

What REMI Models Can Tell Us about The Future of Energy

Regional Economic Models, Inc.

May Lin, *Analyst*

Introduction

Review of Baseline Forecast

Economic Transitions: Electric Vehicles

The Effect of Policy Interventions: Bipartisan Infrastructure Plan

The Effect of Policy Interventions: Disaster Resilience

Conclusion

Q&A

About Us



We are the nation's leader in dynamic local, state and national policy modeling.

From the start, REMI has sought to improve public policy through economic modeling software that informs policies impacting our day-to-day lives.

We were founded in 1980 on a transformative idea: government decision-makers should test the economic effects of their policies before they're implemented.

At REMI, we're inspired by a single goal: *improving public policies.*



what does **REMI** say?sm

At REMI, we're inspired by a single goal: *improving public policies.*

Our models are built for any state, county, or combination of counties in the United States.

Our Representative Clients

Our model users and consulting clients use REMI software solutions to perform rigorous economic analysis that critically influences policy.



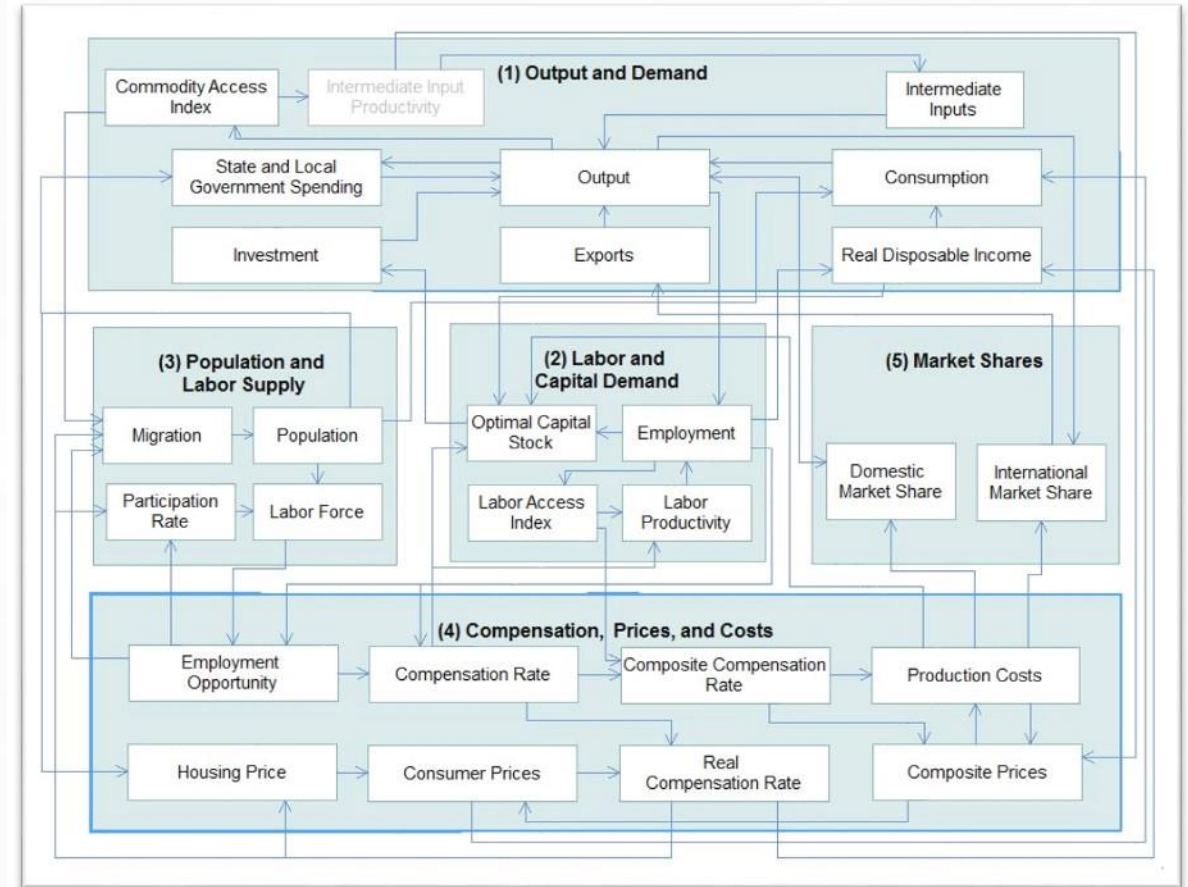
what does **REMI** say?sm

Model Simulation: REMI E3+



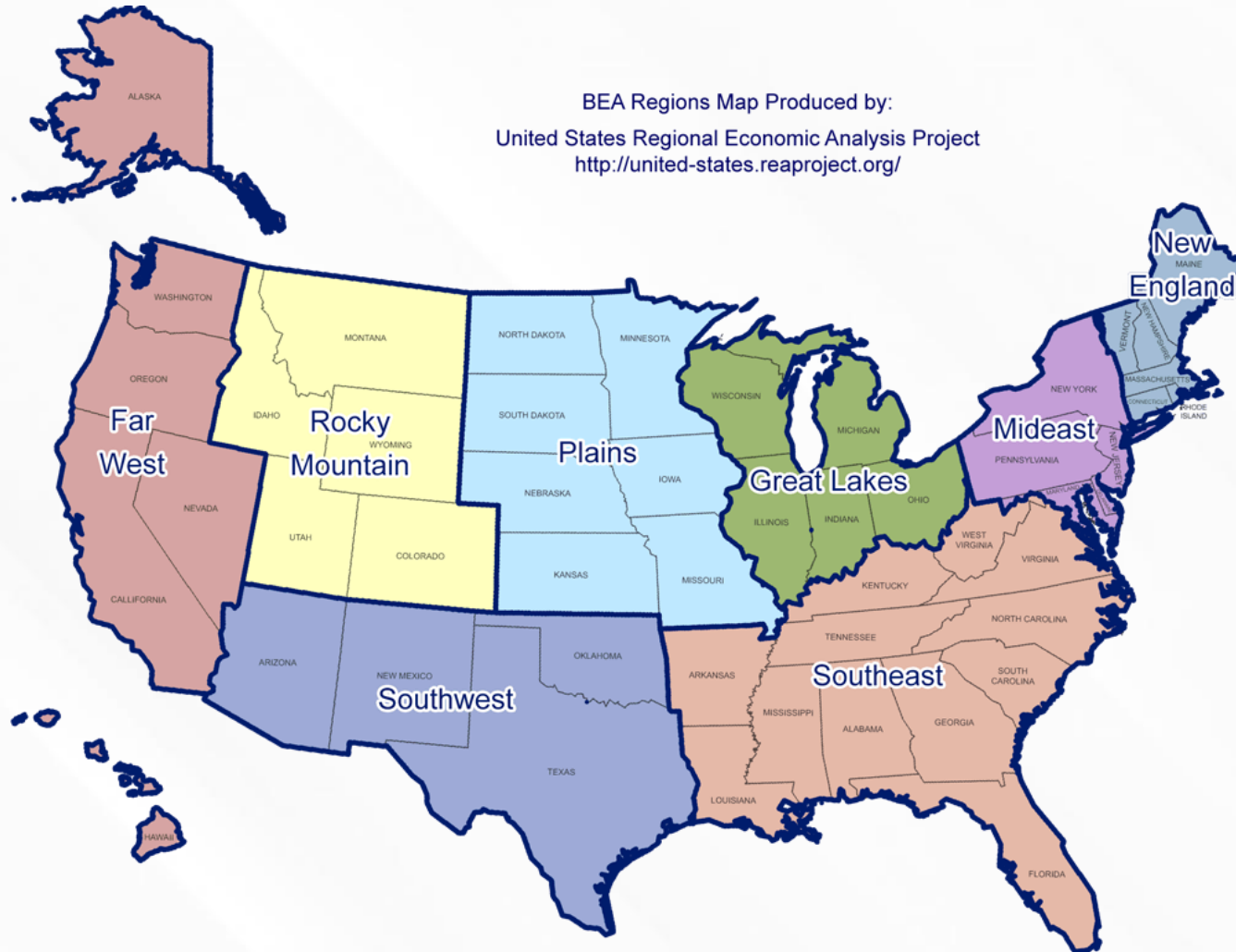
E3+ is the premier software solution for analyzing the macroeconomic and demographic impacts of any initiatives related to the energy and environmental sectors.

Decision-makers depend on E3+ to provide comprehensive evaluations of the total economic impact of altering electric rates, introducing new power sources, investing in the production of energy, and other policy changes.



