

# *Support for HB 301*

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**House Labor & Commerce Committee**  
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Renewable Energy  
Alaska Project

Founded in 2004, REAP is a statewide non-profit coalition of diverse businesses, electric utilities, Alaska Native Corporations, NGOs and clean energy developers.

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

# REAP Education & Programs



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

Alaska Network for Energy Education and Employment (ANEEE) builds career paths

Partnerships with US DoE and national labs brings technical assistance to rural communities

*Sustainable Southeast Partnership* assists communities in Southeast Alaska

A variety of conferences, energy fairs, webinars and presentations that educate the public

# REAP Advocacy

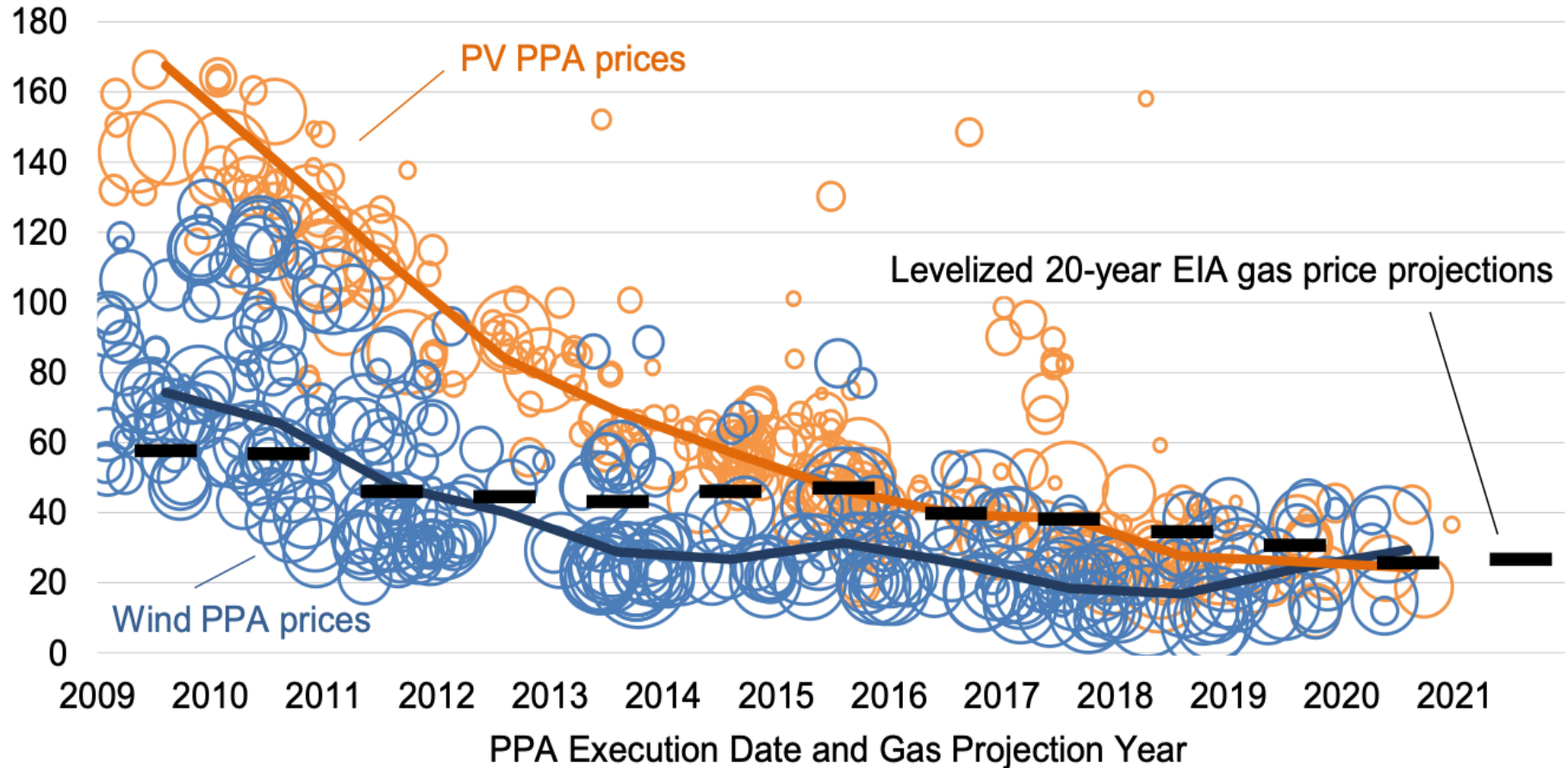
2008:	Renewable Energy Fund (\$275 million appropriated, to date)
2008-15:	\$640 million to AHFC for home weatherization programs
2010:	Emerging Energy Technology Fund House Bill 306 (State Energy “Policy”)
2016:	SB 196 (PCE Endowment)
2017:	Property Assessed Clean Energy (C-PACE)
2020:	Railbelt Grid Reform (SB 123)
2021-22:	Green Bank (HB 170 & SB 123) Renewable Portfolio Standard (HB 301 & SB 179)

