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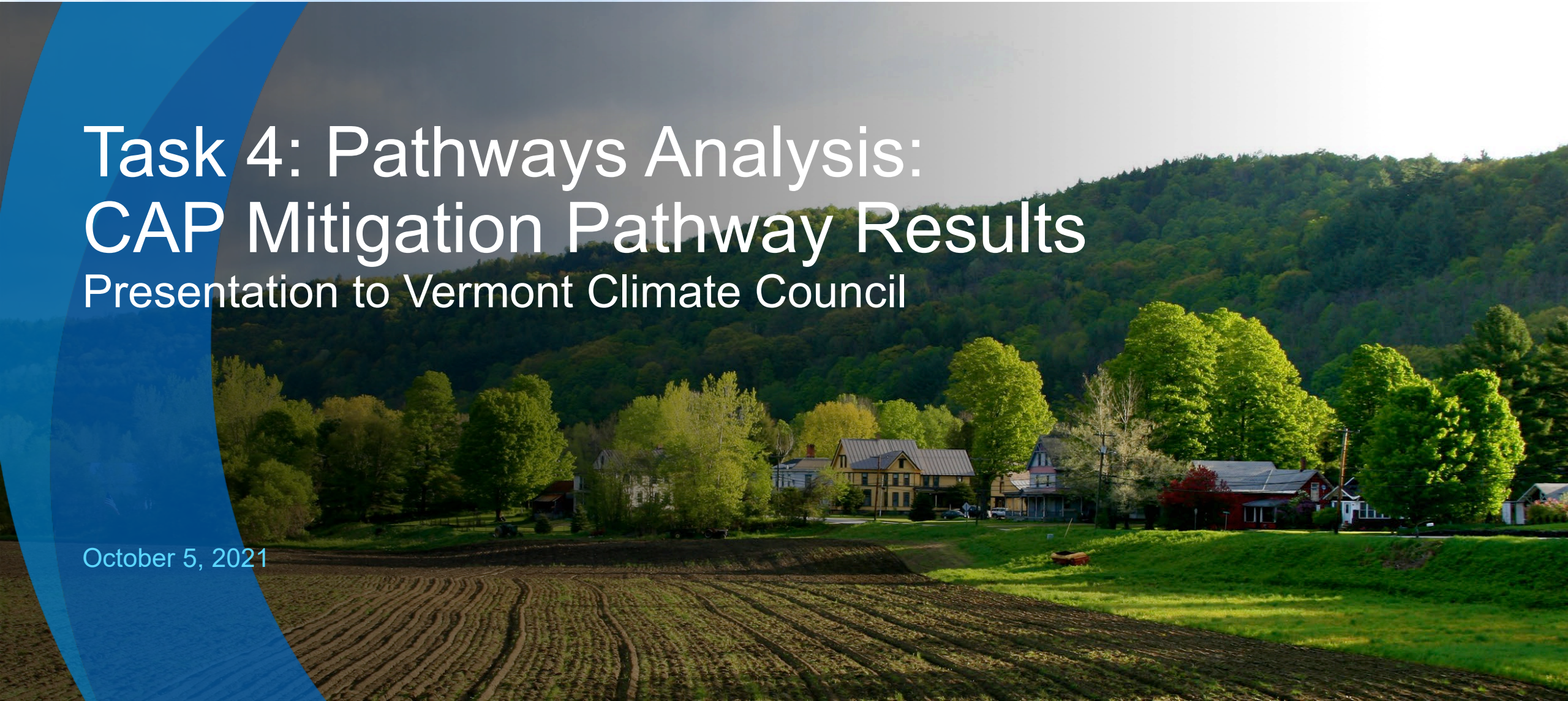
Task 4: Pathways Analysis: CAP Mitigation Pathway Results

Presentation to Vermont Climate Council



October 5, 2021

Agenda

- CAP Mitigation Scenario
- Sector Analysis
  - Transportation
  - Buildings
  - Non-Energy
  - Electricity
- Cross-Cutting Considerations
- Questions and Discussion

