The background of the slide features a low-angle shot of solar panels in the foreground, with several wind turbines visible in the distance against a clear blue sky. The overall tone is professional and focused on clean energy.

Federal Clean Energy Tax Credits

A Vital Building Block for Advancing Clean Electricity

Sandra Sattler, Ashtin Massie, and Steve Clemmer

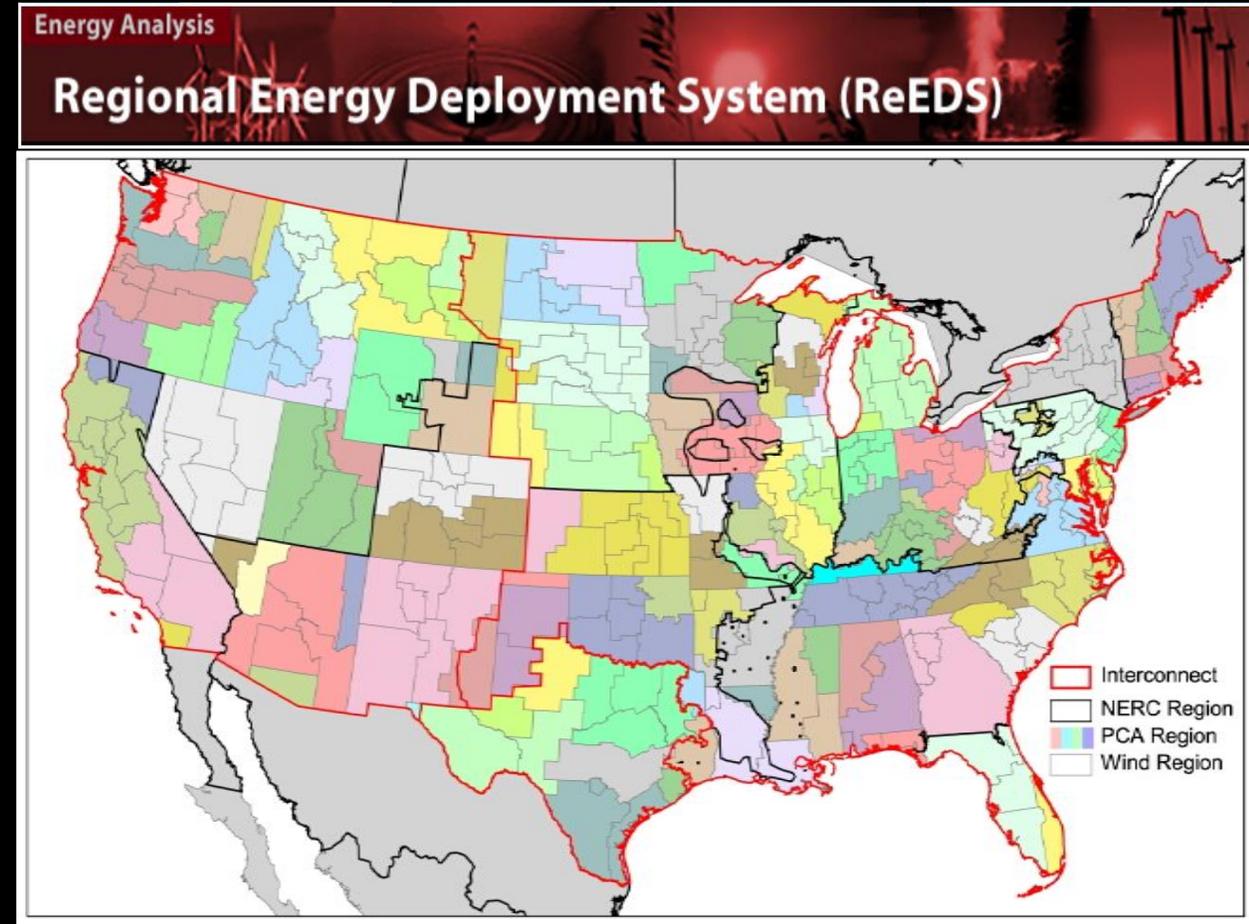
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Key Takeaways

- Federal clean energy tax credits continue the recent momentum in deploying renewable energy and reducing carbon emissions
 - The 5-year GREEN Act tax credit extension drives modest near-term renewable energy growth and carbon reductions, while the more ambitious Wyden Technology Neutral Tax Credit proposal accelerates the momentum and achieves significant reductions in US power sector carbon dioxide emissions through 2035
- Clean energy tax credits offer an affordable pathway to help achieve the clean energy transition while delivering economic and health benefits across the United States
- Clean energy tax credits can make an important contribution to decarbonizing the power sector
- Additional policies are needed to achieve 100% carbon-free electricity by 2035 and to ensure a just and equitable transition to a clean energy economy