# Why the Railbelt Needs More Renewable Energy

- The region is dangerously (80%) dependent on one, high-priced fuel – Cook Inlet natural gas
- The region has some of the highest-priced electricity in the nation, discouraging investment
- The region is blessed with all types of stably-priced renewable energy resources: wind, solar, hydro, geothermal, biomass and tidal
- The state has no energy policy, and the Railbelt utilities have a relative history of inaction

# Declining Wind & Solar Prices Compared to Natural Gas

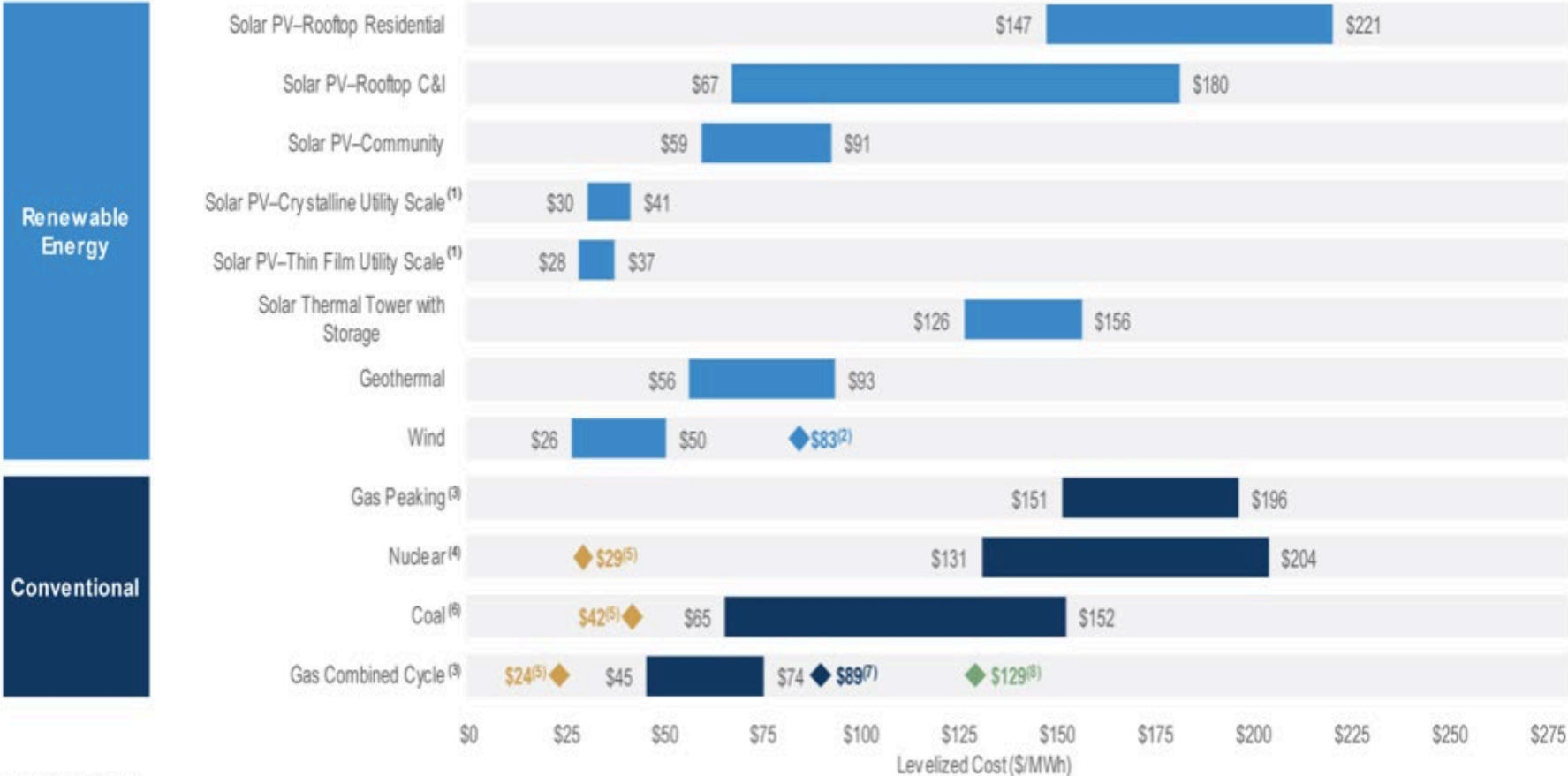
Levelized PPA and Gas Price (2020 \$/MWh)



*Note: Smallest bubble sizes reflect smallest-volume PPAs (<5 MW), whereas largest reflect largest-volume PPAs (400 MW)*

*Sources: Berkeley Lab, FERC, EIA*

Selected renewable energy generation technologies are cost-competitive with conventional generation technologies under certain circumstances



Source: Lazard estimates.