what does **REMI** say?sm

Agenda



- 8 BEA Major Regions
- History: 2001 – 2018
- Forecast: 2019 - 2060

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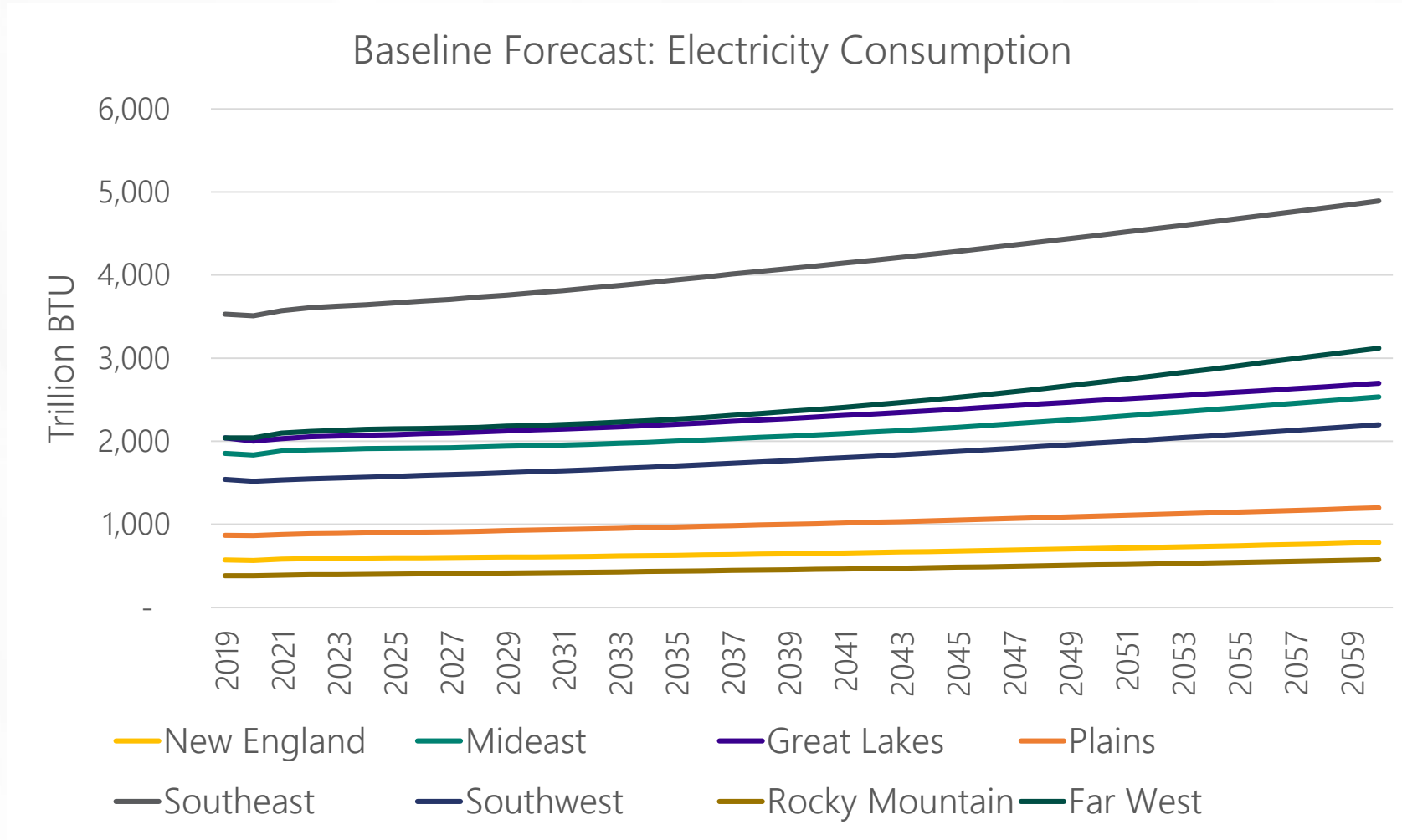
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Baseline Forecast: Electricity Consumption



Region	2021-2060 Percent Change
New England	39%
Midwest	35%
Great Lakes	35%
Plains	33%
Southeast	37%
Southwest	37%
Rocky Mountain	43%
Far West	48%

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- Assumptions
 - Fixed total amount of registered cars, including electric vehicles and gasoline cars
 - Net zero change in consumption levels in the economy
- Change: electric vehicles in operation will replace the same amount of gasoline cars

- 
- A flow diagram consisting of two rounded rectangular boxes with red borders, connected by a large red arrow pointing from left to right. The left box contains two bullet points: "Less gas cars" and "More EVs". The right box contains two bullet points: "Gasoline Consumption decreasing" and "Electricity Consumption increasing".
- Less gas cars
 - More EVs

- Gasoline Consumption decreasing
- Electricity Consumption increasing

Simulation Variables: Electric Vehicles



Consumer Spending: Electricity

- \$1.3 Billion increase in 2022 increasing with EV sale projections
- \$249 Billion increase by 2060

