US Climate Ambition in 2030: Insights from Recent Modeling

Meeting Potential New U.S. Climate Goals

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Study Design

A 30-region CGE model (MIT's USREP) augmented by a dispatch and capacity investment electricity sector model operating at a finer spatial and temporal resolution (NREL's ReEDS)

A Reference Calibrated to EIA/AEO 2020 and Adjusted to Reflect Recent Changes

Economic growth update (the pandemic)
Policy updates in RPS/CES and wind/solar carveout
Climate policies with legislative authority

Mid-Range Baseline

NREL's ATB 2019 Mid-Range cost assumptions

Low-Cost Baseline

NREL's ATB 2019 Low cost assumptions
All states achieving a 3% energy efficiency improvement
EVs reaching cost parity with ICE vehicle by 2030

Policy Scenario: A 45%/50% Reduction by 2030

The allowances are distributed across states based on three allocation methods
(Equal Marginal Cost - EMC, Equal Cut from Base year emissions - ECB, or Equal per Capita - EPC)

Net Benefits Calculation: Air Pollution and Climate Effects

Findings

NATIONAL

- The cost of cutting emissions to 50% is modest and varies little across allocation methods
- The welfare impact is modest with a 2.5-month delay (Mid-Range) or a 3-week delay (Low-Cost) to achieve the 2030 welfare level
- Net benefits are positive and significant

REGIONAL

- While the emissions outcomes remain almost unchanged, allowance revenue varies depending on the choice of allocation method
- The welfare effect differs across regions with a dominating effect from the distribution of allowance revenue
- Equal lump-sum payments to state residents generally lead to net benefit to lower income households

Technology and cost assumptions are crucial to the cost of the policy and the allocation method matters in the regional impact

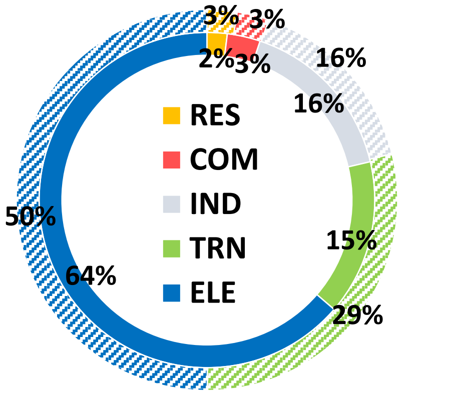
What emissions reductions can be achieved by 2030, and at what cost?

(2018$/$tCO_2$)	45% Reduction	50% Reduction
Mid-Range Baseline	68	100
Low-Cost Baseline	20	35

What are the key sectors and technology pathways to achieving this result?

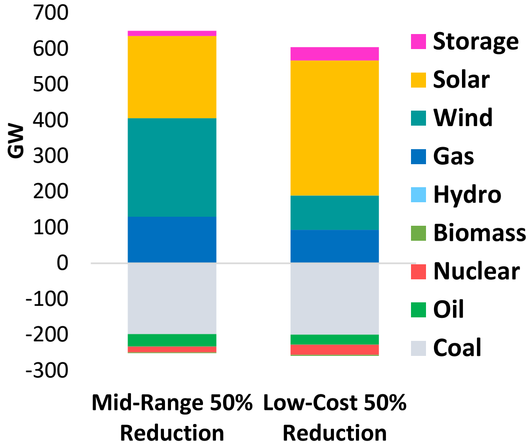
Abatement Contribution

Mid-Range (Inner circle) vs. Low-Cost (Outer circle)



Capacity Expansion/Retirement

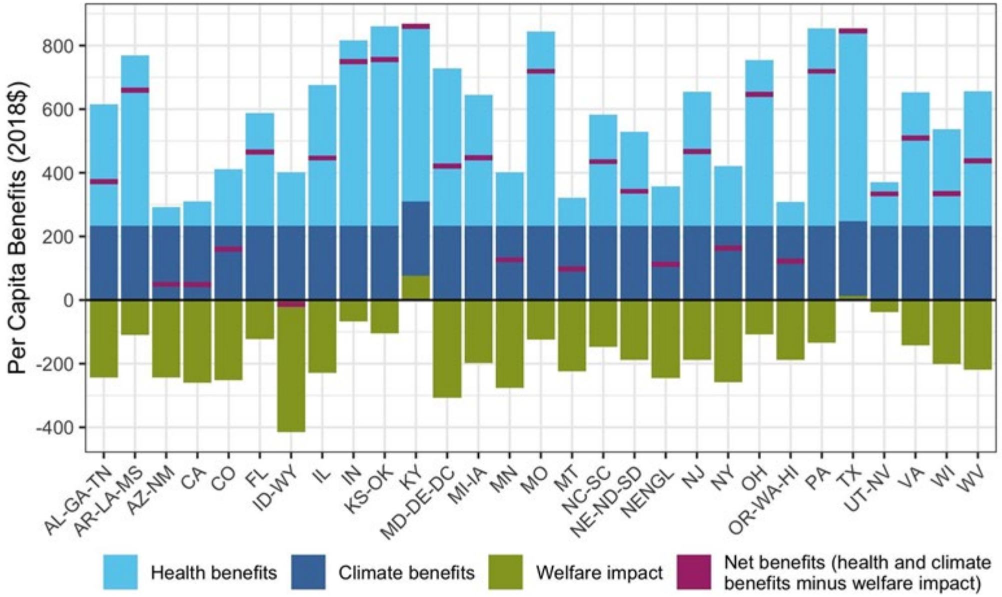
(2030 vs. 2020)



What are the critical technology and cost assumptions underlying these results?

- Cost of renewable energy (wind/solar)
- Electrification (EVs)
- Energy efficiency improvement

Are regional cost impacts uniform or disparate?



Thank you!