Note: Here and throughout this presentation, unless otherwise indicated, the analysis assumes 60% debt at 8% interest rate and 40% equity at 12% cost. Please see page titled "Levelized Cost of Energy Comparison—Sensitivity to Cost of Capital" for cost of capital sensitivities. These results are not intended to represent any particular geography. Please see page titled "Solar PV versus Gas Peaking and Wind versus CCGT—Global Markets" for regional sensitivities to selected technologies.

(1) Unless otherwise indicated herein, the low case represents a single-axis tracking system and the high case represents a fixed-tilt system.

(2) Represents the estimated implied midpoint of the LCOE of offshore wind, assuming a capital cost range of approximately \$2,500 – \$3,600/MW.

(3) The fuel cost assumption for Lazard's global, unsubsidized analysis for gas-fired generation resources is \$3.45/MMBTU.

(4) Unless otherwise indicated, the analysis herein does not reflect decommissioning costs, ongoing maintenance-related capital expenditures or the potential economic impacts of federal loan guarantees or other subsidies.

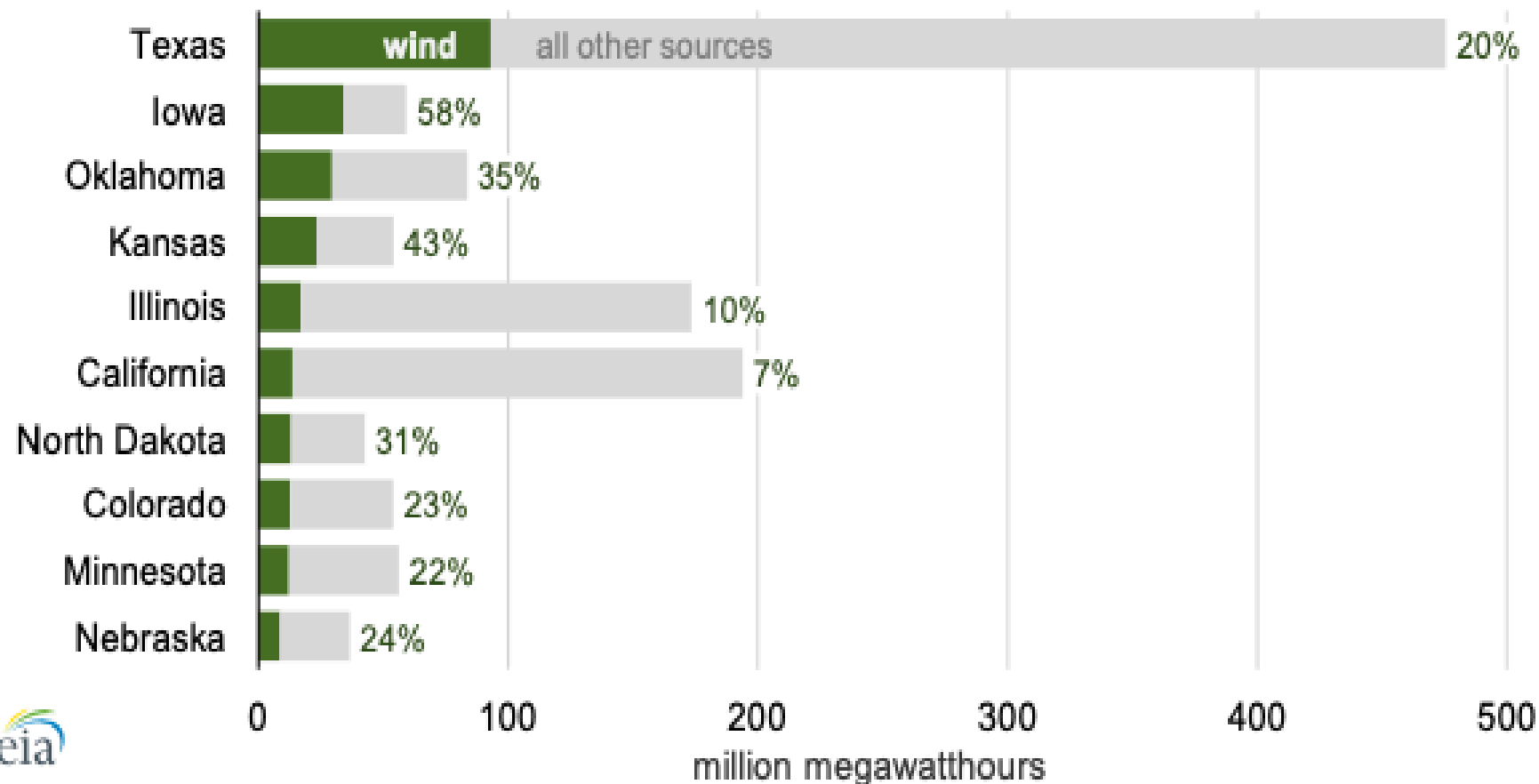
(5) Represents the midpoint of the marginal cost of operating fully depreciated gas combined cycle, coal and nuclear facilities, inclusive of decommissioning costs for nuclear facilities. Analysis assumes that the salvage value for a decommissioned gas combined cycle or coal asset is equivalent to its decommissioning and site restoration costs. Inputs are derived from a benchmark of operating gas combined cycle, coal and nuclear assets across the U.S. Capacity factors, fuel, variable and fixed operating expenses are based on upper- and lower-quartile estimates derived from Lazard's research. Please see page titled "Levelized Cost of Energy Comparison—Renewable Energy versus Marginal Cost of Selected Existing Conventional Generation" for additional details.

