

Energy & Environment: Public Policy & Political Perspectives

POWER SUMMIT
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Nebraska Public Power District

Always there when you need us

Memory Lane

My “Conclusions” from 2015 presentation

- The Nation remains deeply divided politically, socially and geographically.
- National energy policy is increasingly made by federal regulatory agencies and not by Congress.
- The use of coal to produce electricity will continue to decrease nationally; but remain significant in certain geographic regions.
- Renewables and distributed generation will continue to grow; but will face increasing integration challenges in some regions.

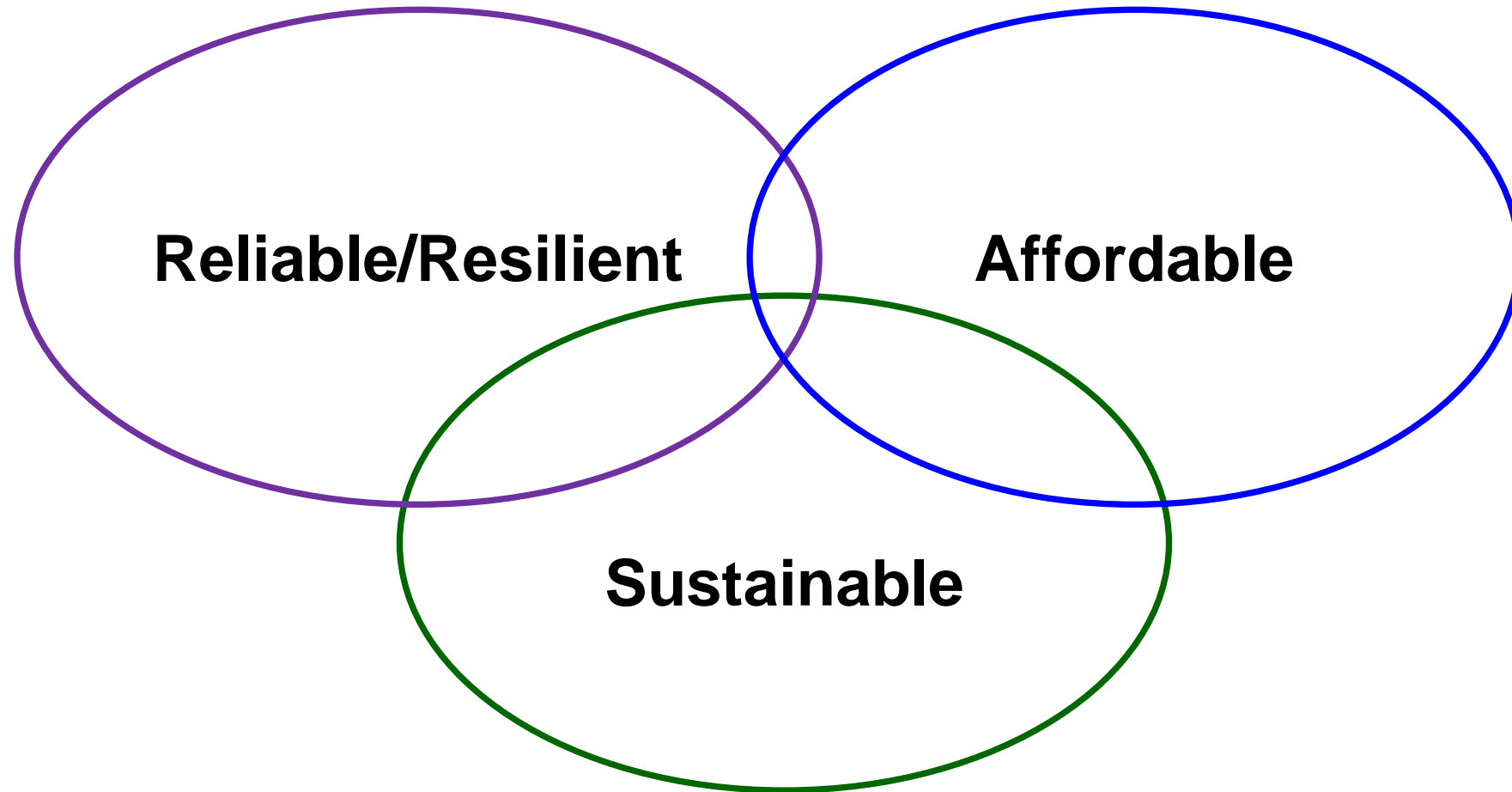
Memory Lane

My “Conclusions” from 2015 presentation *(Cont’d)*

- Natural gas will continue to play a growing role in the production of electricity.
- Transmission expansion will be required to incorporate more renewables.
- Litigation over the Clean Power Plan will leave a cloud over the program until addressed by the Supreme Court (2018/2019).
- Tax subsidies have major impacts on electricity markets.

Three Simple Questions

How can we provide electricity that is....