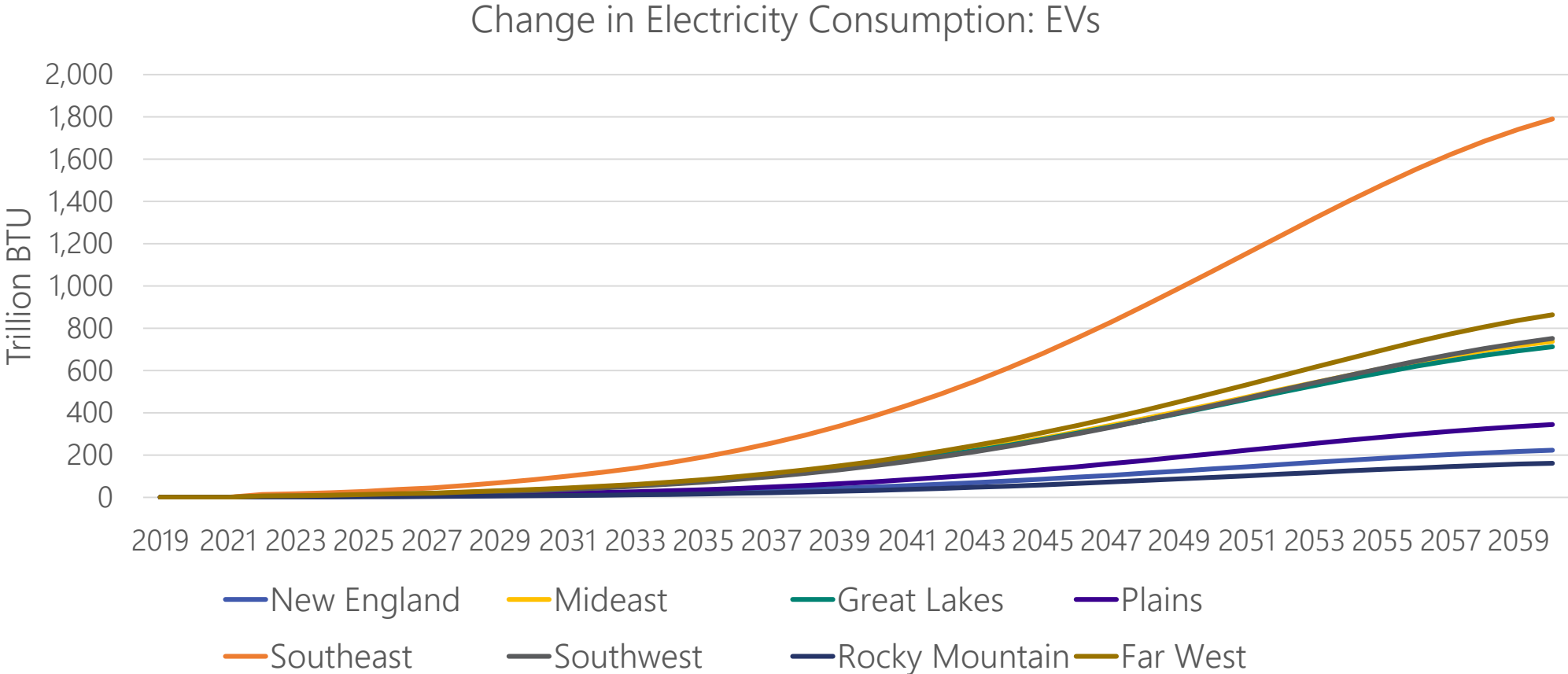
Consumer Spending: Motor Fuels

- \$3.8 Billion reduction in 2022 increasing with EV sale projections
- \$576 Billion reduction by 2060

Consumer Spending: Other Categories

- Increased by difference between Consumer Spending on Motor Fuels and Electricity
- Creates net zero change in consumption levels in the economy

Simulation Forecast: Impact of Electric Vehicles



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Industry Sales: Power and Communication Structures

- \$73 Billion increase in spending split between the first 5 years: total set aside in Bipartisan Infrastructure Bill for transmission system upgrades