(6) High end incorporates 90% carbon capture and storage. Does not include cost of transportation and storage.

(7) Represents the LCOE of the observed high case gas combined cycle inputs using a 20% blend of "Blue" hydrogen, (i.e., hydrogen produced from a steam-methane reformer, using natural gas as a feedstock, and sequestering the resulting CO<sub>2</sub> in a nearby saline aquifer). No plant modifications are assumed beyond a 2% adjustment to the plant's heat rate. The corresponding fuel cost is \$5.20/MMBTU, assuming \$1.39/kg for Blue hydrogen.

(8) Represents the LCOE of the observed high case gas combined cycle inputs using a 20% blend of "Green" hydrogen, (i.e., hydrogen produced from an electrolyzer powered by a mix of wind and solar generation and stored in a nearby salt cavern). No plant modifications are assumed beyond a 2% adjustment to the plant's heat rate. The corresponding fuel cost is \$10.05/MMBTU, assuming \$4.15/kg for Green hydrogen.

## Net electricity generation from wind and other sources in selected states (2020)

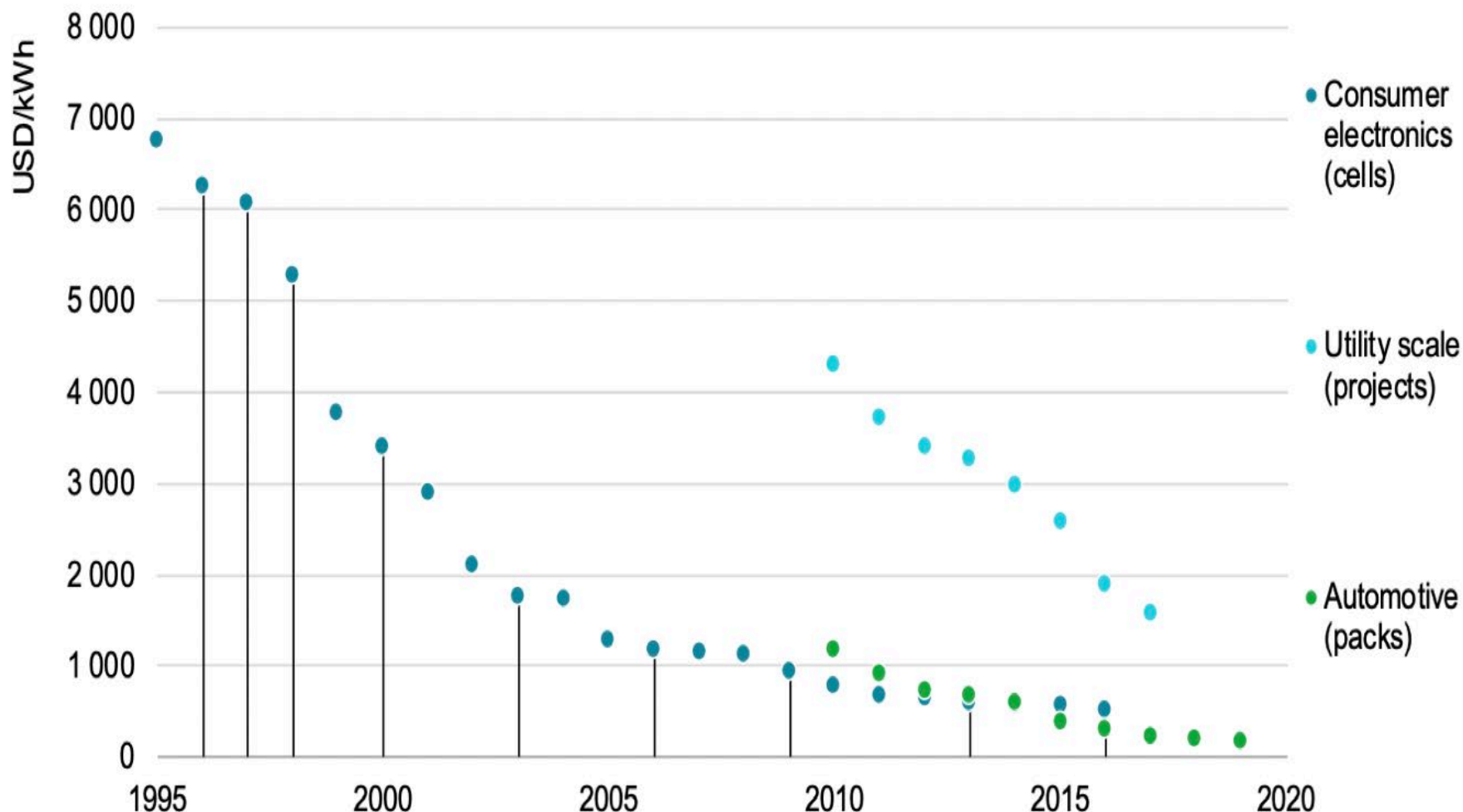


Source: U.S. Energy Information Administration, [Electric Power Monthly](#)

Texas has the most wind turbine capacity among states: 30.2 GW were installed as of December 2020. In 2020, Texas generated more electricity from wind than the next three highest states (Iowa, Oklahoma, and Kansas) combined. However, Texas generates and consumes more total electricity than any other state, and wind remains slightly less than 20% of the state's electricity generation mix.

In two other states—Iowa and Kansas—wind is the most prevalent source of in-state electricity generation. In both states, wind surpassed coal as the state's top electricity generation source in 2019.

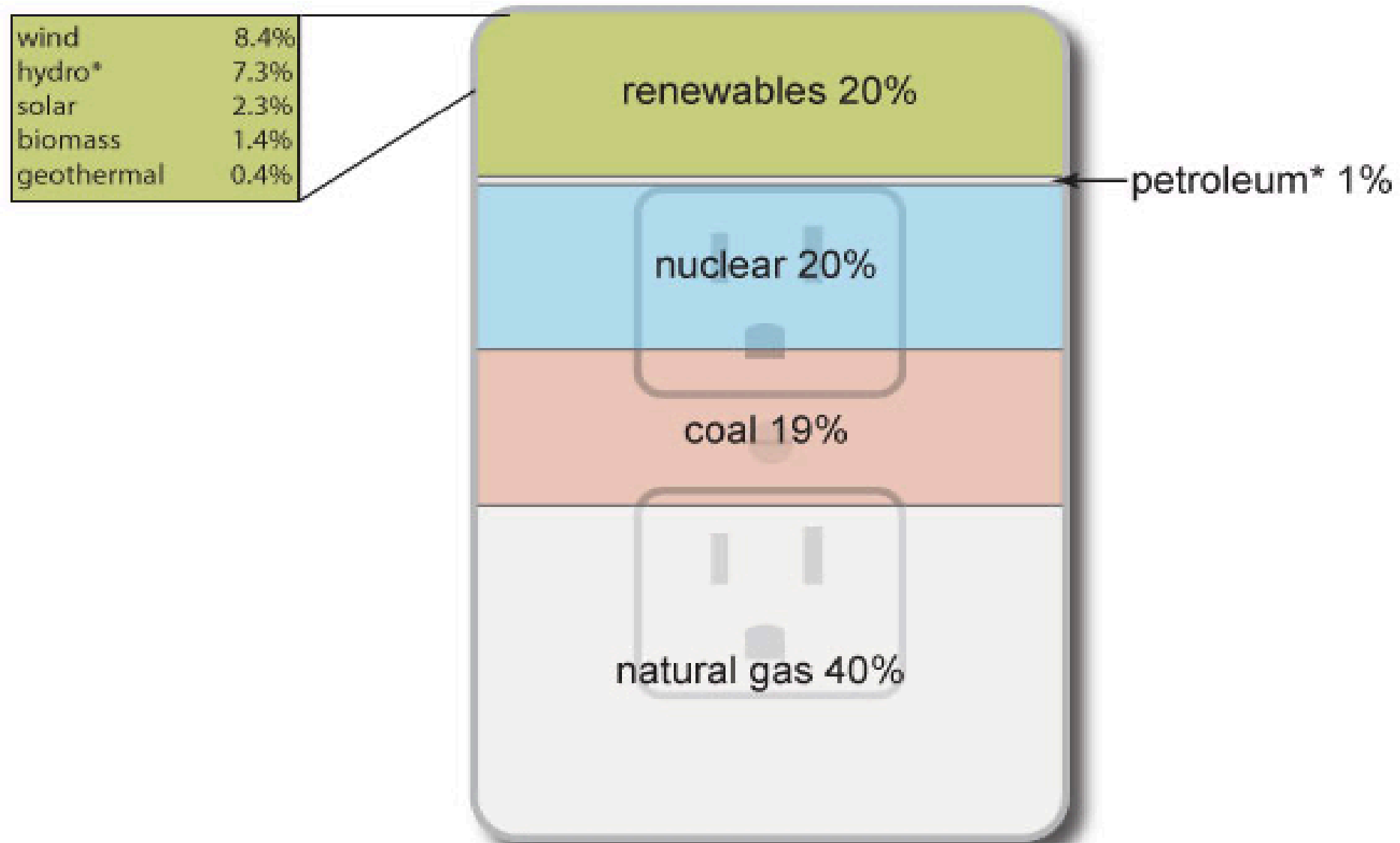
# Declining Costs of Lithium Ion Batteries