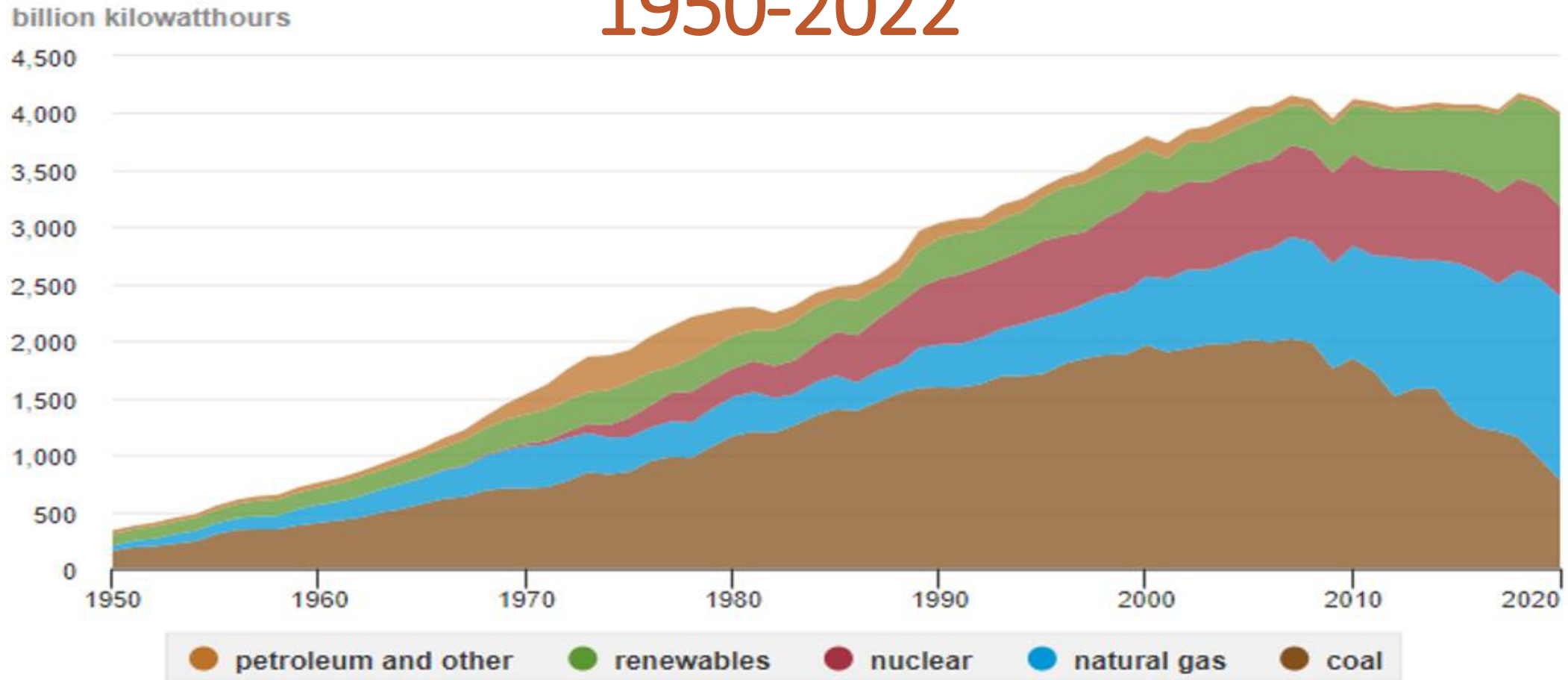
The Answers are Complex

The Electricity Industry is Undergoing Significant Transformation

- **Locally, Regionally, Nationally, Internationally**
- **The Big Drivers**
 - ✓ Decarbonization
 - Changing Fuel Mix
 - ✓ New Technologies
 - ✓ Impact of Organized Markets
 - ✓ Expectations of Customers, Rating Agencies, Investors, Lenders
 - ✓ Electrification
 - ✓ Local, State, Regional and Federal Policies
 - IIJA
 - IRA
 - ✓ War in Ukraine

Shift Happens!

U.S. Electricity Generation by Major Energy Source, 1950-2022



Note: Electricity generation from utility-scale facilities.

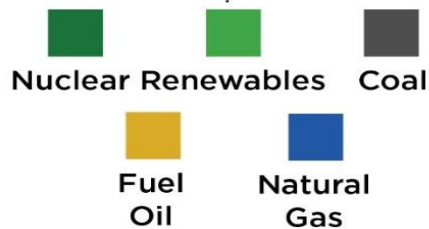
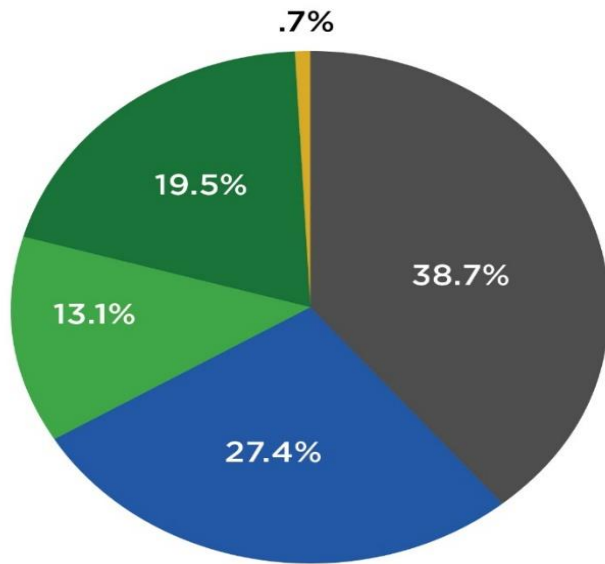
Source: U.S. Energy Information Administration, *Monthly Energy Review*, Table 7.2a, January 2021 and *Electric Power Monthly*, February 2021, preliminary data for 2020



How Fast Can Fuel Mix Evolve?

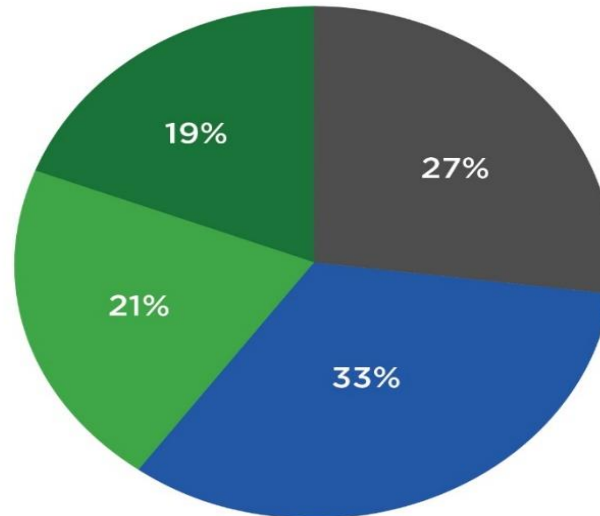
NATIONAL FUEL MIX FOR ELECTRICITY PRODUCTION

2014 ACTUAL

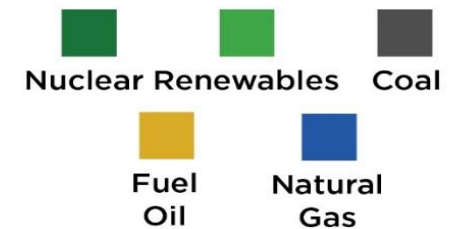
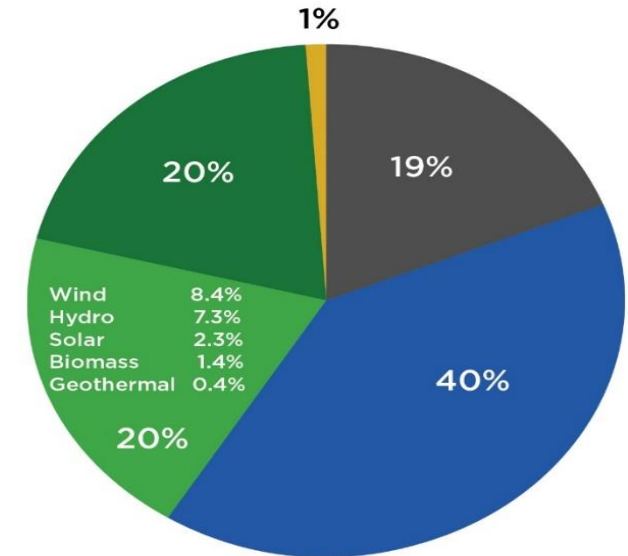


