The Energy Policy Simulator for States

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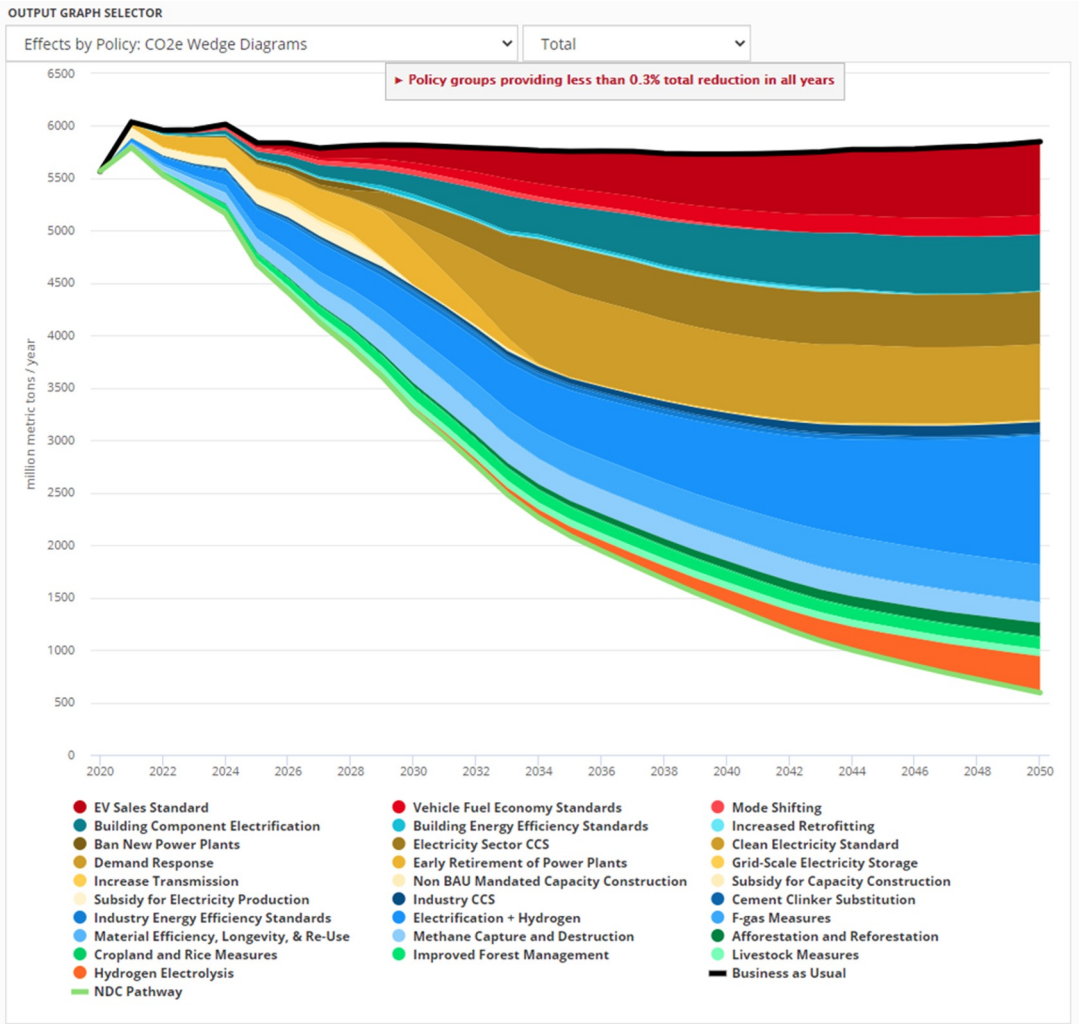
EI x RMI
ENERGY. TRANSFORMED.