Source: "Energy Technology Perspectives 2020 – Special Report on Clean Energy Innovation: Accelerating Technology Progress for a Sustainable Future," *International Energy Agency*, page 81.

# Sources of U.S. electricity generation, 2020

Total = 4.12 trillion kilowatthours

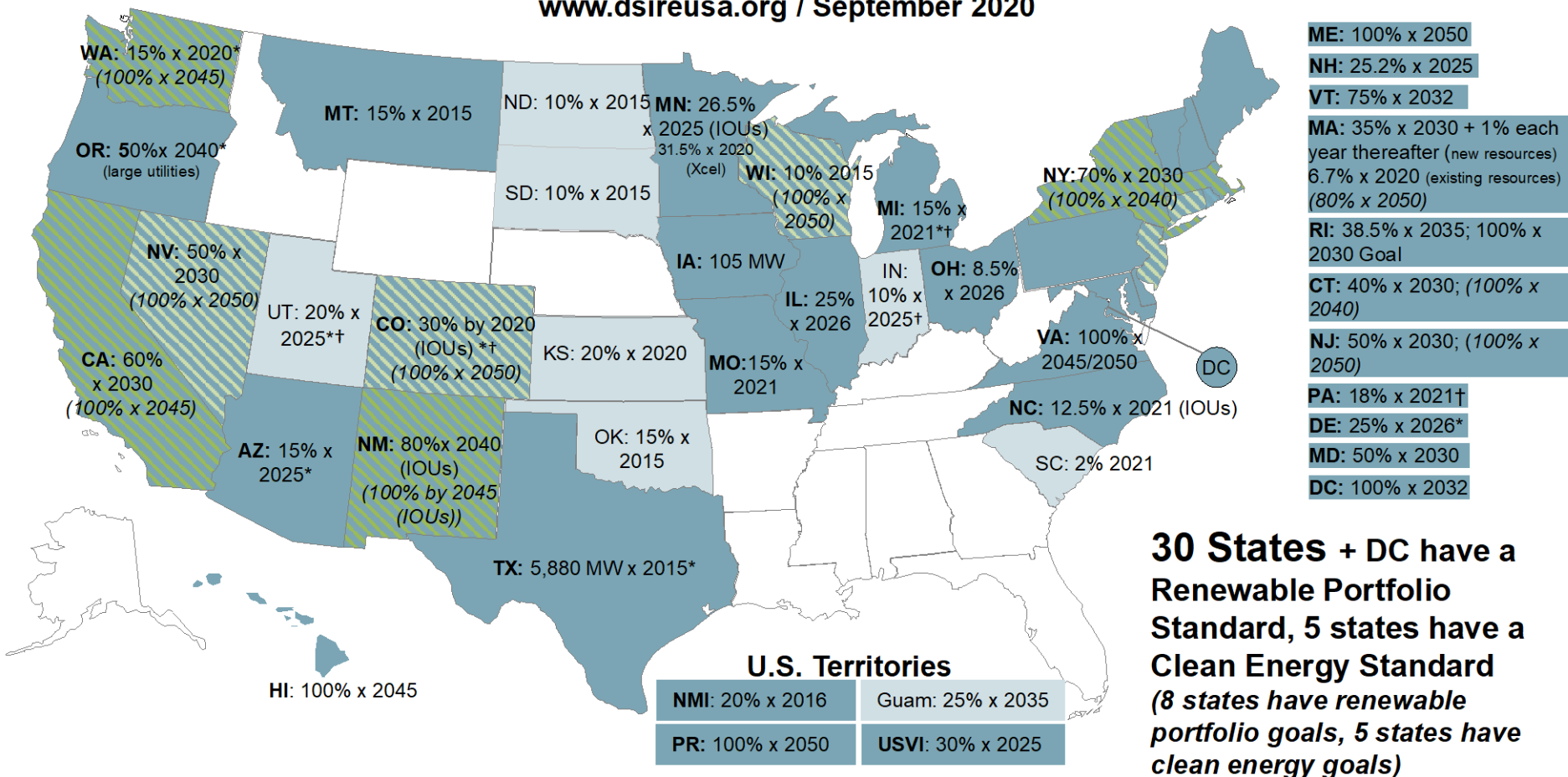






Note: Electricity generation from utility-scale generators. \* Hydro is conventional hydroelectric; petroleum includes petroleum liquids and petroleum coke, other gases, hydroelectric pumped storage, and other sources.

Source: U.S. Energy Information Administration, *Electric Power Monthly*, February 2021, preliminary data