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CAP Mitigation Scenario

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Pathways Analysis

Build upon analyses completed by the State and Stockholm Environment Institute to deliver:

Task 4a: Initial Pathways Analysis (Sept. 30)

Recommendations and Excel table:

- Sectoral, jurisdictional and existing climate initiatives
- Impact of the VCC recommended strategies on emissions reductions
- Preliminary 2025, 2030 and 2050 pathway recommendations and corresponding LEAP inputs

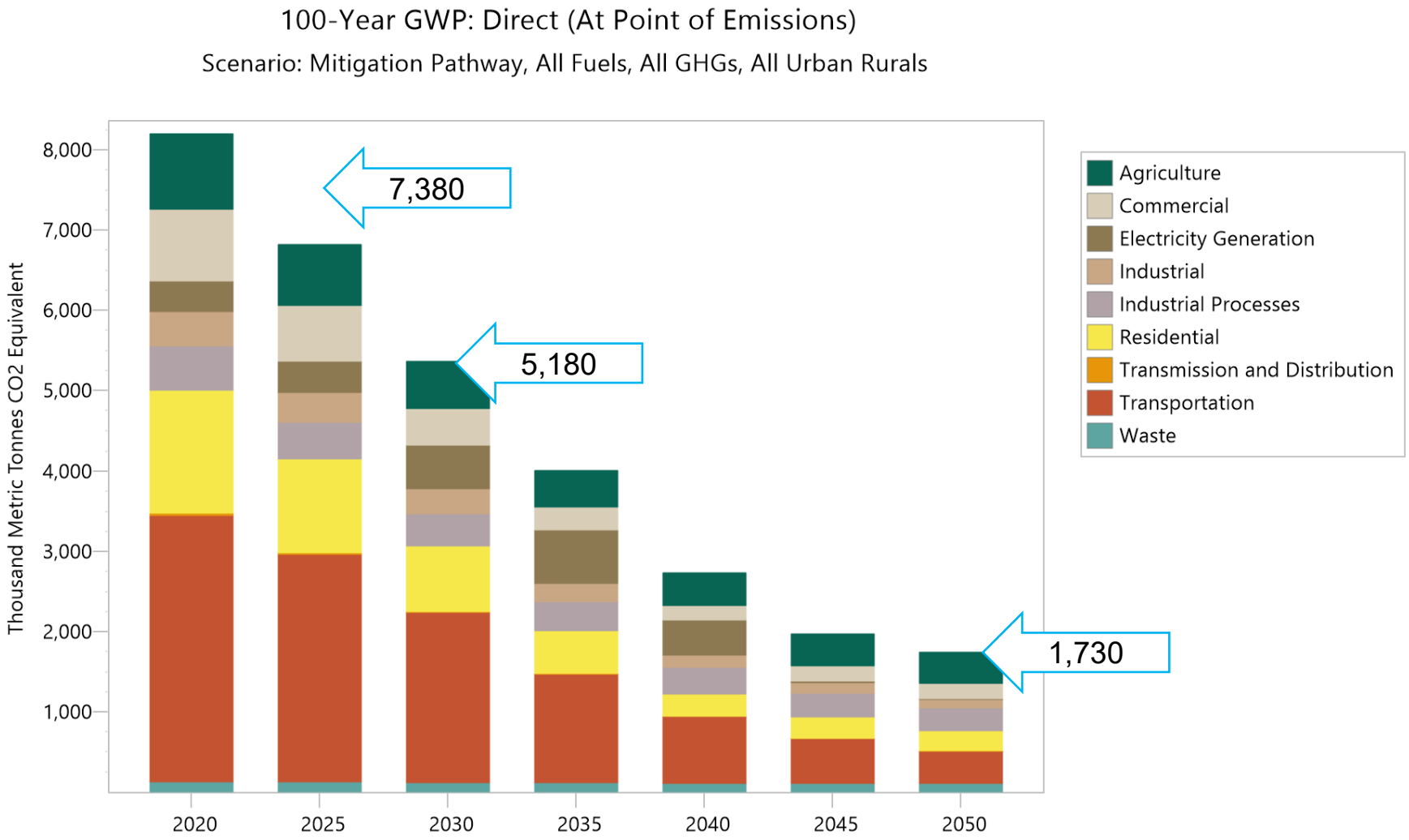
Task 4b: Draft and Final Pathways Report and Executive Summary (Nov. 15)