PROPOSED 2030 UNDER
OBAMA CLEAN POWER PLAN

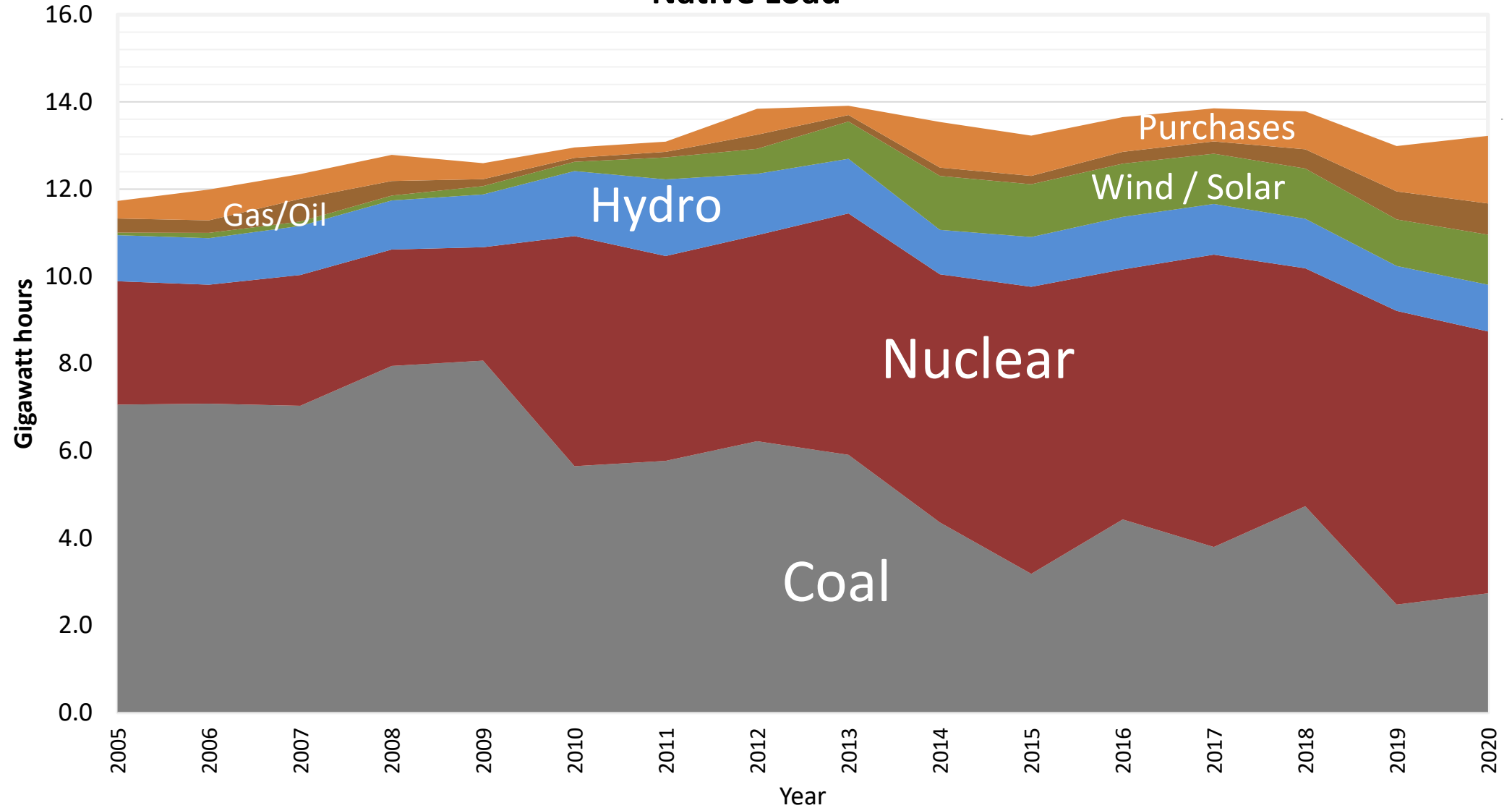
June 2014



2020 ACTUAL



Nebraska Public Power District NPPD's Share of Energy Resources Native Load



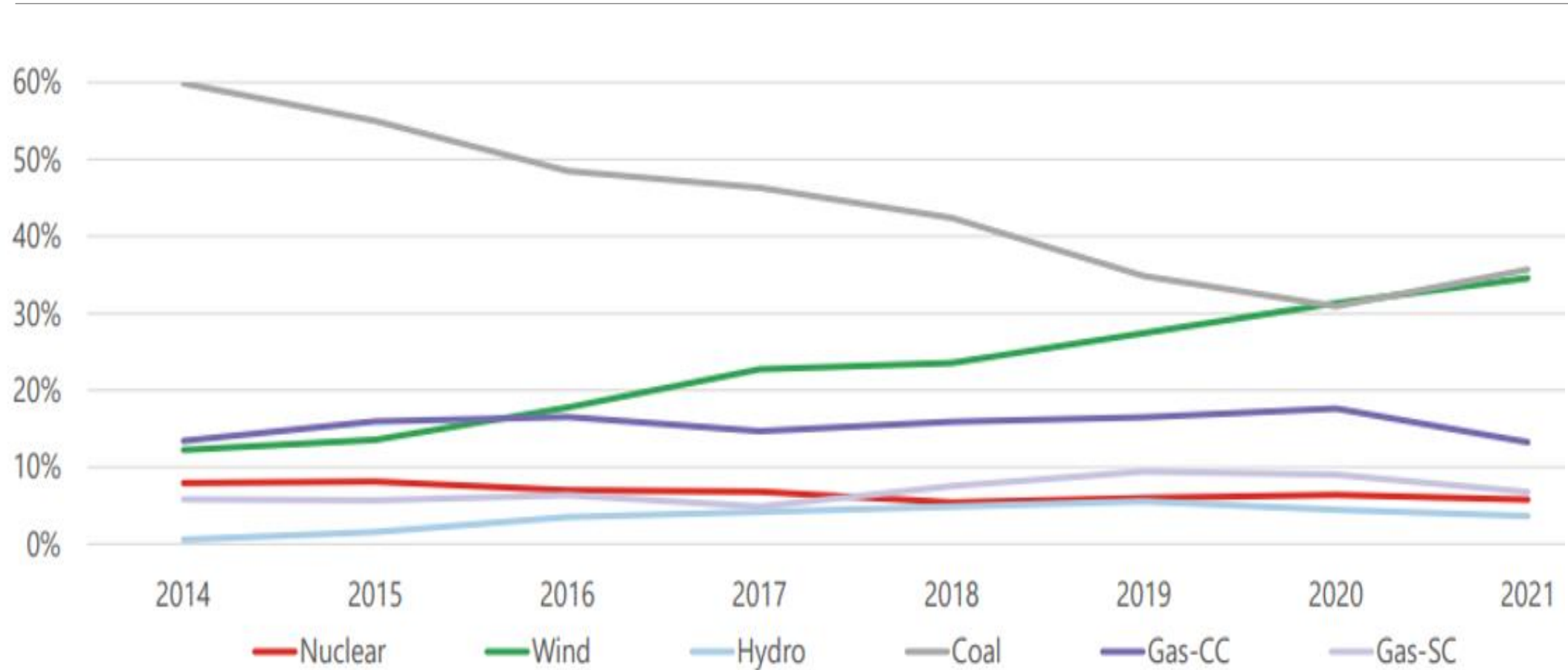
Carbon Emissions Reductions

from Strategic Directive BP-SD-05 effective 12/9/21

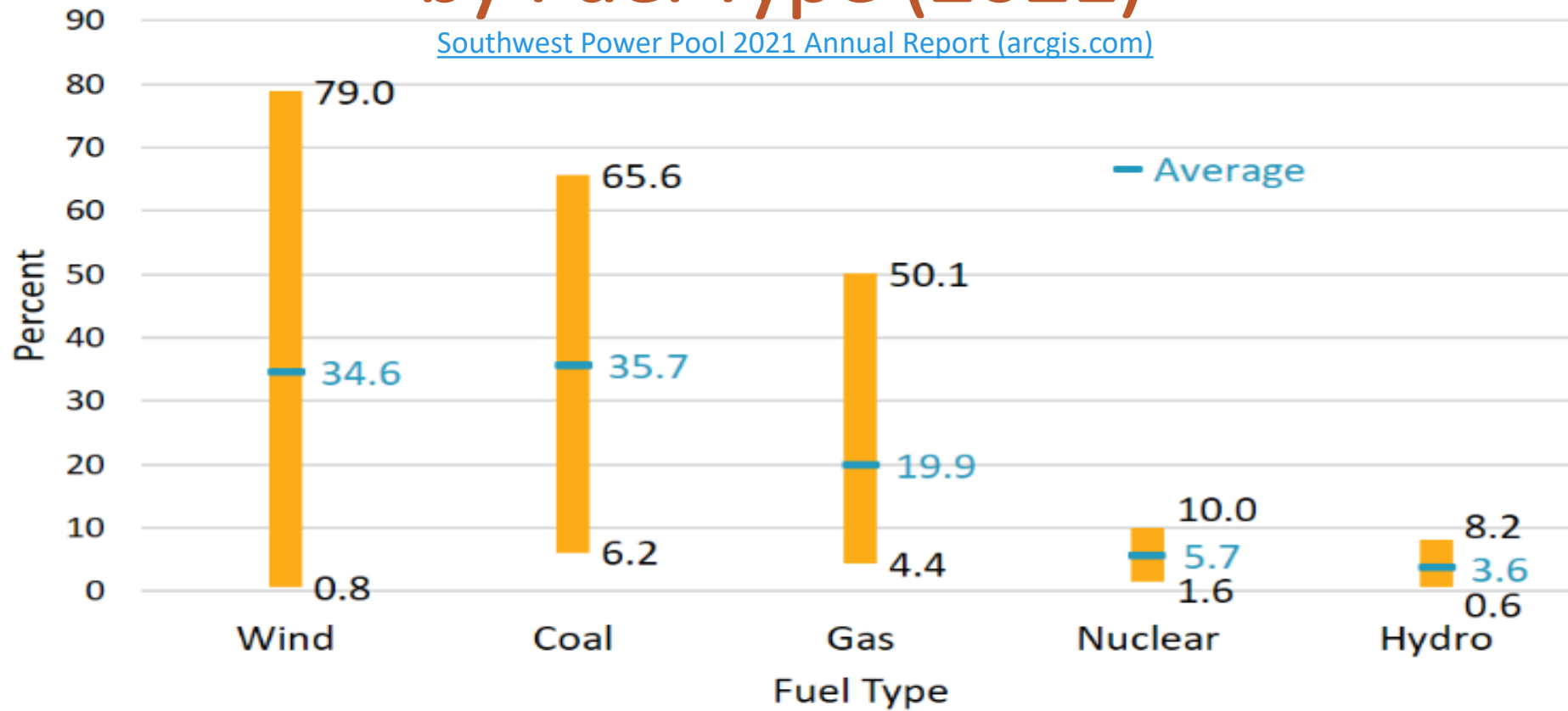
- “NPPD adopts the **goal of achieving “net zero” carbon emissions from NPPD’s generation resources by 2050**. This will be achieved by continuing the use of proven, reliable generation until alternative, reliable sources of generation are developed and by using certified offsets, energy efficiency projects, lower or zero carbon emission generation resources, beneficial electrification projects, or other economic and practical technologies that help NPPD meet the adopted goal at costs that are equal to, or lower than, then current resources.”

