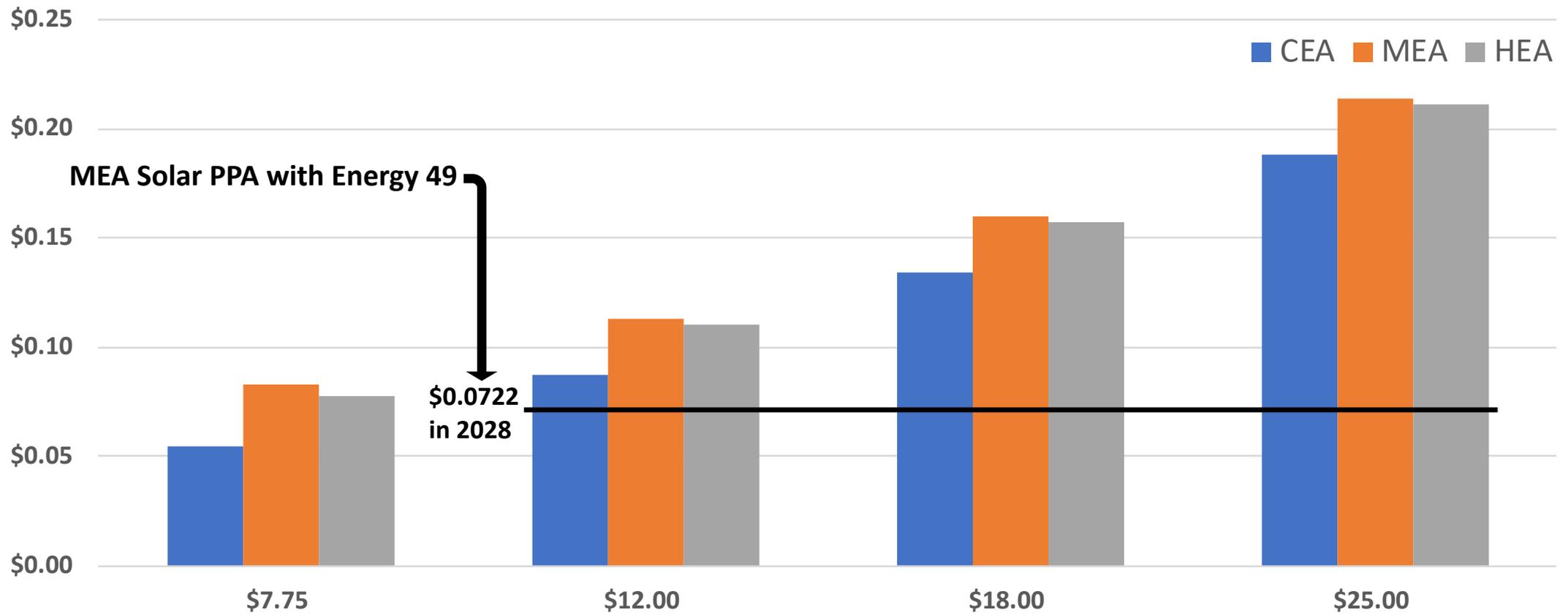
# Methodology to Estimate Future Avoided Costs for Railbelt Utilities that Generate Power with Gas

- Railbelt utilities are required by regulation to perform and publish the results (but not methodology) of internal avoided cost studies.<sup>1</sup>
- A conservative estimate of future avoided fuel costs can be developed using each utility's annual average heat rate across all generation units. "Heat rate" refers to the amount of natural gas that must be burned to generate a MWh.
- Chugach staff recently assumed both \$12 and \$18 natural gas prices to justify why it continues to evaluate the Dixon Diversion Project.<sup>2</sup> A \$25 "high" price scenario is therefore reasonable in light of recent spot prices around \$35/Mcf.