UCS Analysis of Federal Tax Credit Extensions

- Examines the effects of federal clean energy tax credit extensions on the US power sector, consumers, economy, emissions and public health
- Uses NREL's Regional Energy Deployment System (ReEDS) power sector planning model
- Uses cost and performance assumptions from EIA's Annual Energy Outlook 2019 and NREL's Annual Technology Baseline 2019



Scenarios

Reference Case

- Includes state and federal policies enacted through July 2020 and tax extenders passed by Congress in December 2020.
- Used as a baseline to measure the impact of the proposed policies

Growing Renewable Energy and Efficiency Now (GREEN) Act 2020 (5-year extension)

- 60% of PTC for wind through 2026; extends PTC for hydro, biomass, geothermal and 45Q for CCS
- 30% ITC for solar and storage through 2026, ramping down to 10% by 2028; 30% ITC for offshore wind through 2028

GREEN Act Plus (10-year extension)

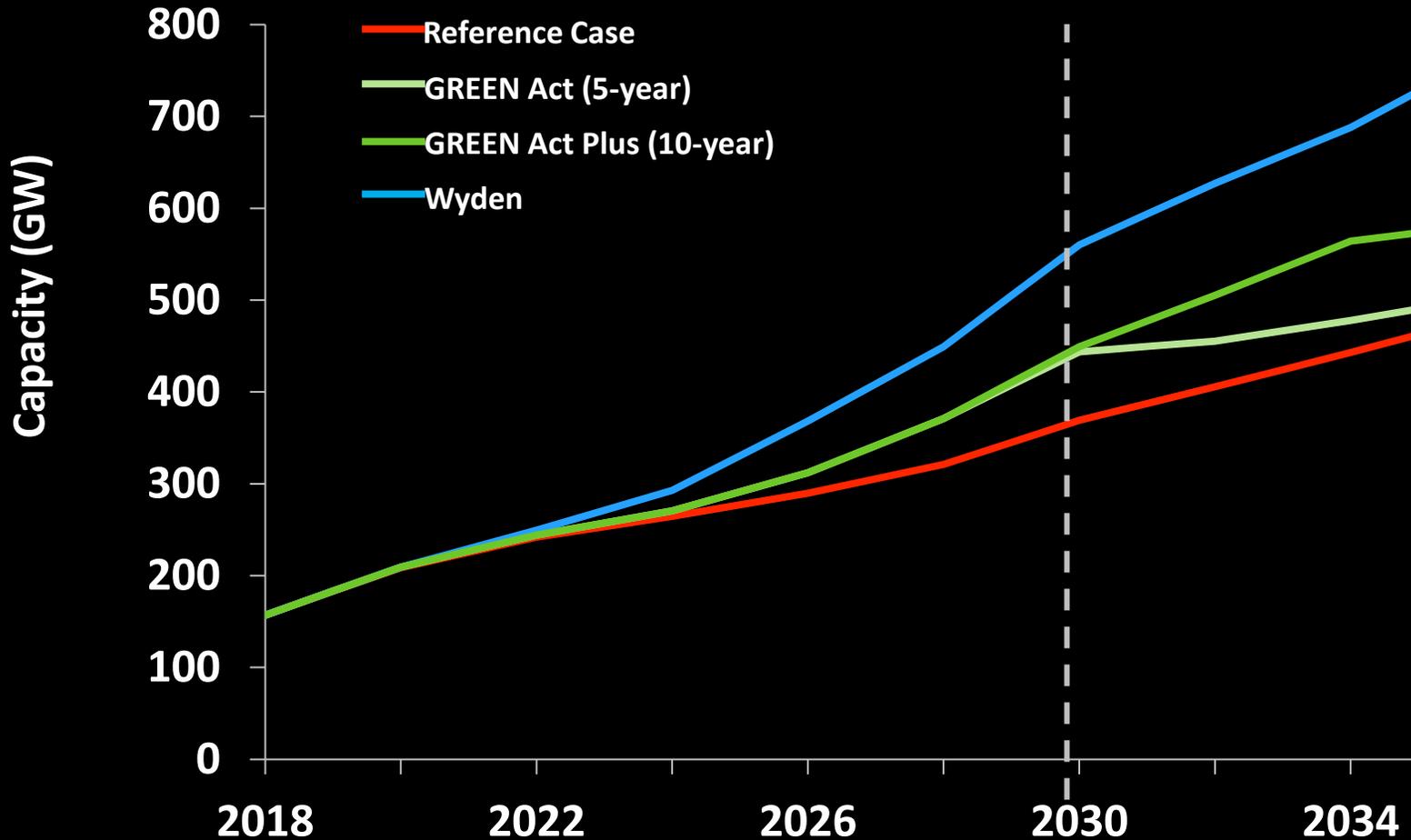
- GREEN Act with additional 5-year extension and ramp-down