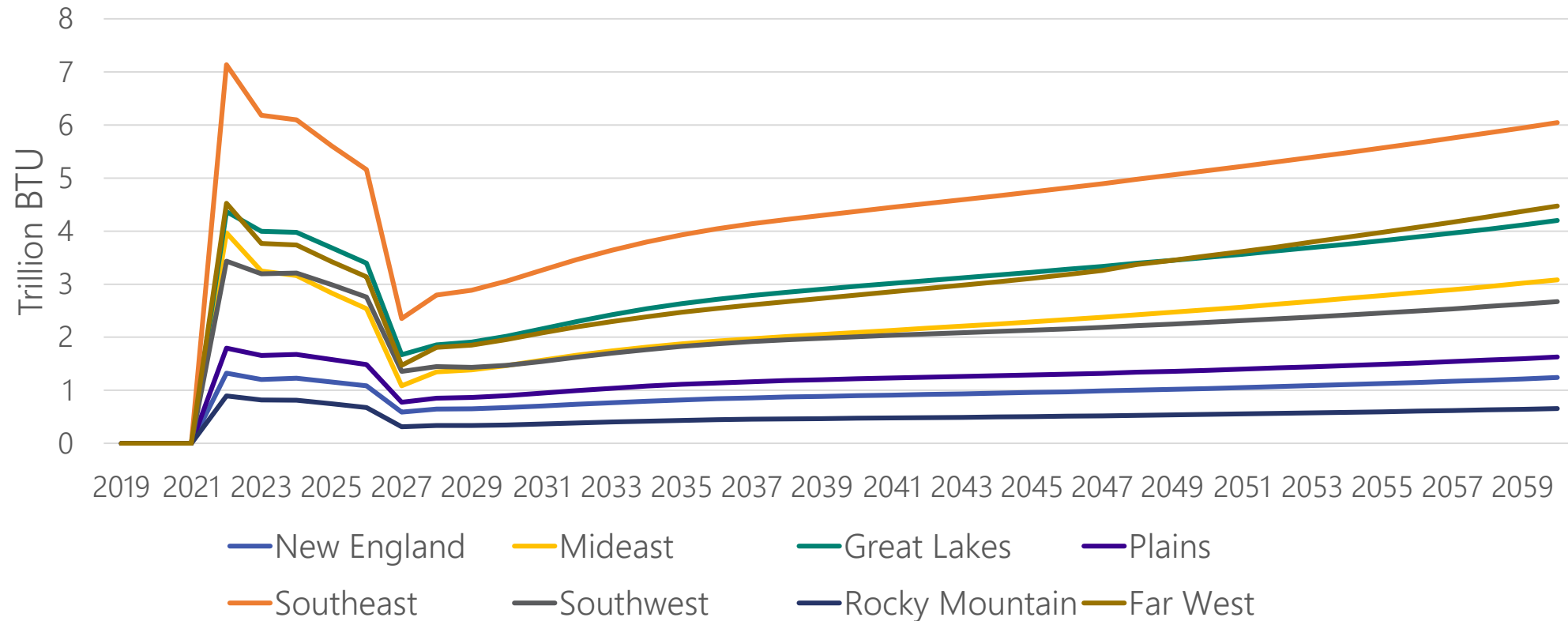
Change in Fuel Cost

- Reduced by 3% for every year
- Applied to every industry in the economy
- Simulates the impact of improved transmission infrastructure

Simulation Forecast: Transmission Upgrades



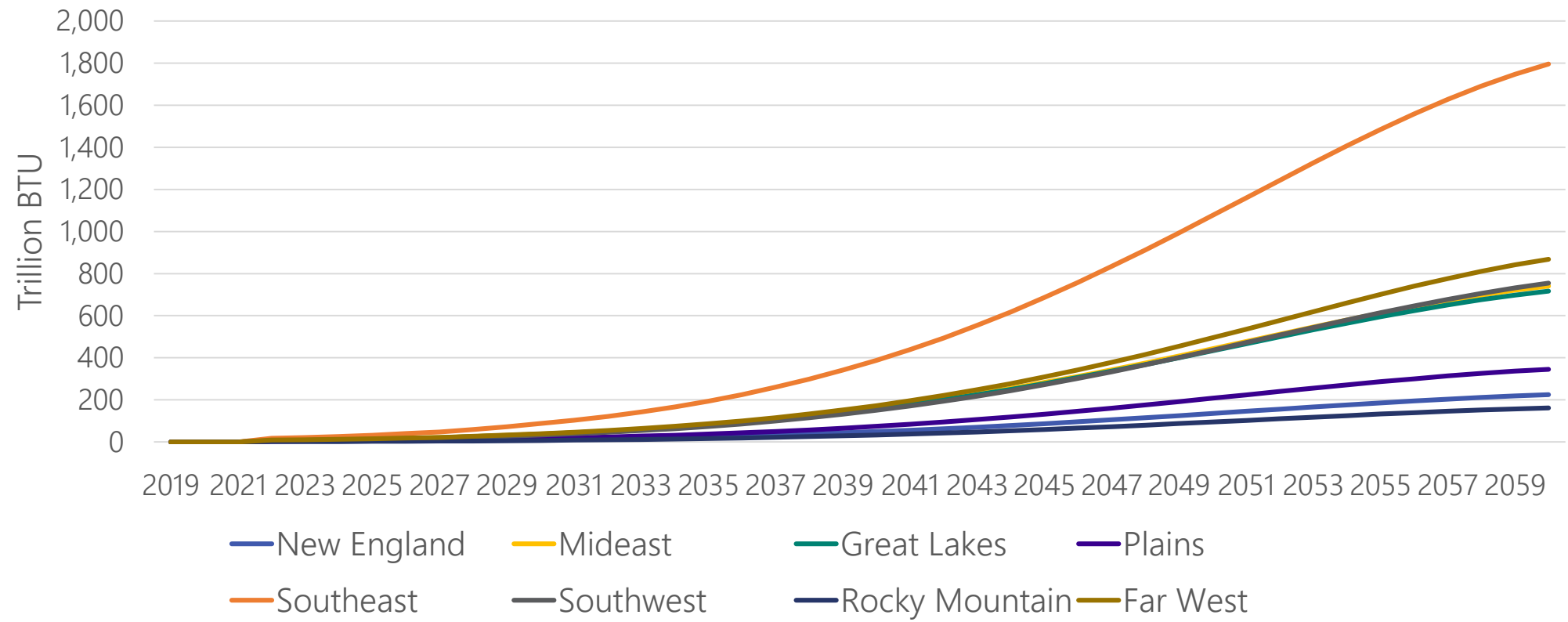
Change in Electricity Consumption: Transmission Upgrades