# Renewable & Clean Energy Standards

**www.dsireusa.org / September 2020**



 Renewable portfolio standard
  *Clean energy standard*  
 Renewable portfolio goal
  *Clean energy goal*

\* Extra credit for solar or customer-sited renewables  
† Includes non-renewable alternative resources

# The Railbelt is Dangerously Dependent on High-Priced Cook Inlet Natural Gas

Approximately 80% of all electric generation in the Railbelt relies on natural gas from Cook Inlet

Cook Inlet gas is twice as expensive as Lower 48 gas

The small Cook Inlet gas market is under virtual monopoly control by Hilcorp

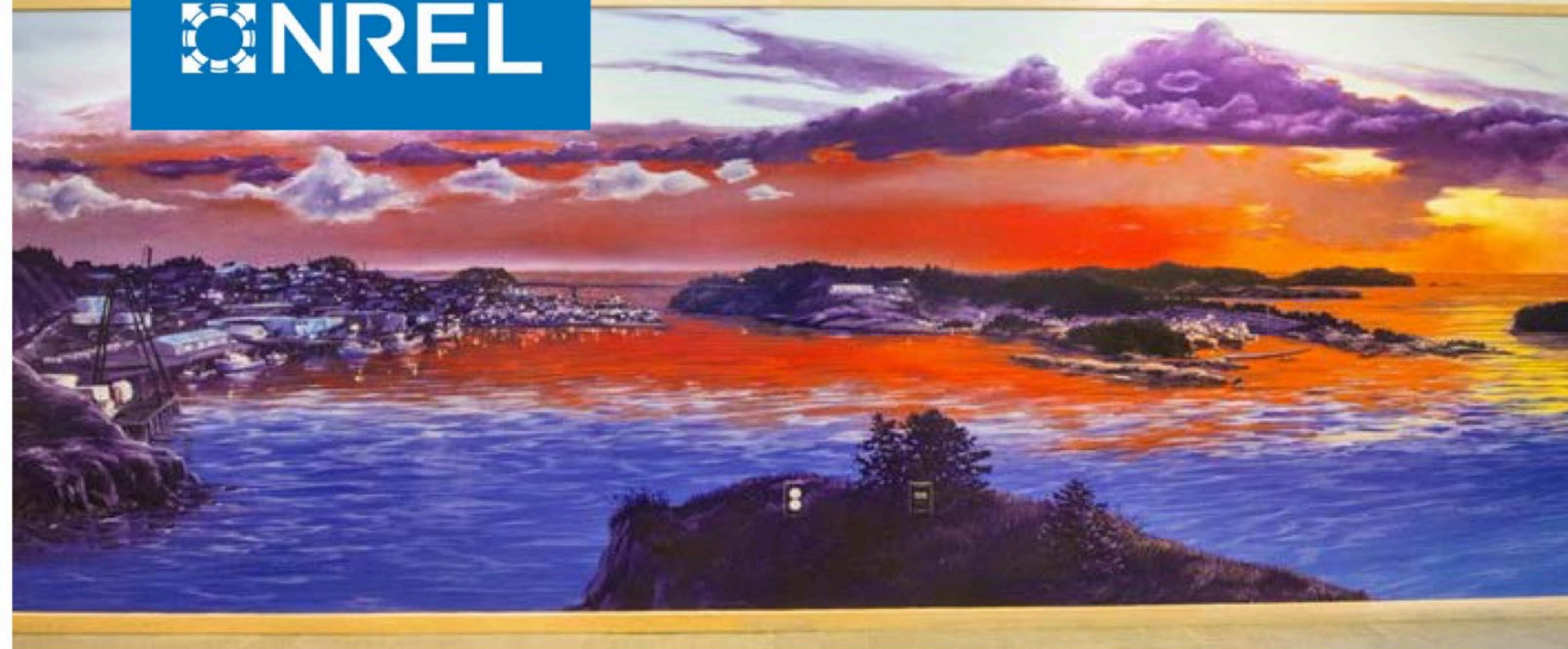
Cook Inlet gas suffers from flat demand, high production costs & aging infrastructure