CLEAN Energy for America (CEA) Act 2019, Wyden Technology Neutral Tax Credits

- Full PTC and 30% ITC for new renewables, storage, nuclear, and carbon capture and storage (CCS), ramping down over 4-year period after power sector emissions reach 50% below 2019 levels

Tax Credits Drive Increases In Renewable Capacity

US Non-Hydro Renewable Capacity

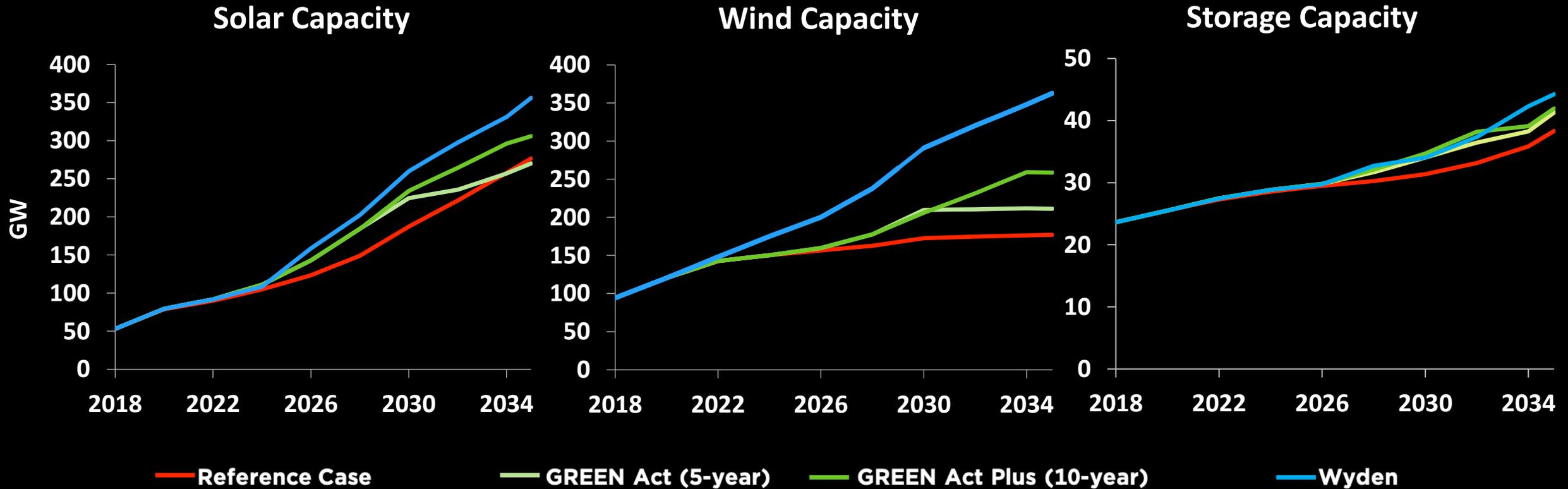


The policy scenarios deliver:

- 74-191 GW more wind and solar by 2030 and 265 GW more by 2035 under Wyden
- \$41-177 billion additional wind and solar investments by 2035*
- 51% reduction in new gas capacity (47 GW) by 2035 under Wyden