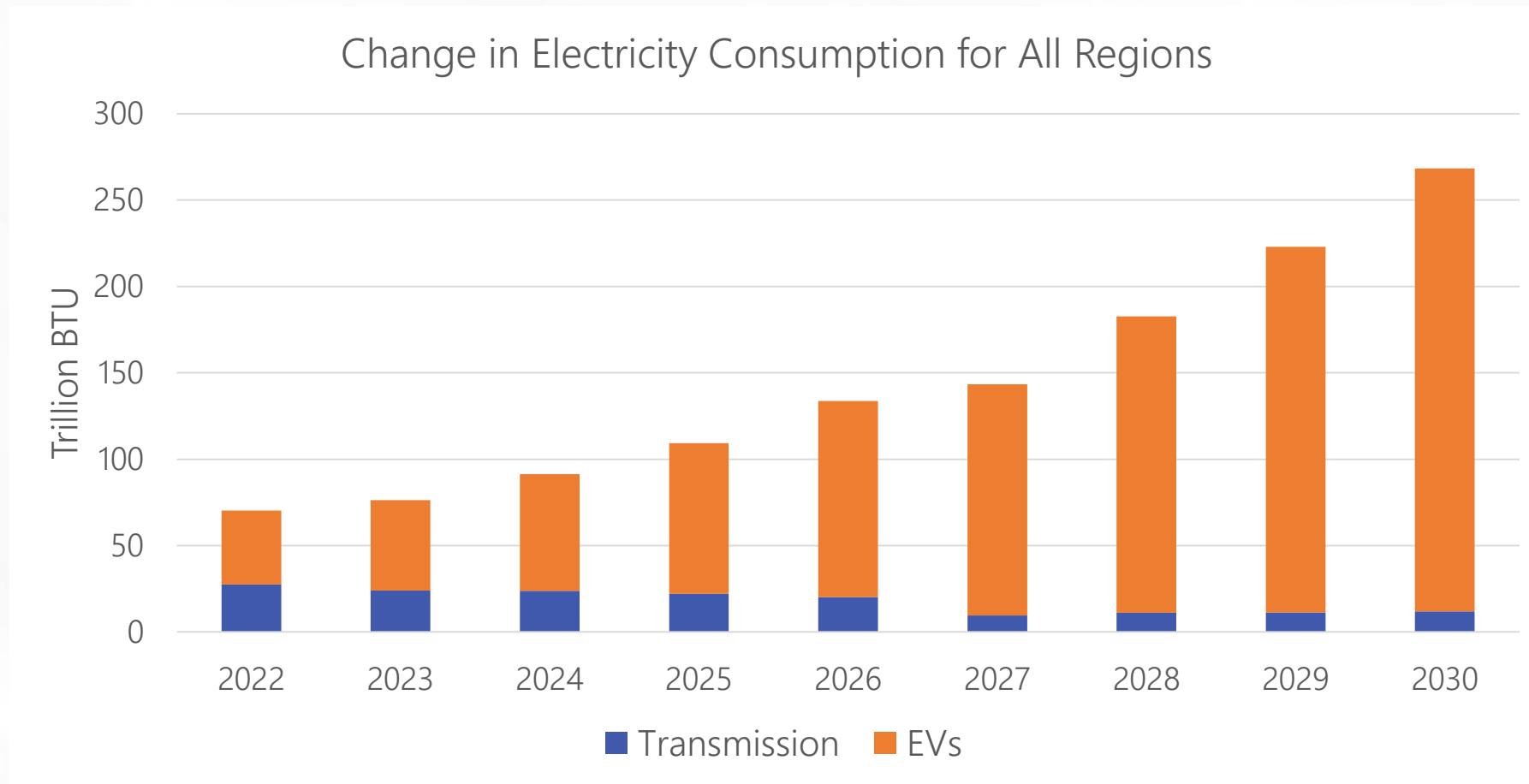
Simulation Forecast: EVs + Transmission Upgrades



