Decarbonization Policies in the National Energy Modeling System (NEMS)

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By

Kevin Nakolan, Operations Research Analyst
NEMS decarbonization policies

• NEMS models numerous policies related to decarbonization

• Some policies span multiple sectors

• Other policies are more sector-specific
  – Electric power sector
  – Transportation sector
  – Industrial sector*
  – Residential and commercial sectors

* The NEMS industrial module does not currently model sector-specific policies related to decarbonization
Cross-sector policies

• 45Q tax credit
  – Tax credit for sequestering CO₂ emissions (including EOR use)
  – Covered sectors: electric power, industrial

• California AB32
  – Bill requiring statewide reductions in greenhouse gas emissions
  – Covered sectors: electric power, industrial, transportation, residential, commercial
Electric power sector

• Percentage of electricity sales met by renewables
  – Currently used mostly for Renewable Portfolio Standards, but could be applied more generally to Clean Energy Standards

• Investment and production tax credits
  – Solar, wind, geothermal, hydroelectric, biomass, landfill gas, municipal solid waste

• Zero-emission credits
  – For select nuclear facilities in NY, IL, NJ, and OH

• Regional Greenhouse Gas Initiative (RGGI)
Transportation sector

- Corporate Average Fuel Economy (CAFE) regulations for light-duty vehicles
- Fuel efficiency standards for medium and heavy-duty trucks
- Zero-emission vehicle mandates
- Electric vehicle tax credits
- Renewable fuel standards
- California low-carbon fuel standards (LCFS)
Residential and commercial sectors

- Federal and utility energy efficiency rebates
- Building energy codes
- Appliance and equipment energy efficiency standards
- Investment tax credits
  - Solar photovoltaics and wind energy, natural gas fuel cells, other combined heat and power systems, ground-source heat pumps, solar water heaters, and biomass stoves
Potential economy-wide policies

• National carbon fee

• National cap and trade program for CO$_2$ emissions