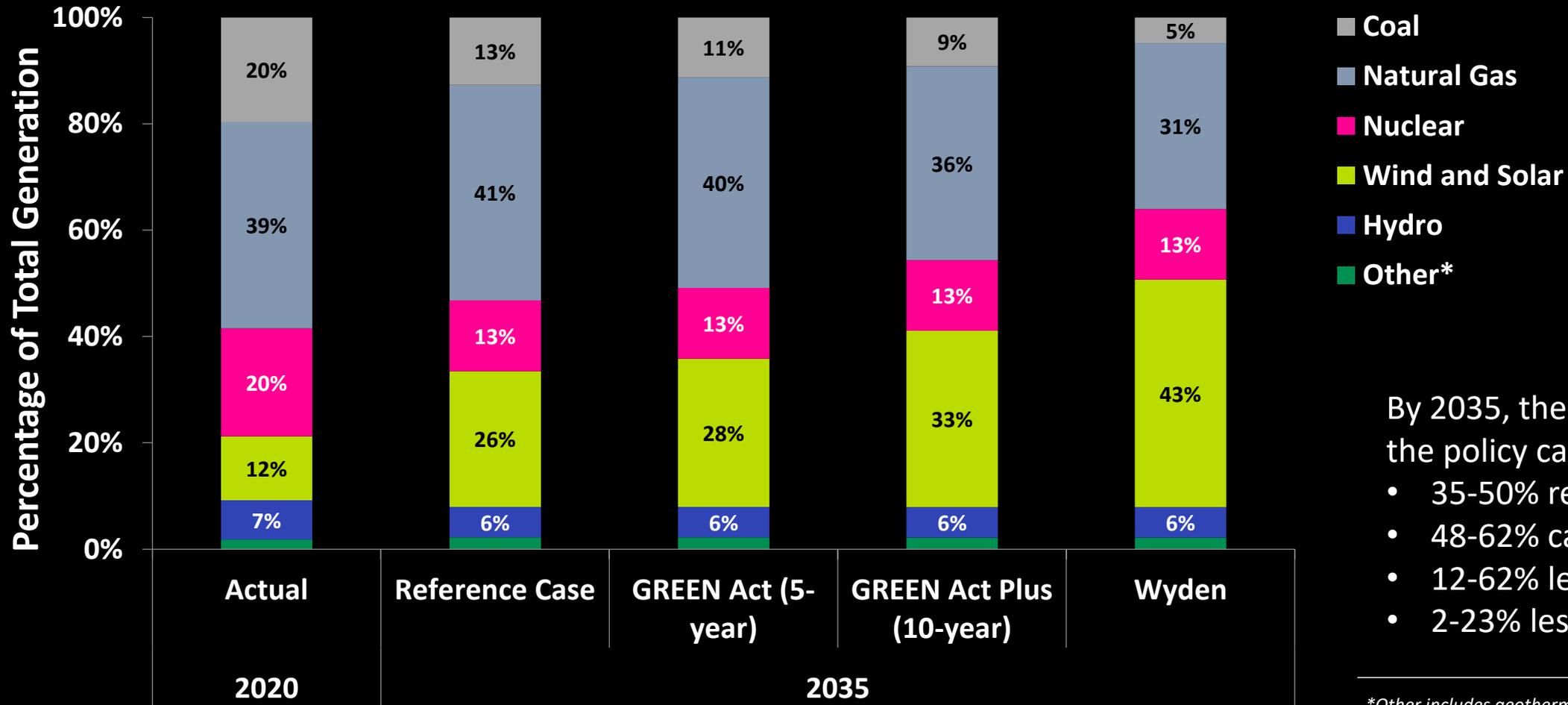
* Cumulative results are NPV 2020\$ using a 7% discount rate.

Renewable and Storage Builds Vary Based on Tax Credit Value and Duration



Increasing the value of the PTC from 60% to 100% under the Wyden scenario drives additional wind and solar capacity.