- 2025 Pathway: Immediate and short-term policies, programs, and initiatives to meet reduction targets.
- 2030 Pathway: Additional policies, programs, and initiatives to be advanced this decade to meet reduction targets.
- 2050 Pathway: Strategic framework for additional activities necessary to achieve 2050 emissions targets.

Deliverables

50-page report, 10-page Executive Summary

CAP Mitigation Scenario and GWSA Targets



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Sector Modeling
Transportation

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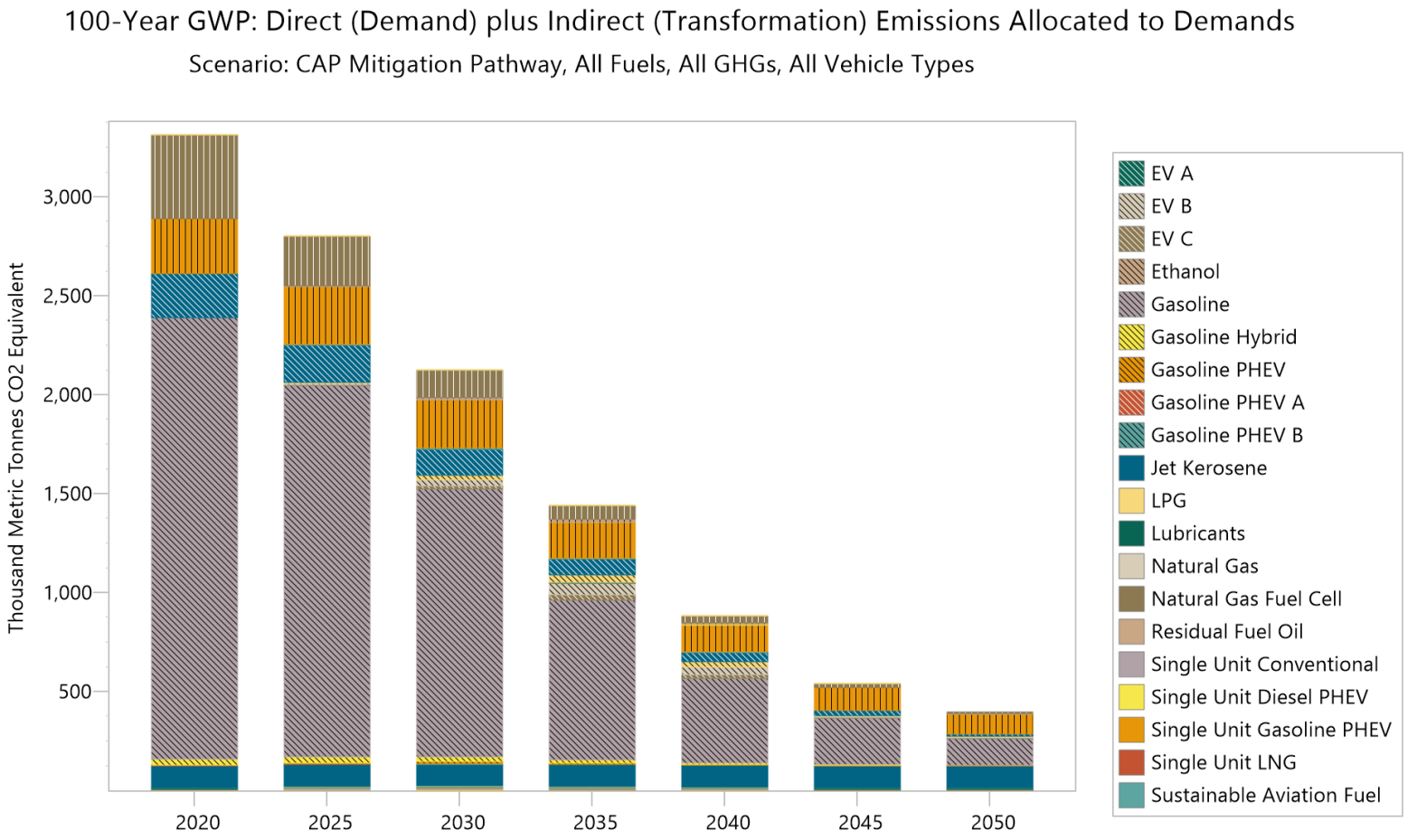
Transport Sector – CAP Mitigation Scenario