Evolving SPP Energy Mix

GENERATION BY FUEL TYPE - ANNUAL



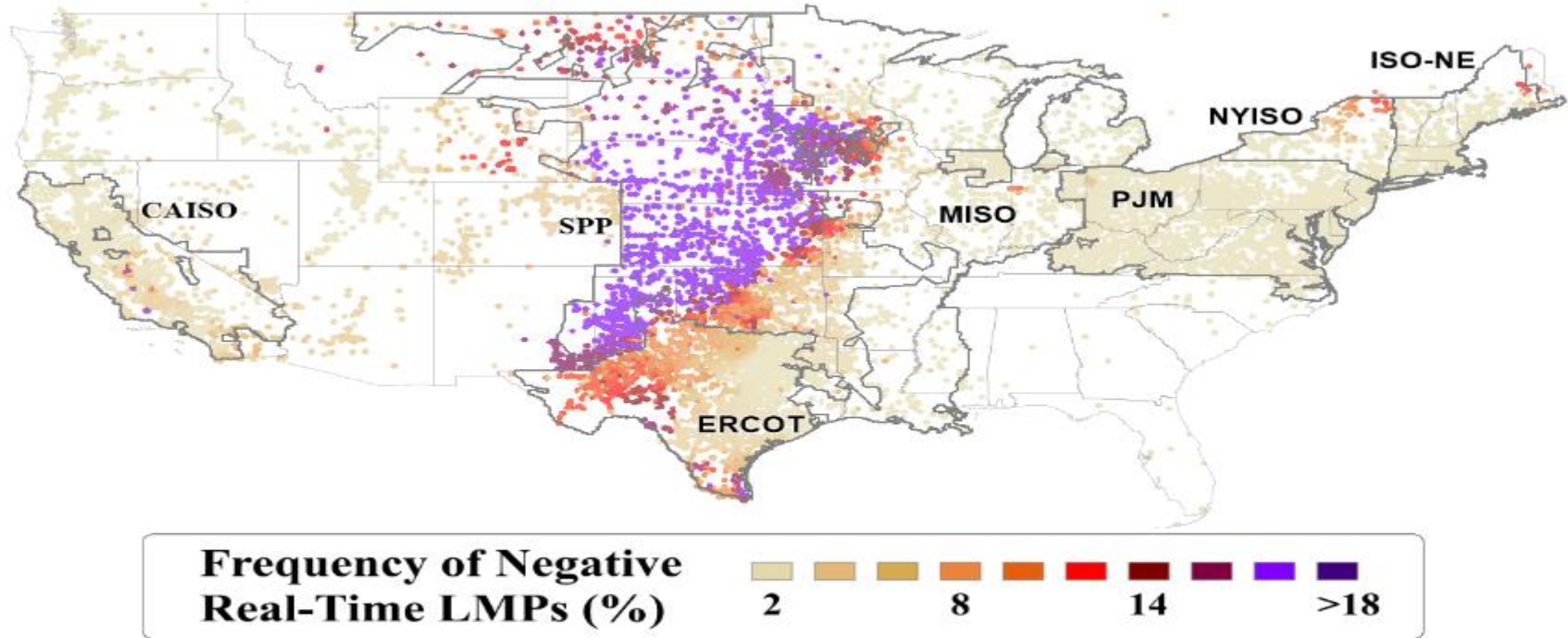
SPP Minimum and Maximum % of Energy Mix by Fuel Type (2021)



Minimum and Maximum % of Generation Mix by Fuel Type (2021): Min and Max based on the highest and lowest percent from individual RTBM intervals for the period. Total MW/h of production is based on the sum of RTBM dispatch MW across the period.

Frequency of Negative Real-Time LMPs in 2021

[Report](#) | [2021 State of the Markets](#) | [Federal Energy Regulatory Commission \(ferc.gov\)](#)



Source: Hitachi ABB Power Grids Velocity Suite

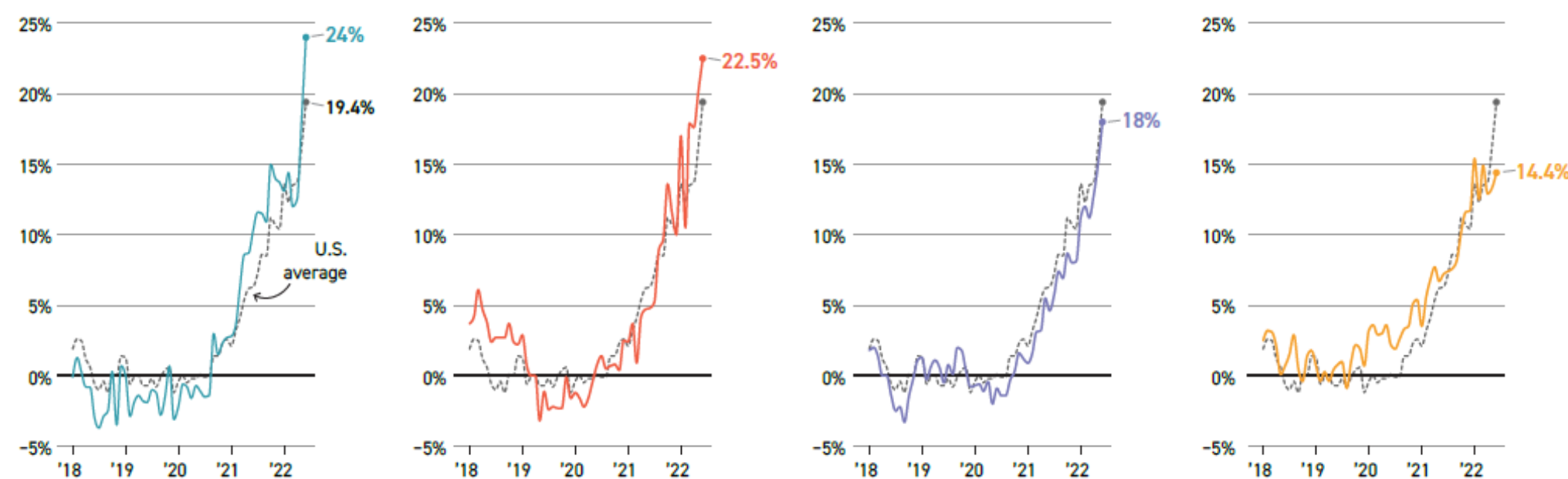
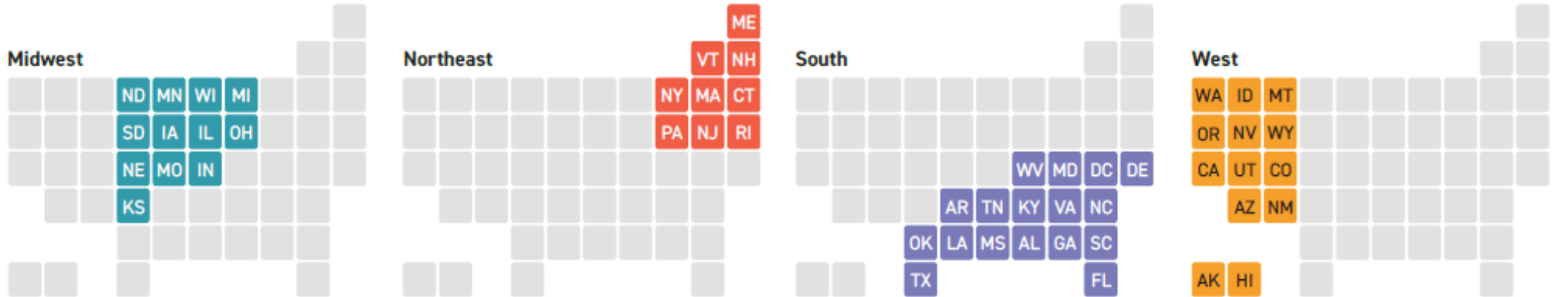
Note: Hourly averages of 5-minute and 15-minute Real-Time LMPs.