Clean Energy Tax Credits Help Diversify the US Electricity Mix

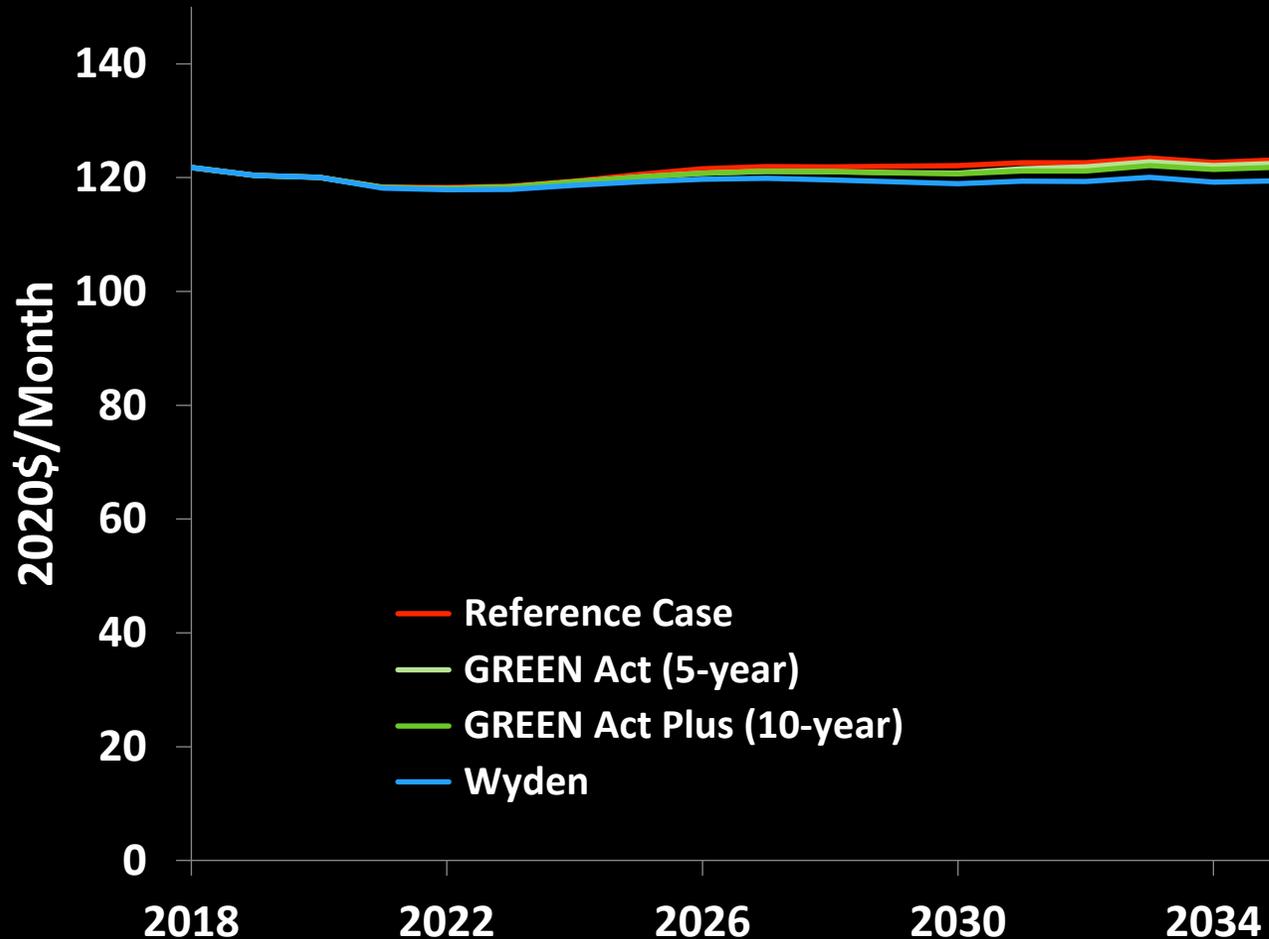


By 2035, the generation mix in the policy cases is:

- 35-50% renewable
- 48-62% carbon-free
- 12-62% less coal
- 2-23% less gas

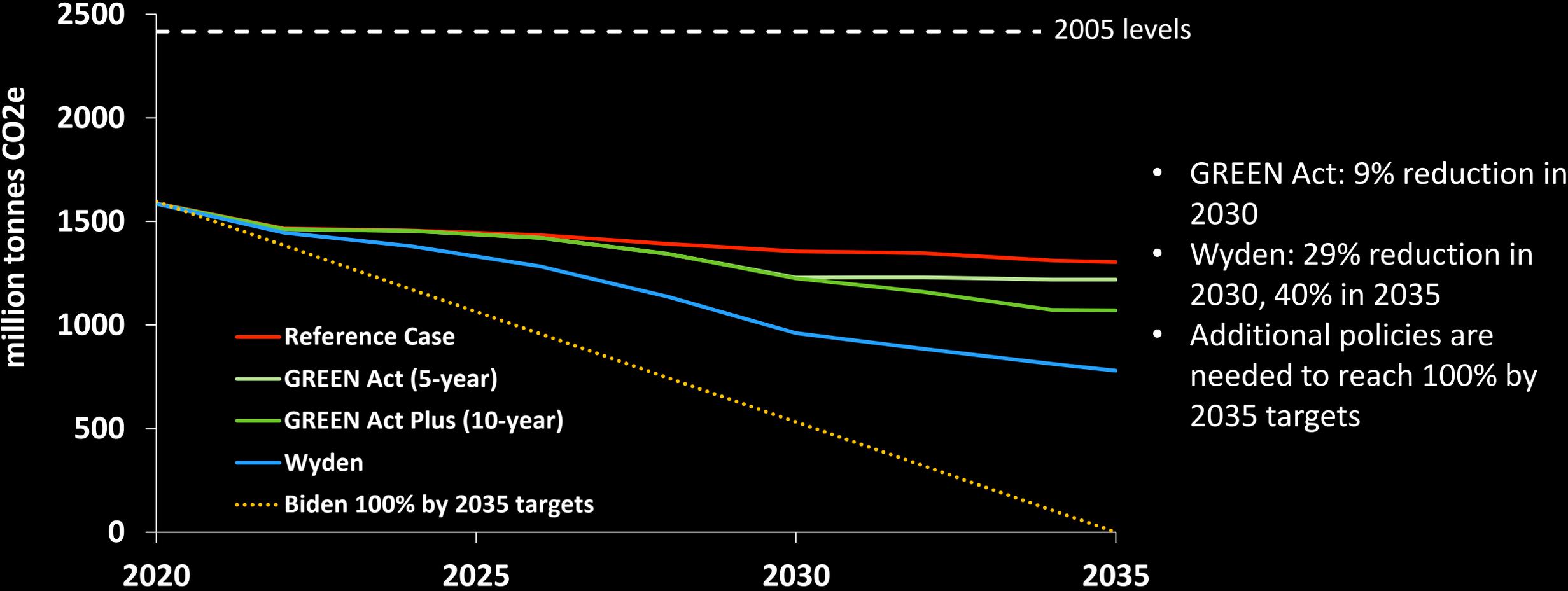
**Other includes geothermal, biomass, and imports from Canada (mostly hydro)*

Tax Credits are Affordable, Resulting in Slightly Lower Electricity Bills

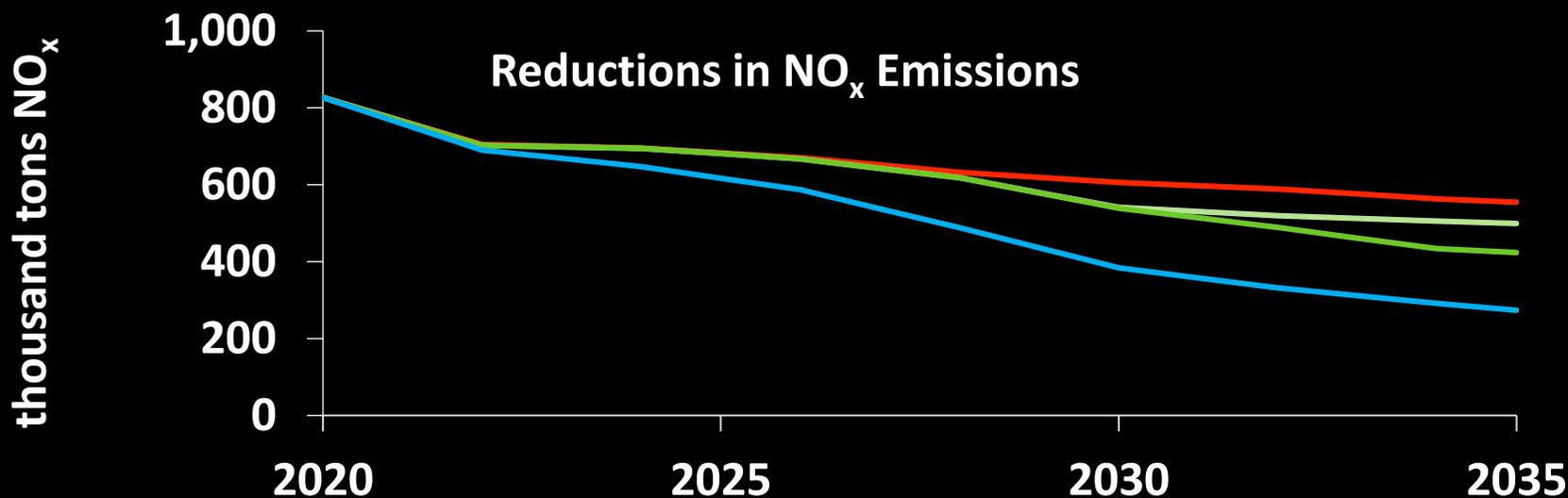
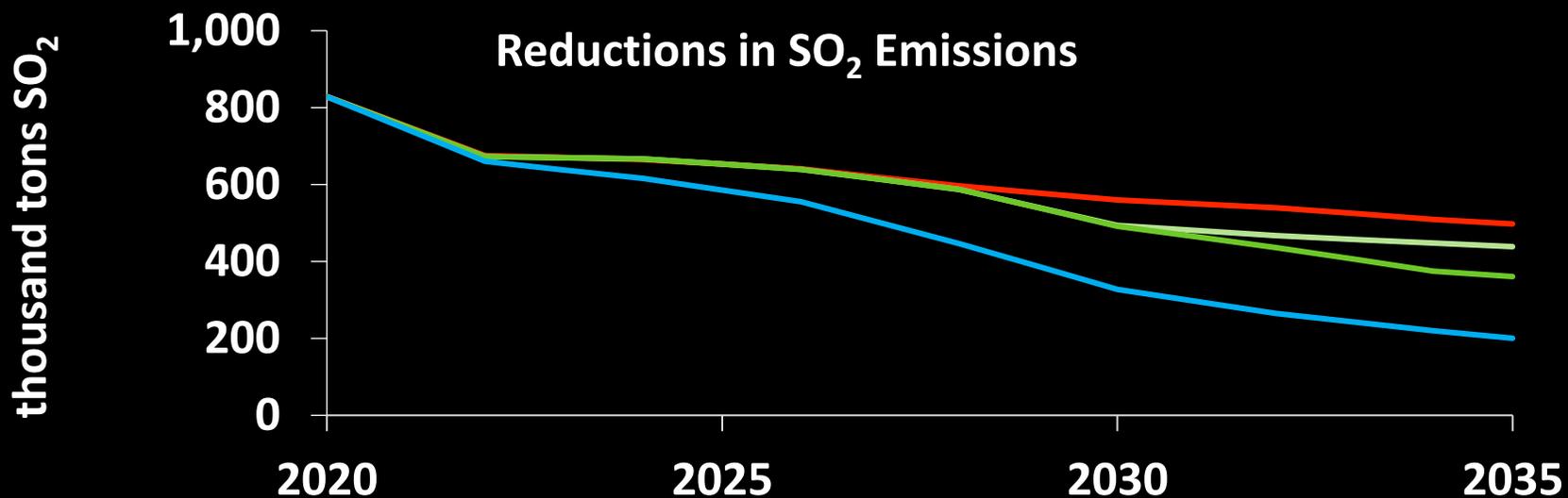