<sup>1</sup>"Subject: Compliance with 3 AAC 50.790(e); Avoided Cost Biennial Information Report", filed by Chugach with the RCA on 4/1/2022

<sup>2</sup> "Dixon Diversion Economics". Regular Board of Directors Meeting, 1/25/2023.

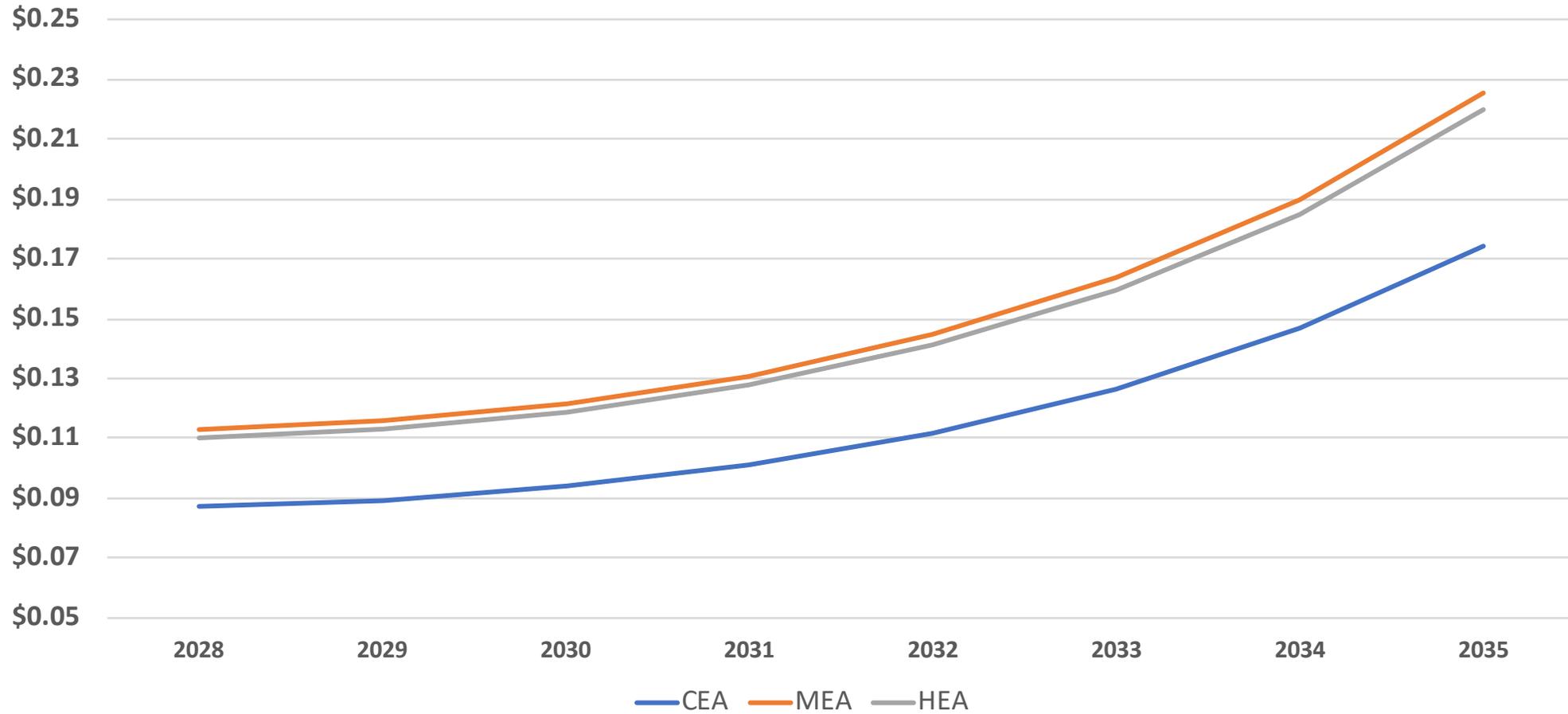
# 2028 Railbelt Avoided Cost Scenarios (At Three Different Potential LNG Spot Prices)



MEA's PPA price from TA535-18. 3/18/2022.