Change in Electricity Consumption: Transmission Upgrades

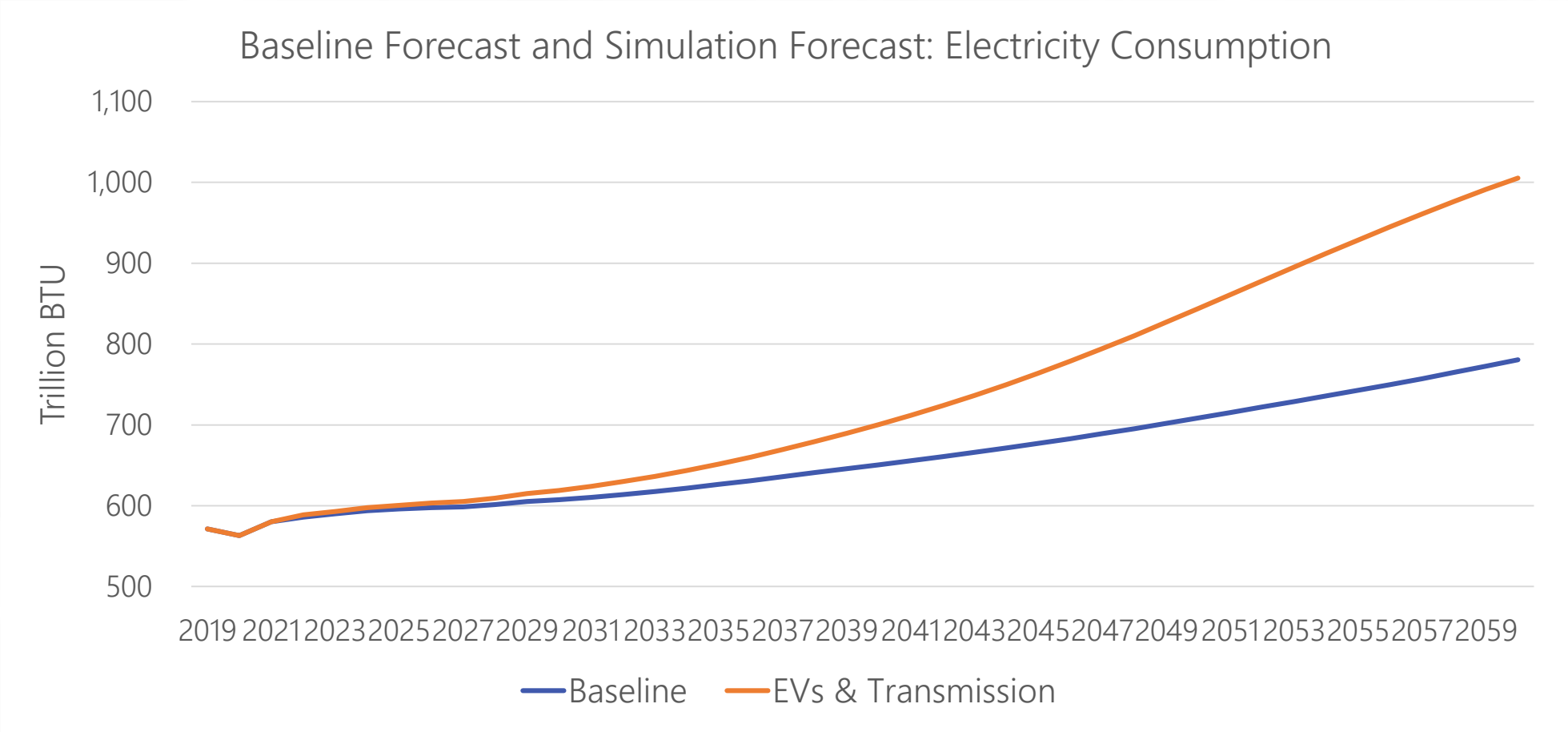


Simulation Forecast: Change in Energy Consumption



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Baseline Forecast and Simulation Forecast