Electricity, natural gas inflation nearly hits 20 percent this year

The price of energy reached a 16-year high this year, as inflation for all items continues to rise across the U.S. The consumer price index for electricity and natural gas jumped 19.4 percent in June compared to the same month last year – the largest 12-month increase since early 2006.

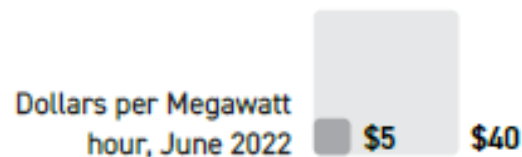
Midwest region had largest spike in energy inflation

Year-over-year change in consumer price index for natural gas and electricity, by region, not seasonally adjusted

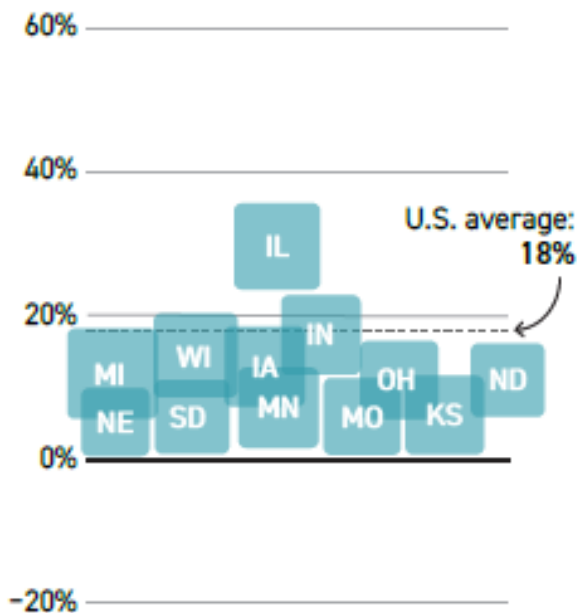


Average electricity price jumps 18% over four years

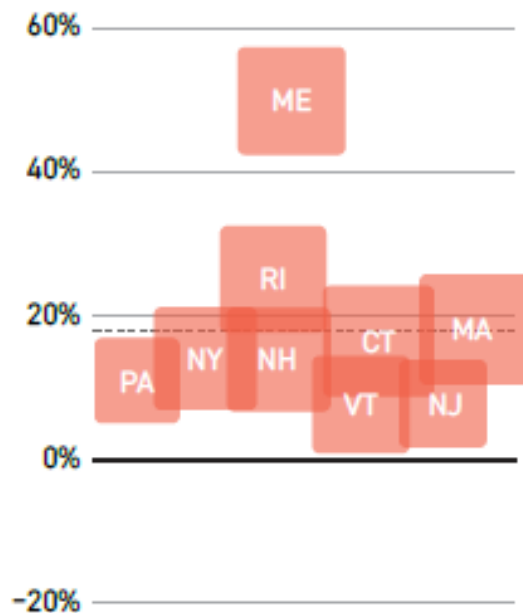
Percentage change in average retail price of residential electricity from June 2018 to June 2022