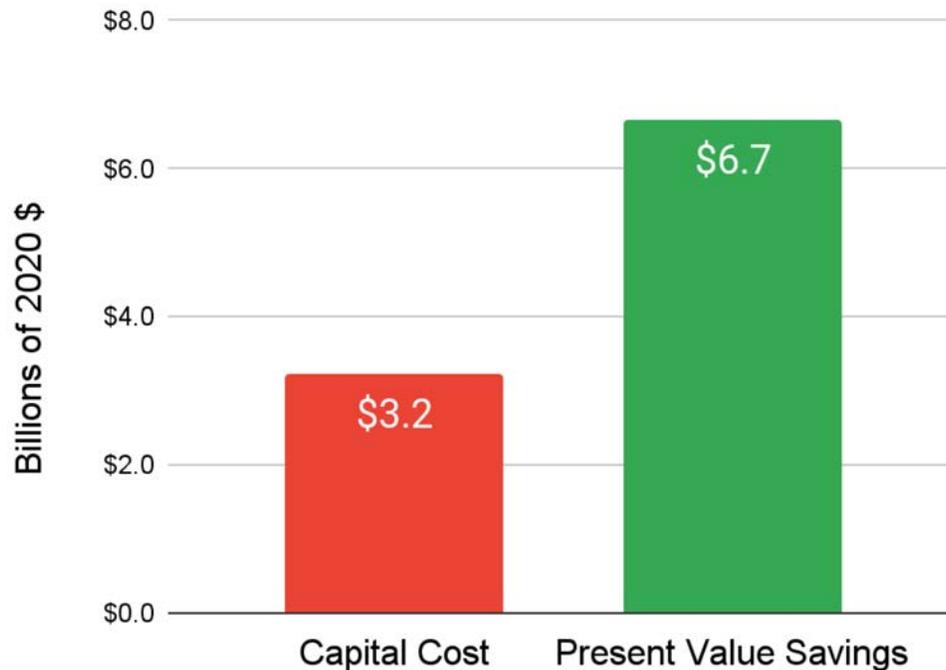
<https://rca.alaska.gov/RCAWeb/ViewFile.aspx?id=179D912B-C930-4049-A108-E68764F19F9F>

# Future Avoided Costs for Three Railbelt Utilities, Assuming \$12/Mcf Gas in 2028 and 2.5 % Escalation



# Preliminary Benefit/Cost Analysis of 80% by 2040 RPS (NREL Scenario #3)

Costs and Benefits of RPS Scenario 3



Present Values are anchored to the year 2035

- Capital Cost of implementing RPS Scenario #3 (predominantly wind + solar) is \$3.2 billion, relative to the Base Case.
- Present Value Benefits (fuel savings, with small offset from renewable operating costs) are \$6.7 billion.
- Capital costs *could more than double* and Scenario #3 would still be cost effective.
- This analysis was done *before* federal tax credits for renewable energy were extended for 10 years.

Source: Analysis North. Model at <https://analysisnorth.com/rps-econ>

# A Railbelt RPS Would:

- **Diversify** the region's generation portfolio and protect consumers from rising rates.
- **Displace** high-priced natural gas fuel used for electricity and help reserve Cook Inlet gas for the region's heating needs.
- **Utilize** local, renewable resources like wind and solar that have no fuel costs.
- **Stabilize** Cook Inlet energy costs.
- **Increase** the region's energy independence and keep Alaska competitive in a fast-changing world.
- **Create** jobs, spur statewide innovation and keep hundreds of millions of precious energy dollars circulating in the state's economy.
- **Establish** a standard that triggers action before we import LNG.

# Why an RPS is needed now



*“I skate to where the puck is going to be, not where it has been.”*

*Wayne Gretzky*