Introduction

- U.S. Energy Policy Simulator (EPS) was originally published in 2015 and is used to analyze the potential impact of US climate policies
- RMI and Energy Innovation came together to develop EI's Energy Policy Simulator (EPS) tool for U.S. states
- The EPS is designed to help drive state climate action with unbiased, data supported policy analysis

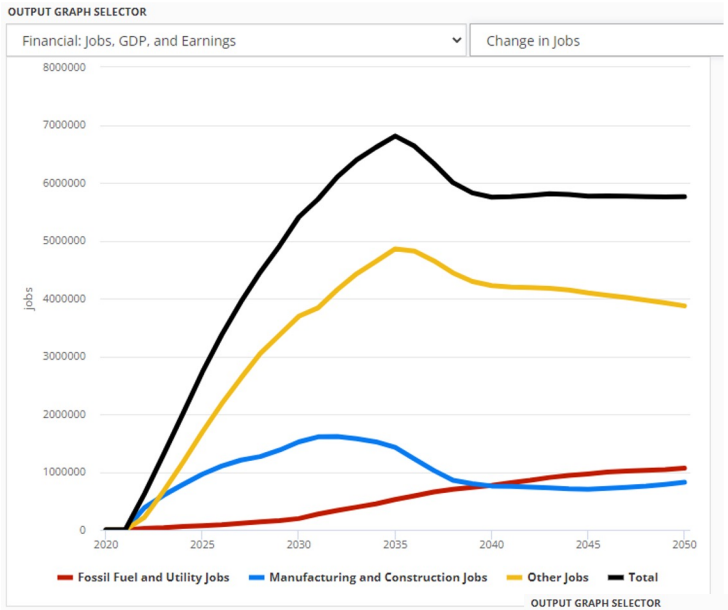
The Energy Policy Simulator Helps Policymakers…

- Zero in on most impactful policies
- Find the best way to meet state climate and energy goals
- Assess energy use, emissions, economic, health impacts
- Understand policy interactions



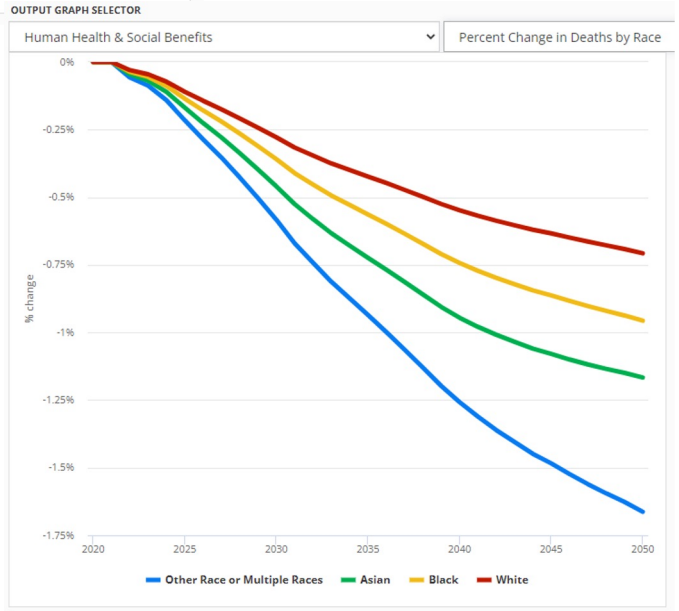
The Energy Policy Simulator is…

- A system dynamics model
- Based on reputable, publicly available data
- Economy-wide including input-output model
- Open source



Job Growth due to Climate Policies

Public Health Benefits of Climate Policies



Model Subdivisions Vary by Sector: Buildings

Building End Uses

- Heating
- Cooling and ventilation
- Envelope
- Lighting
- Appliances
- Other energy-using components

By Unit Type

- Rural residential
- Urban residential
- Commercial

Model Subdivisions Vary by Sector: Industry

- Iron & steel
- Other metals
- Metal & products
- Computers & electronics
- Appliances/electrical equipment
- Other machinery
- Road vehicles
- Nonroad vehicles
- Other manufacturing
- Energy pipelines & gas processing
- Water & waste
- Construction
- Agriculture and forestry
- Coal mining
- Oil and gas extraction
- Other mining and quarrying
- Food, beverage, and tobacco
- Textiles, apparel & leather
- Wood products
- Pulp, paper & printing
- Refined petroleum and coke
- Chemicals
- Rubber and plastics
- Glass
- Cement & nonmetallic minerals

Model Subdivisions Vary by Sector: Electricity

Non Renewables

- Hard Coal
- Lignite
- Natural gas (nonpeaker)
- Natural gas (peaker)
- Crude oil
- Heavy or residual fuel oil
- Other petroleum
- Municipal solid waste
- Nuclear

Renewables

- Hydro
- Onshore Wind
- Offshore Wind
- Solar PV
- Solar thermal
- Biomass
- Geothermal

Model Subdivisions Vary by Sector: Transportation

Passenger Modes

- LDVs: Cars and SUVs
- HDVs: Buses
- Passenger aircraft
- Passenger rail
- Passenger boats
- Motorbikes