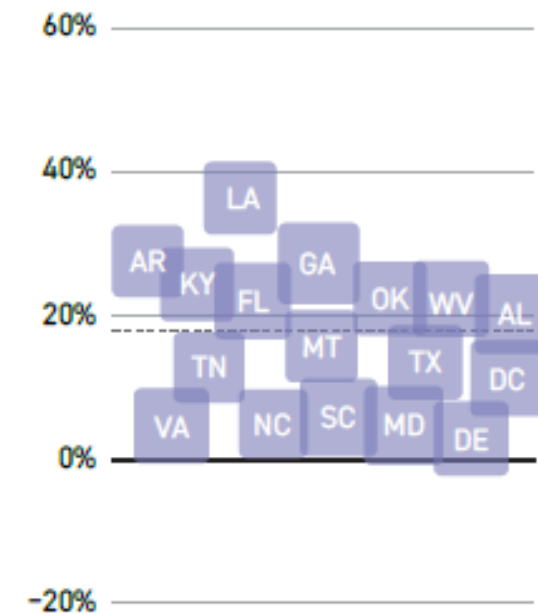
Midwest



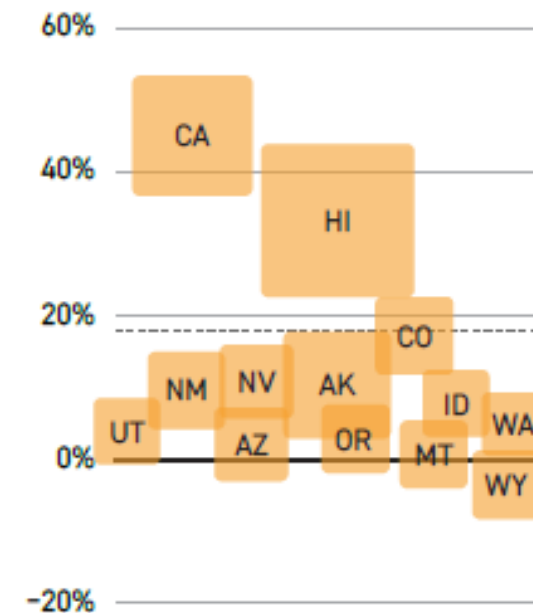
Northeast



South



West

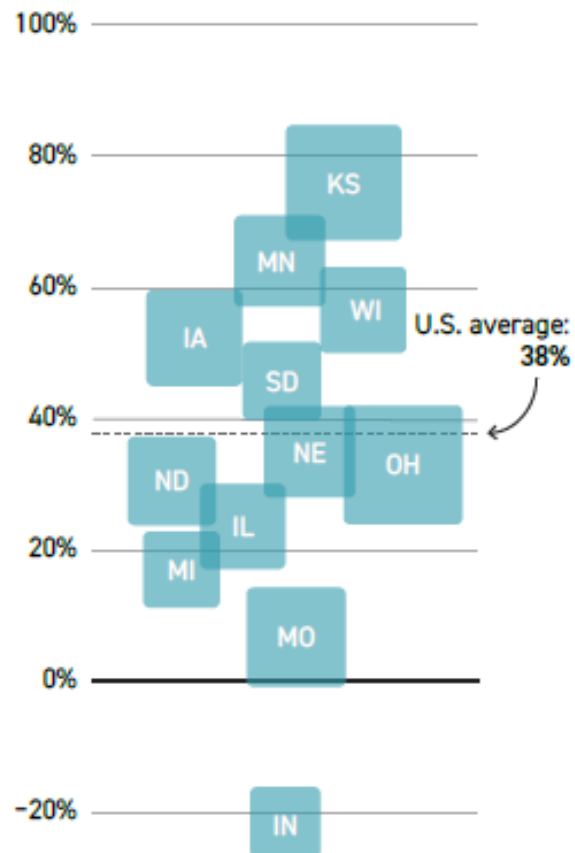


Residential natural gas price jumps 38% over four years

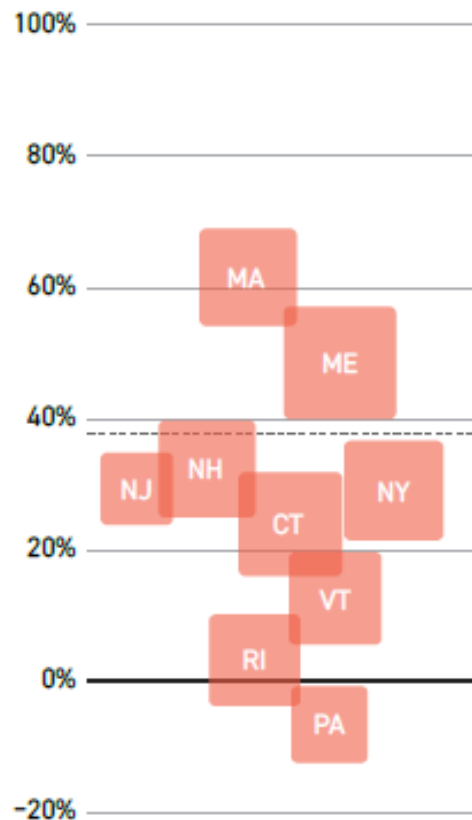
Percentage change in price of natural gas delivered to consumers from June 2018 to June 2022

Dollars per thousand cubic feet, June 2022
 \$5 \$40

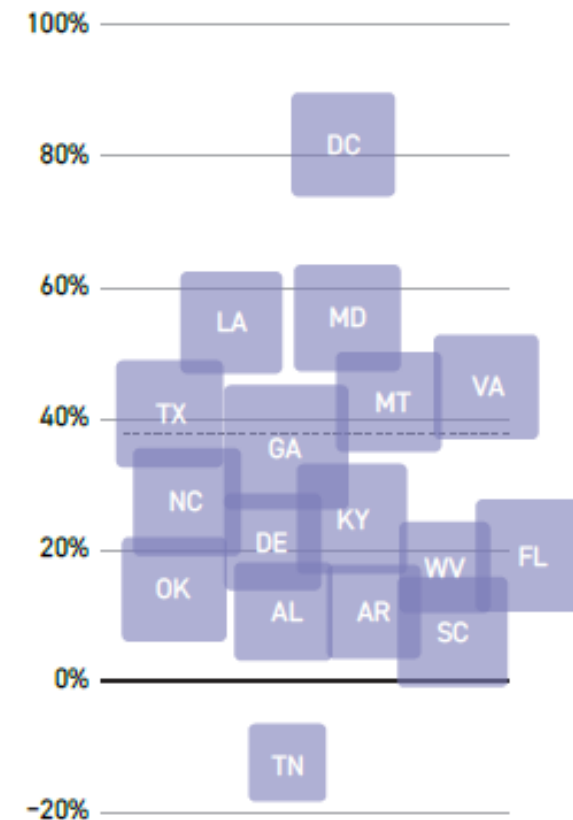
Midwest



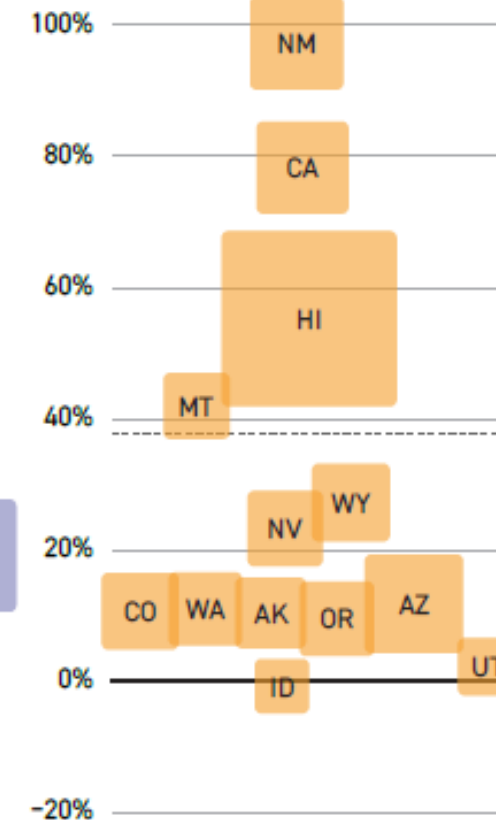
Northeast



South



West



Sources: Bureau of Labor Statistics, Energy Information Administration

By Madi Alexander, POLITICO Pro DataPoint

Biden Administration Energy Policy Goals

- Invest in projects to promote clean energy and decarbonization
- Make the energy system more resilient to address climate/extreme weather hazards
- Promote Environmental Justice
- Create good paying jobs

Major Federal Legislative Actions

- Infrastructure Investment & Jobs Act (IIJA) – November 2021
- Inflation Reduction Act (IRA) – August 2022