Wind and solar put downward pressure on electricity and natural gas prices, leading to slightly lower electricity bills for households and businesses.

Tax Credits Can Make Important Contribution to US Power Sector Carbon Reductions

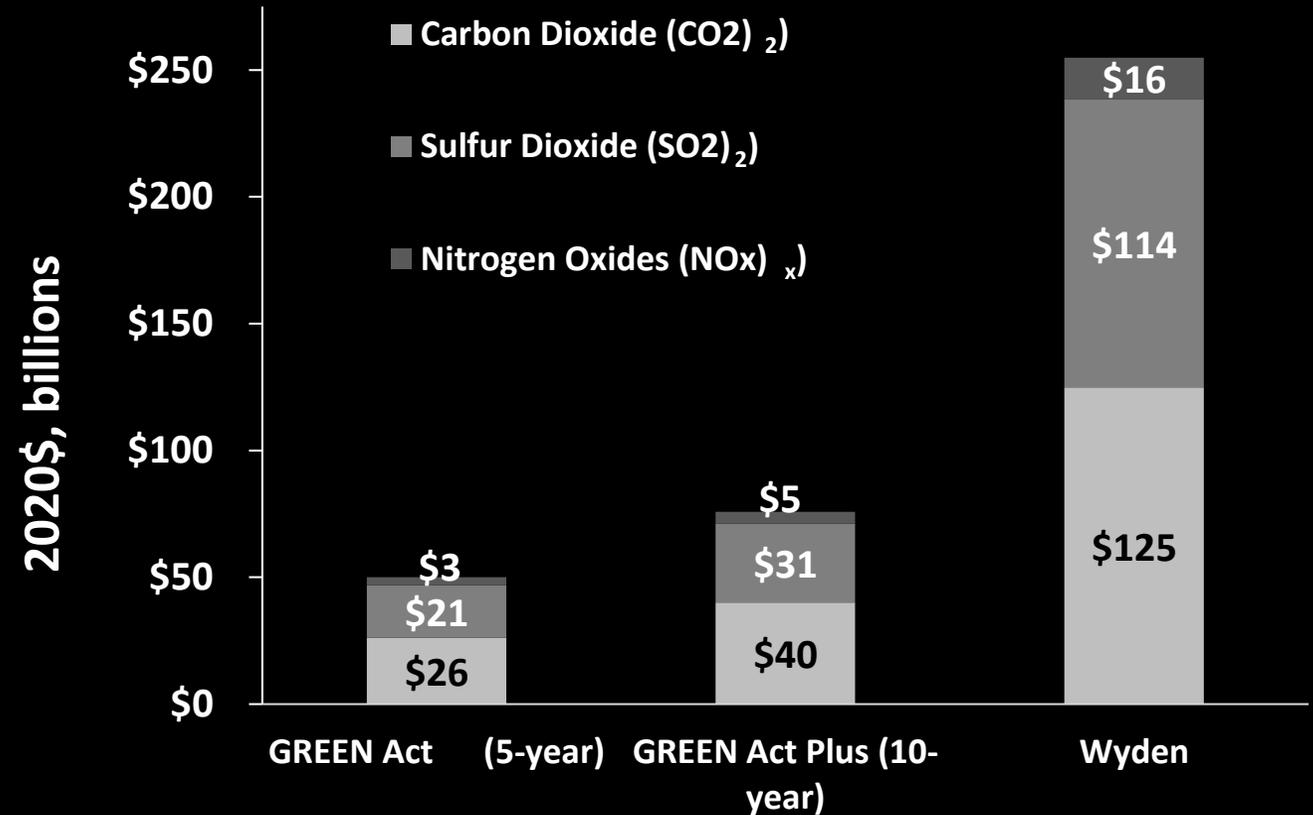


Tax Credits Reduce Criteria Pollutants



Less Pollution Spurs Health and Economic Benefits

- Less pollution under the tax credit scenarios results in \$50-\$255 billion worth of public health and economic benefits through 2035
- Reducing coal and gas generation avoids 7,054 premature deaths under the Wyden proposal through 2035 (80% from coal, 20% from gas)



The Benefits Of Avoided Pollution and Investing in Clean Energy Far Outweigh the Costs to Taxpayers

Scenario	Cumulative Costs And Benefits 2020-2035*		
	Cost to the treasury (PTC+ITC)	Monetized benefits of avoided pollution	Investments in wind and solar
GREEN Act (5-year)	\$21.3	\$50.1	\$40.7
GREEN Act (10-year)	\$41.7	\$75.8	\$75.4
Wyden	\$63.2	\$254.8	\$176.5

* Cumulative results are the net present value 2020\$ using a 7% discount rate, results are the differences between the Reference Case and the policy scenario.

Ensuring A Transition To A Clean Energy Economy That Provides Environmental, Health, And Economic Benefits For All Communities

Communities of color and low-income communities bear a disproportionate burden of pollution from fossil fuels. To ensure all communities benefit from the clean energy transition:

- Communities of color and low-income communities should have guaranteed access to the public health and economic benefits of clean energy. Environmental justice should be centered in energy policies wherever possible. In addition to tax policy, robust policies are needed to guarantee that at least 40% of clean energy benefits flow to EJ communities, legacy pollution is cleaned up, and that other inequities are also addressed through meaningful stakeholder engagement.
- Policies should include targeted investments in clean energy and energy efficiency, tighter limits on co-pollutants including addressing the cumulative burden of pollution, incentives for coal plant retirements and limits on a rush to gas, worker/community transition assistance, and economic diversification.



Credit: Grid Alternatives



Credit: Colorado Energy Office

Key Findings and Recommendations for Accelerating the Transition to a Clean Energy Economy

- Federal tax credits are an important complement to state clean energy policies in promoting renewable energy development, creating jobs, lowering costs, and reducing emissions. Other robust national clean energy policies are also urgently needed.
- Until the U.S. can transition to national policies that provide more stable, long-term support for low carbon energy, Congress should extend the federal tax credits by ten years and at full value to maintain industry growth and provide more parity and predictability in the tax code.
- Tax credits should be expanded to encourage investments in energy storage and include direct payments.
- Additional policies are needed to achieve a carbon-free power sector by 2035, including clean energy standards, stronger power plant pollution standards, funding clean energy investments that directly benefit disadvantaged communities, transition assistance for workers and communities, increased R&D, and investments in transmission and storage.

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