Vehicle Technologies

- Gasoline engine
- Diesel engine
- LPG
- Natural gas
- Battery electric
- Plug-in hybrid
- Hydrogen

Freight Modes

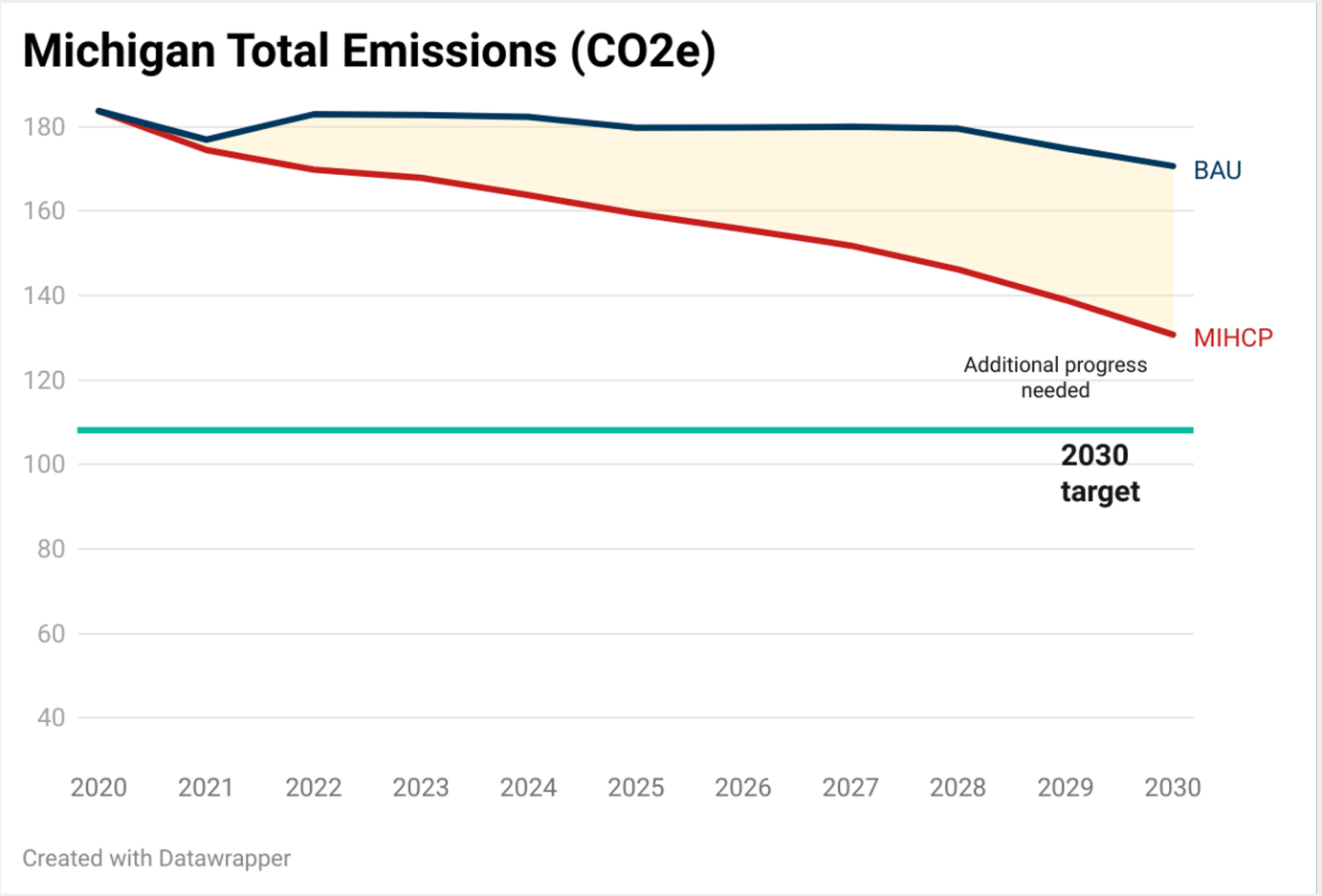
- LDVs: Light and medium trucks
- HDVs: Heavy trucks
- Freight aircraft
- Freight rail
- Freight shipping