Sector Emission Reductions:

- 15% by 2025
- 36% by 2030
- 88% by 2050

Primarily from Electric Vehicles
- Increased efficiency
- Cleaner fuel

Other contributors
- Biofuels
- VMT reductions

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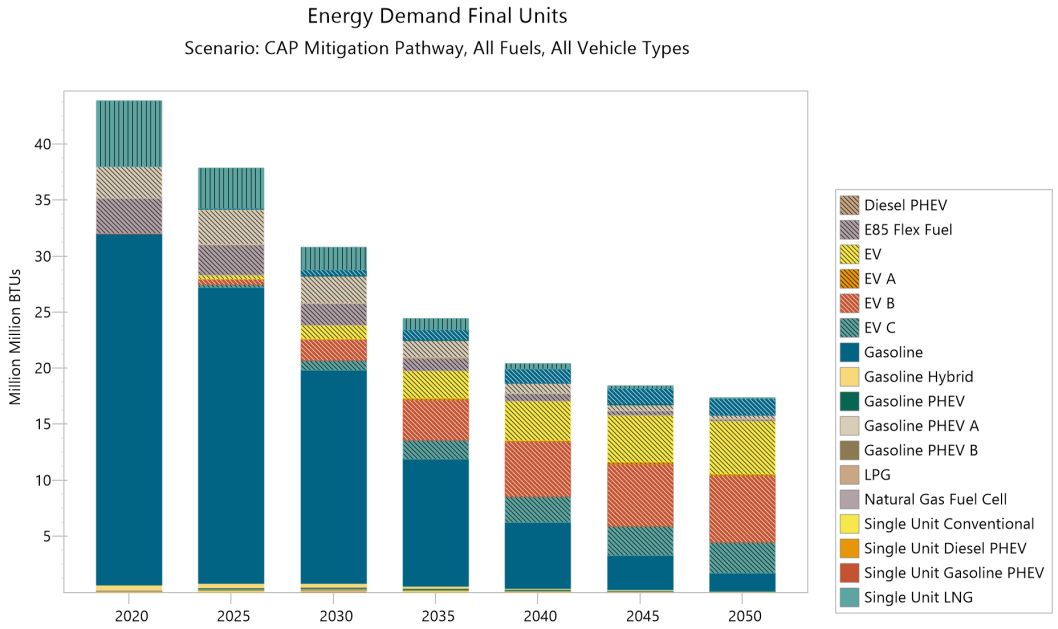
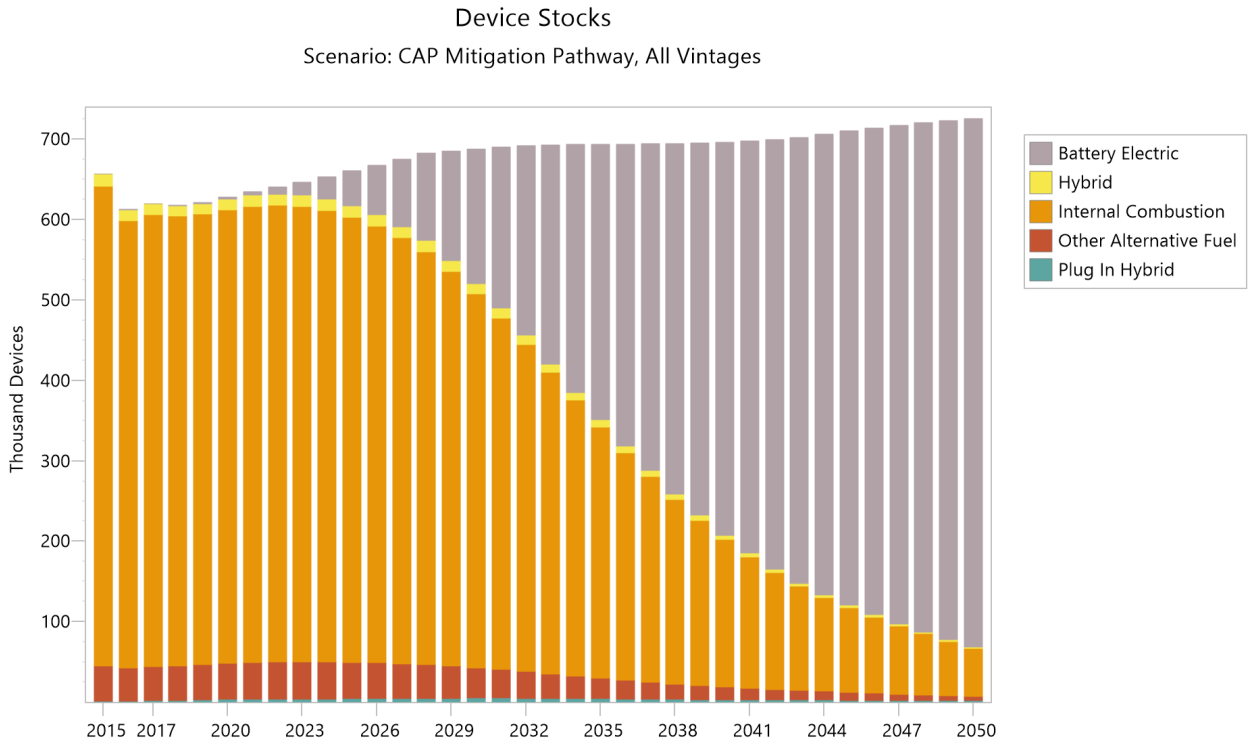
Transport Sector – CAP Mitigation Scenario