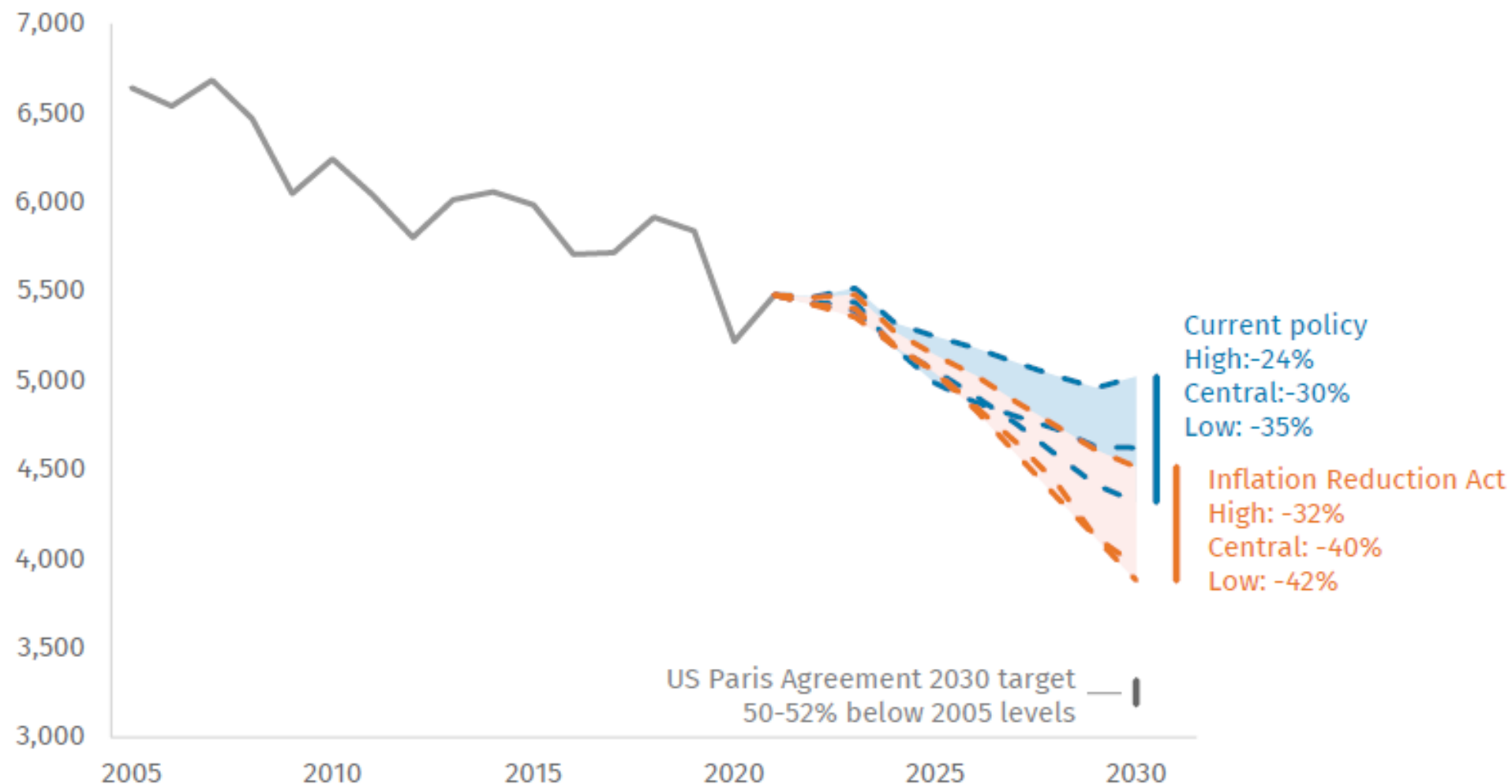
IIJA Funding for Areas of Interest to Electric Utilities

- **\$65 Billion for power grid including resiliency**
 - ✓ \$8 Billion for Hydrogen Hubs
 - ✓ \$6 Billion for Nuclear Power
- **\$47 Billion for other resiliency impacting energy (drought, wildfires, coastal issues)**
- **\$7.5 Billion for EVs (buses & ferries)**
- **\$7.5 Billion for EV Infrastructure (National network of chargers)**
- **\$9 Billion to fund previously “authorized programs” in 2020 Energy Legislation**
- **\$65 Billion for Broadband**

Inflation Reduction Act Overview

- Largest federal legislative action to address climate change and promote clean energy
- Creates “direct pay” options allowing public power, cooperatives and limited others to access federal financial incentives for clean energy equal to PTC & ITC
- Expected to enhance decarbonization efforts
- Estimate \$370 billion of financial incentives for clean energy
- Also includes certain grants

FIGURE 1
US greenhouse gas emissions
Net million metric tons (mmt) of CO₂-e



Source: Rhodium Group. The range reflects uncertainty around future fossil fuel prices, economic growth, and clean technology costs. It corresponds with high, central, and low emissions scenarios detailed in [Taking Stock 2022](#).

Key Provisions for Generators

Direct Pay Tax Credits

- Nuclear Power Production Tax Credit (45U)
- New Clean Energy Production Tax Credit (45Y)
- New Clean Energy Investment Tax Credit (48E)
- Carbon Capture & Sequestration Tax Credit (45Q)
- Clean Hydrogen Production Tax Credit (45V)

Key Provisions for Customers

- Advanced Energy Project Credit (48C)
- New Clean Fuel Production Credit (45Z)
- New Sustainable Aviation Fuel Credit (40B)
- Extension of Second Generation Biofuel Incentives
- Extension of Biodiesel and Renewable Diesel Credit
- Clean Vehicle Credit (30D)
- Previously Owned Clean Vehicle Credit (25E)
- New Commercial Clean Vehicle Credit (45W)
- Extension of Alternative Fuel Refueling Property Credit (30C)

Key Provisions for Customers *(Cont'd)*

- Residential Clean Energy (25D)
- Energy Efficiency Home Improvements (25C)
- Home Energy Performance Based Whole House Rebates
- High Efficiency Electric Home Rebate Program
- Grants for Energy Efficiency Contractor Training
- Energy Credits for Solar & Wind in Low-Income Communities

Key Legal / Regulatory Actions

- West Virginia v. EPA
- Biden Clean Power Plan Replacement Rule
 - ✓ Expected 2023/2024
- Suncor Energy v. Board of Commissioners of Boulder County
 - ✓ State v Federal Court Jurisdiction of Climate Claims

Conclusion

- A diverse fuel mix serves Nebraskans best.
- Renewables will continue to expand which will require significant transmission expansion.
- Nuclear energy is clean, constant and must be maintained and expanded.
- Coal will play an important, but diminished role in the regional energy mix.
- New technologies are important and must be implemented economically and reliably considering existing infrastructure and future needs.
- Federal financial incentives and grants will help facilitate significant electric industry expansion.
- We must properly balance reliability, affordability and sustainability in the electric industry.

Questions?