Data Sources for State Models

SECTOR	SUBSECTORS	SOURCES
Electricity	In-state capacity and generation; out of state imports	EIA State Electricity Data
Building Energy Use	All energy use, all building components, residential and commercial buildings	EIA's State Energy Data Systems from 2020 NREL 2017 Electrification Futures Study - Reference Scenario
Industrial Energy Use	All fuel use for industrial sector	EIA's Annual Energy Outlook tables on Industrial Energy Use EIA's State Energy Data Systems
Industrial Process Emissions	Agriculture and industrial process emissions	EPA's U.S. State-level Non-CO2 GHG Mitigation Report
Land Use	Natural carbon sinks and sources (LULUCF)	EPA's State GHG Emissions and Removals 2020 Inventory Report
Transportation	All energy use, vehicle miles	EIA's State Energy Data Systems from 2020 EIA's Annual Energy Outlook tables on Industrial Energy Use NREL Electrification Futures Study - Reference Scenario

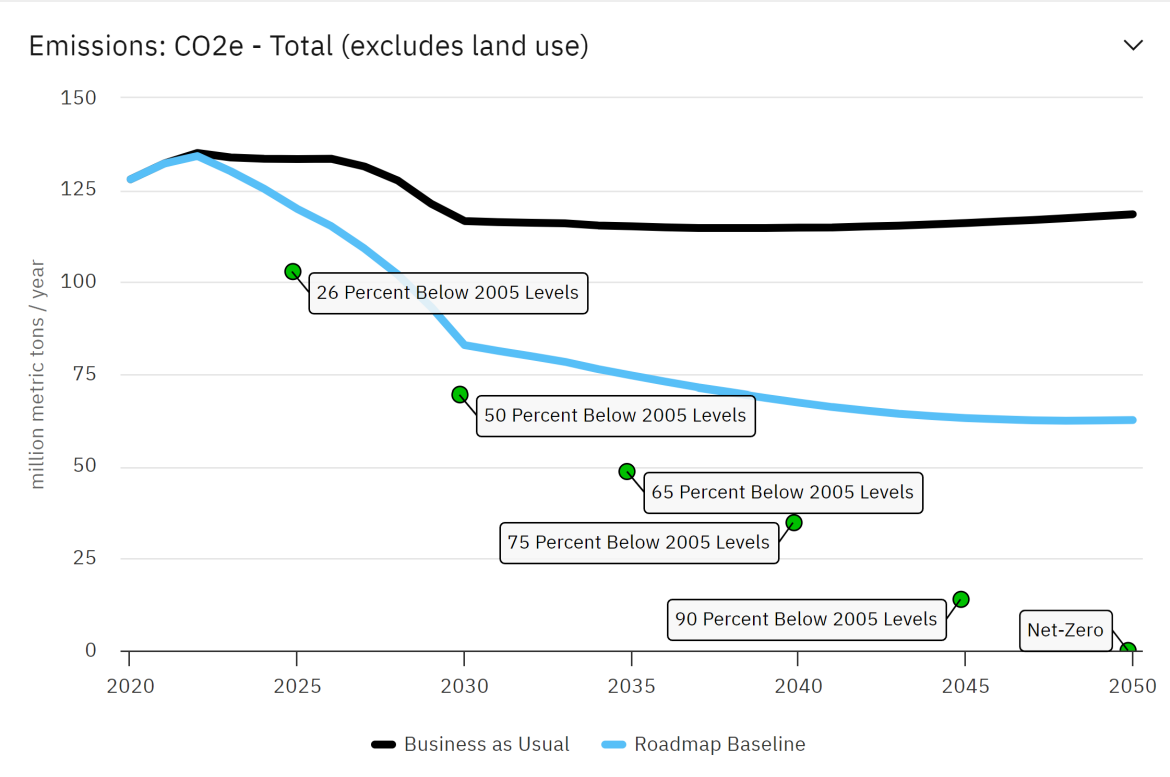
Use Case: Quantifying the Michigan Healthy Climate Plan

- **Michigan Healthy Climate Plan (MIHCP) released in April 2022 is a plan to cut emissions**
- **5Lakes Energy, the Michigan Environmental Council, NRDC, RMI, and EI quantified impact from the plan**
- **Found that though MIHCP is effective at reducing emissions, more is needed**
- ***Recommendations included***
  - *Halting construction of new gas-fired power plants*
  - *Strong building electrification and EV sales standards*