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Transport: Pathway Key Policies, Strategies & Actions

CAP Mitigation Scenario Supports:

Transportation Climate Initiative, and associated initiatives such as:

- Replace your Ride
- Transit
- Smart growth and other Transportation Demand Management, and
- Feebates

Additional supporting analyses (e.g on customer financial incentives/adoption rates, and public costs of initiatives under consideration) to be included in Pathways Report.

Source TCI-P updates program webinar, March 2021

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Sector Modeling
Buildings

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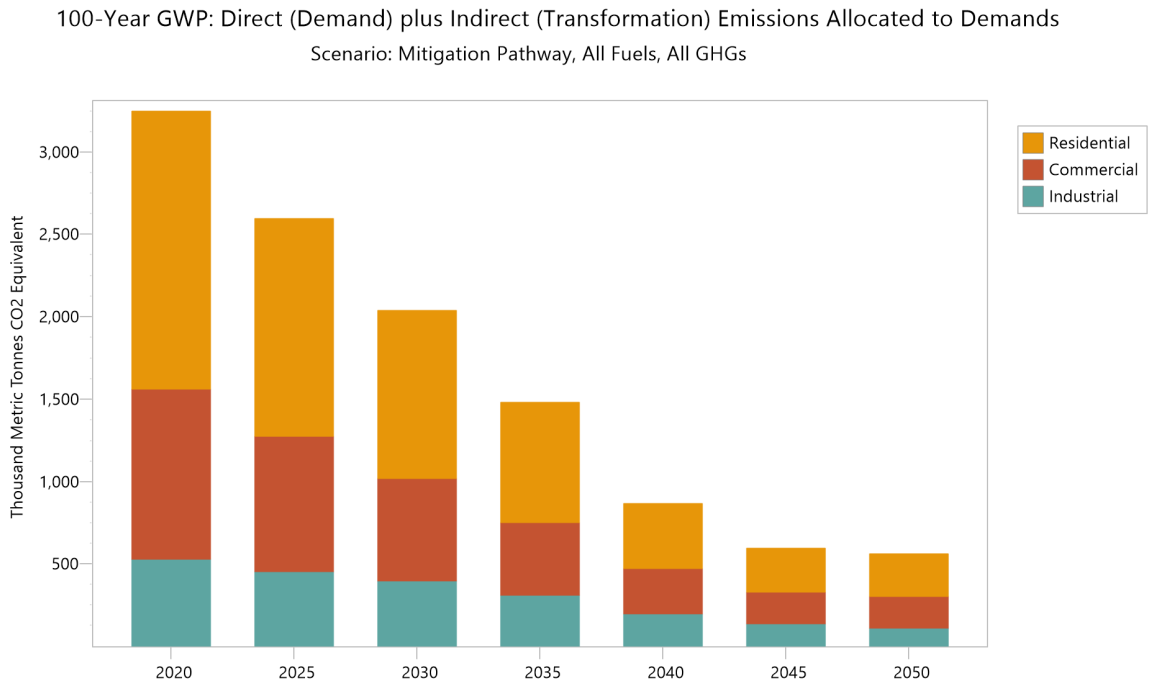
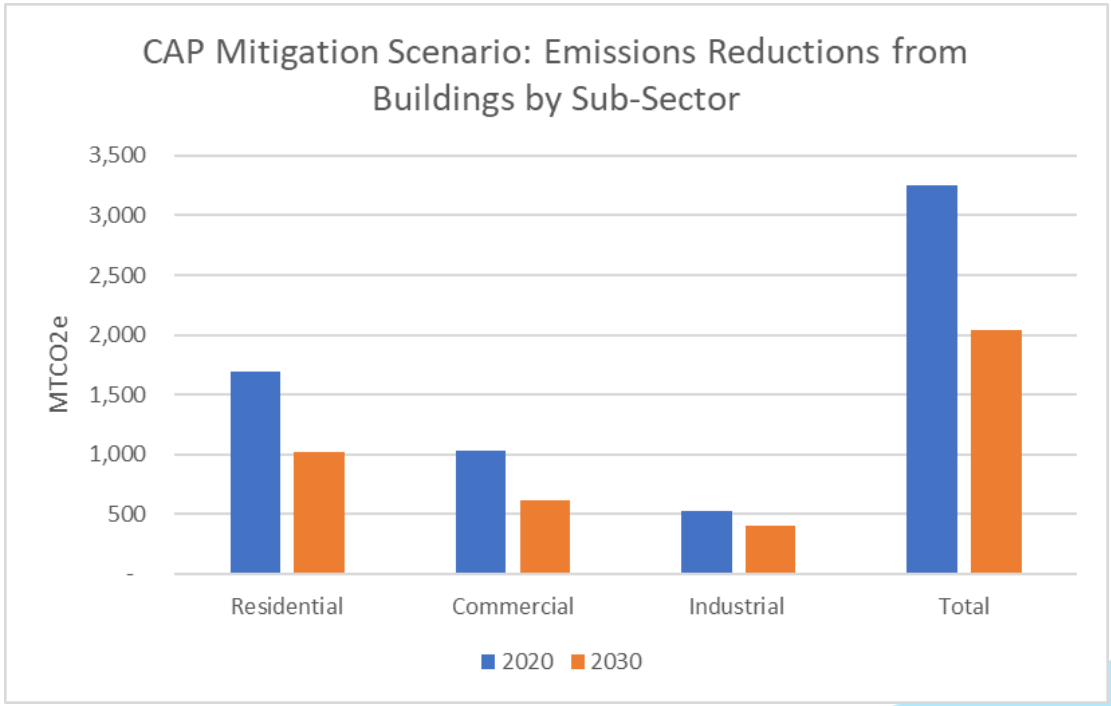
Buildings Sector – CAP Mitigation Scenario