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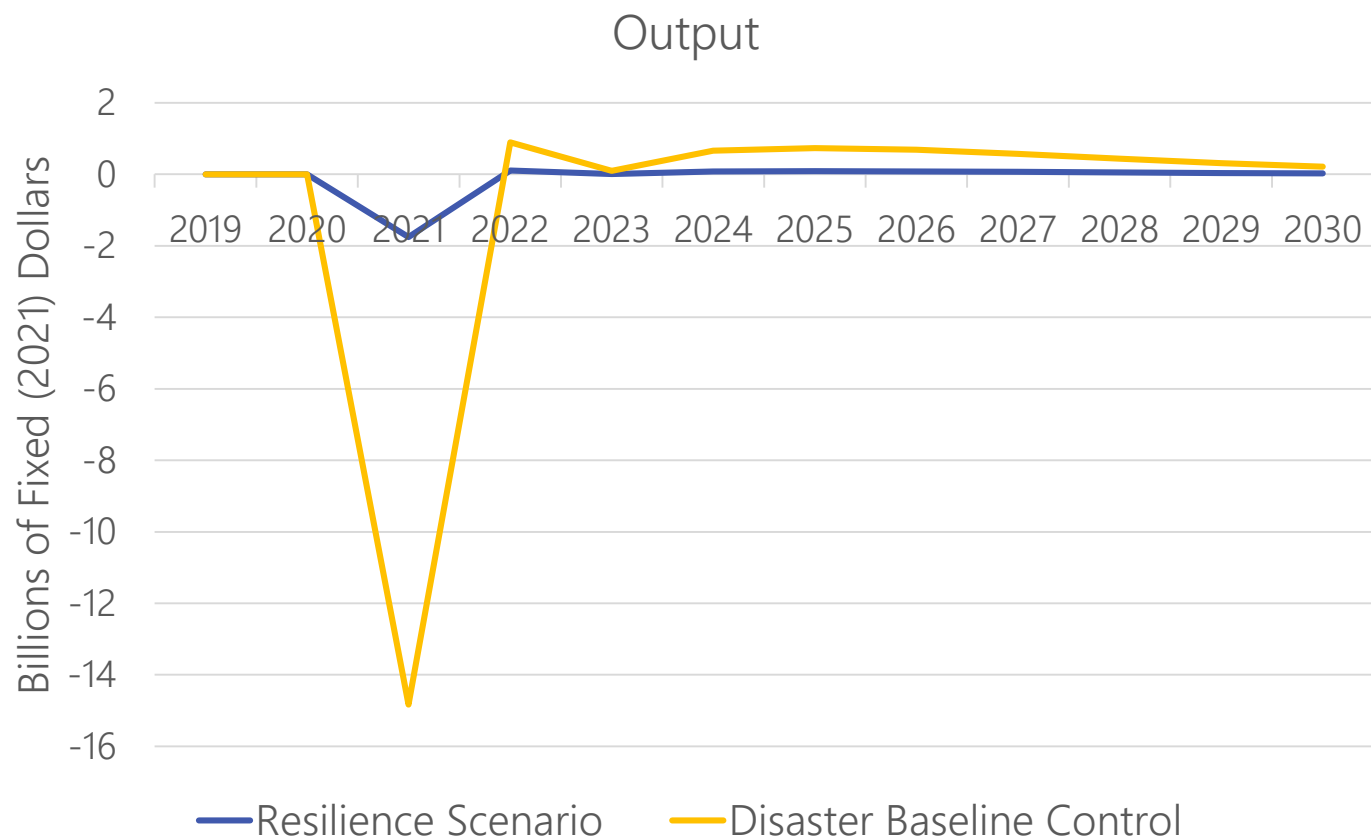
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The Effect of Policy Interventions: Disaster Resilience

Southwest Region



- Estimated Direct Impact in Texas without Resilience Investment: \$4.2B
- Total Maximum Loss Potential: \$9.3B
- Assumed Direct Impact with Resilience Investment: \$0.5B
- Implied Direct Protection by Resilience Investment: \$3.7B
- Total Avoided Loss: \$8.2B

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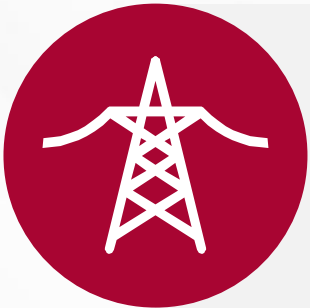
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Conclusions and Notable Results



- Demand for Electric Vehicles will cause an increase in electricity consumption of approximately 5,600 Trillion BTUs by 2060.



- The impact of the Bipartisan Infrastructure Bill on electricity consumption will be positive but relatively small.



- Infrastructure improvements from the Bipartisan Infrastructure Bill may save a considerable amount of money in avoided outages related to extreme weather events. The Total Avoided Loss can be more than twice the amount of the Direct Protection provided by the Resilience Investment.

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- Vehicle Technologies Office. (2019, December 4). *Summary report on EVS at scale and the U.S. Electric Power System 2019*. Energy.gov. Retrieved September 16, 2021, from <https://www.energy.gov/eere/vehicles/downloads/summary-report-evs-scale-and-us-electric-power-system-2019>.
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Thank you for attending!