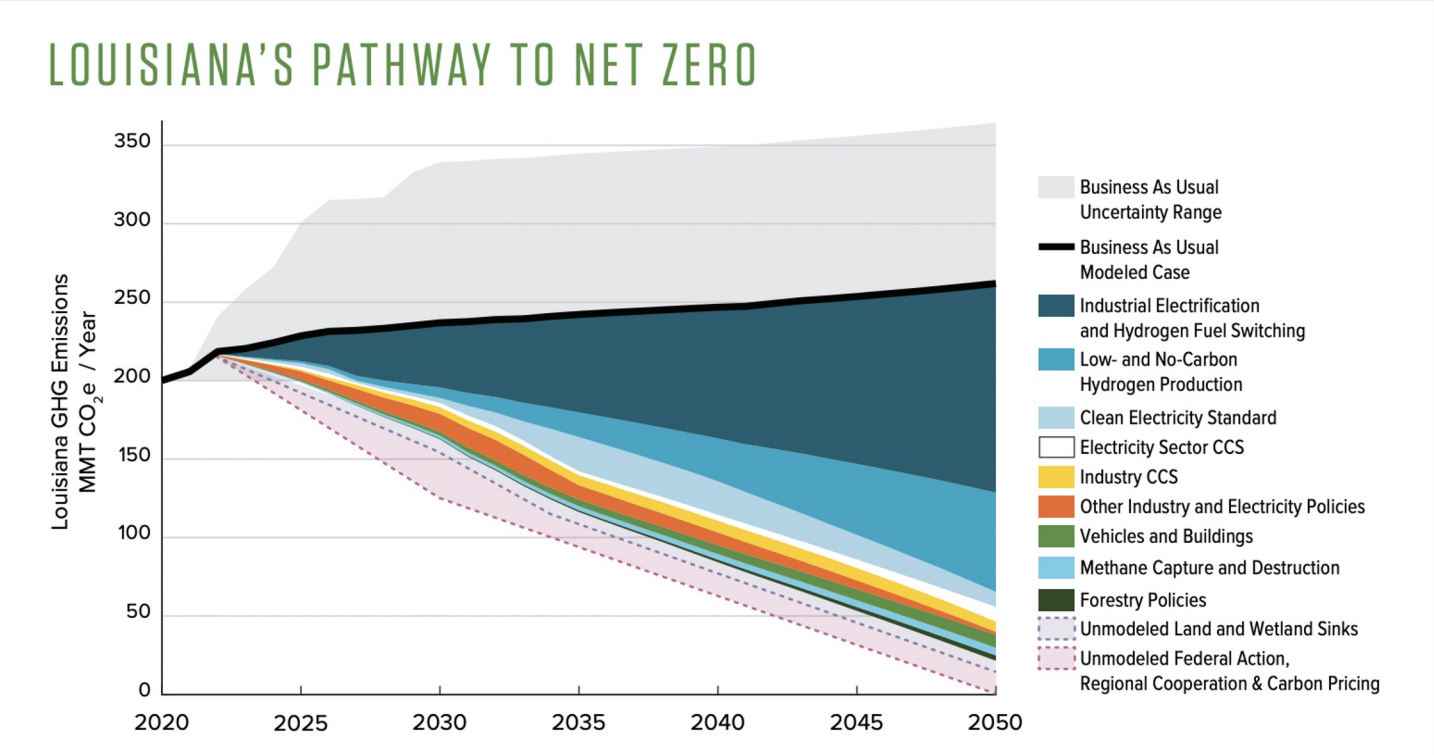
Use Case: Meeting Colorado's Climate Goals

- ***RMI is supporting the Colorado Energy Office in the development of the state's second greenhouse gas emissions reduction roadmap ("Roadmap 2.0").***
- ***Modeling the impact of major federal funding in the model's baseline and the state's current policies***
- ***Colorado Energy Office is using this model to understand the impact of additional near-term actions that could bring the state closer to climate targets and share results with stakeholders***



Use Case: Supporting Louisiana's Climate Initiative Task Force

- **Louisiana created a Climate Initiative Task Force**
- **Used the Louisiana EPS in 2022 to create a Climate Action Plan that achieves the Governor's goals of reaching net zero greenhouse gas emissions by 2050**
- **Policies with the highest emissions abatement include**
  - Industrial electrification and hydrogen fuel switching
  - Low and no carbon hydrogen production
  - Clean electricity standard



Demo

Link