Cook Inlet also relies on unsustainable state gas subsidies

## Published Prevailing Values for Cook Inlet Gas (\$ per MCF)



Source: Alaska Department of Revenue - Tax Division. "Cook Inlet Prevailing Values."



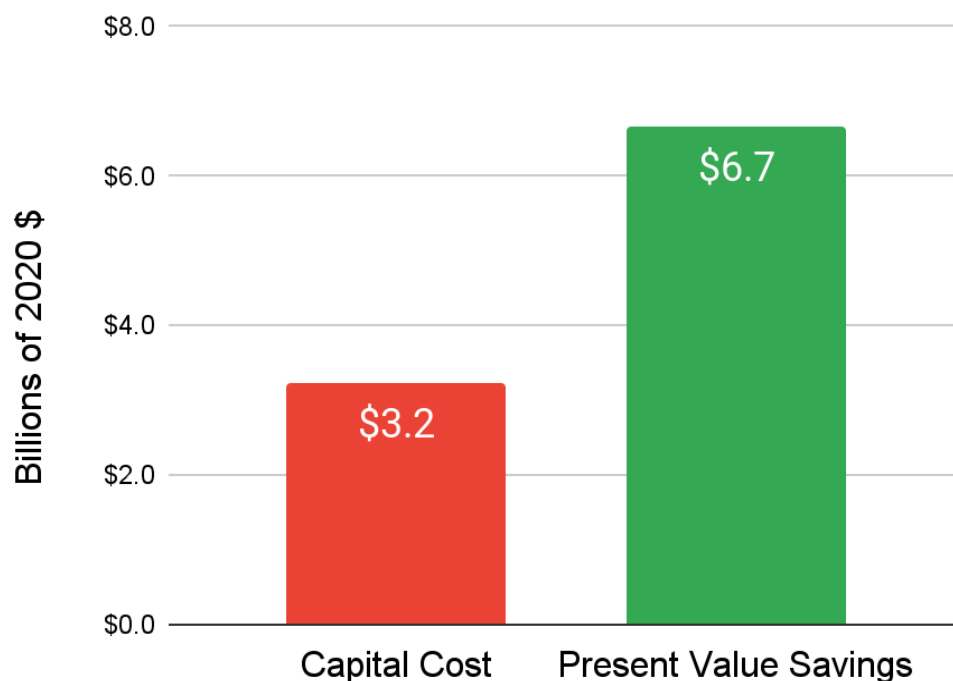
## **Renewable Portfolio Standard Assessment for Alaska's Railbelt**

**Overall Finding 1:** Multiple pathways exist for achieving an 80% RPS while balancing supply and demand under major outage conditions with appropriate system engineering.

**Overall Finding 2:** An 80% RPS achieves a substantial reduction in fuel costs, which could be compared to capital cost expenditures for a comprehensive impact assessment.

# Preliminary Benefit/Cost Analysis of NREL's RPS 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.

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

# A New Railbelt ERO Would Execute HB 301

- New generation and transmission portfolios will be developed by a new electric reliability organization (ERO) through an integrated resource plan (IRP).
- The first regional IRP for the Railbelt will be multi-year, public process that will analyze the technical and economic feasibility of a range of options, select a preferred portfolio and develop an action plan before submitting the IRP package to the RCA for final approval.

# HB 301 Would:

- *Diversify* the region's generation portfolio and increase resiliency
- *Displace* high-priced natural gas fuel, and save hundreds of millions of dollars every year
- *Utilize* local, flat-priced renewable resources
- *Not impact* reliability on the grid
- *Keep* Alaska competitive in a fast-changing world, increase energy independence and meet consumer demand
- *Support* electrification of transportation and heat
- *Create* jobs, spur statewide innovation and keep precious energy dollars circulating in the state's economy
- *Establish* a standard that triggers action

# Thank you!

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