Emissions reductions from 2020 to 2030 37%, and by 2050 83%.

~55% from residential, 33% Commercial, 12% Industrial

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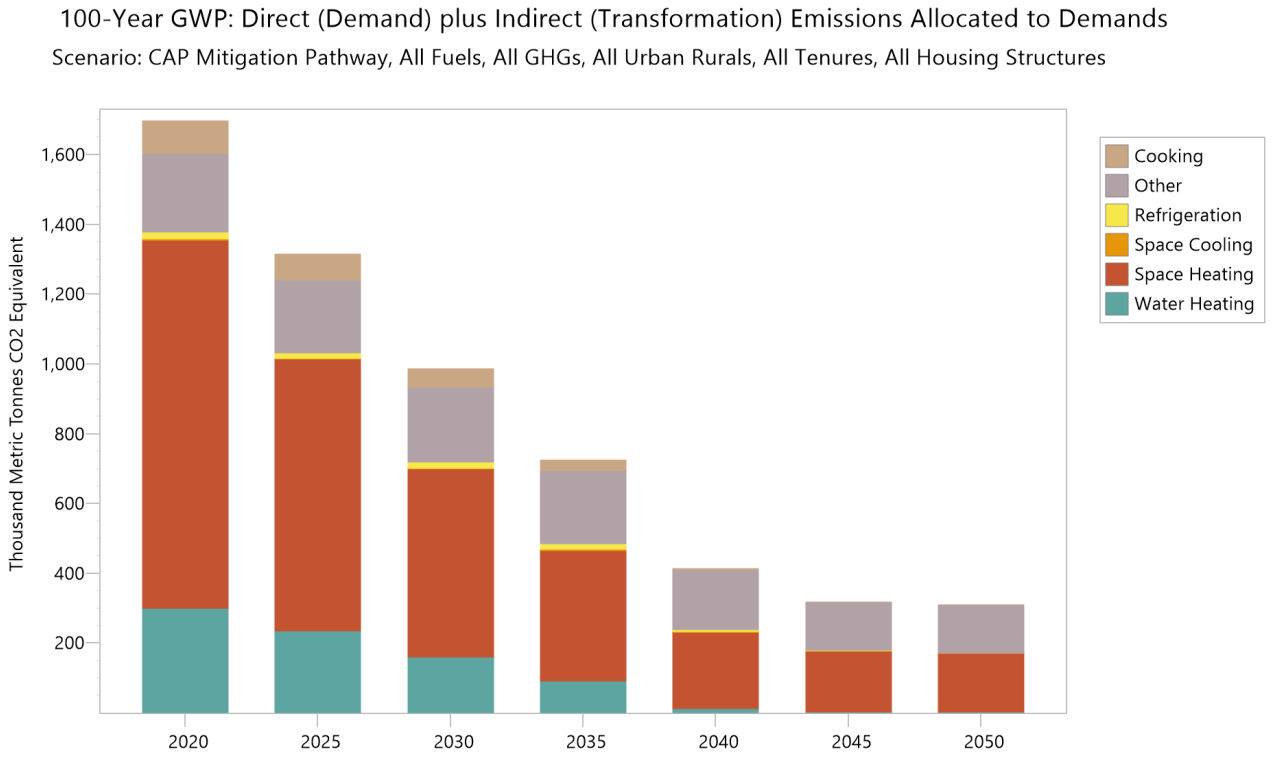
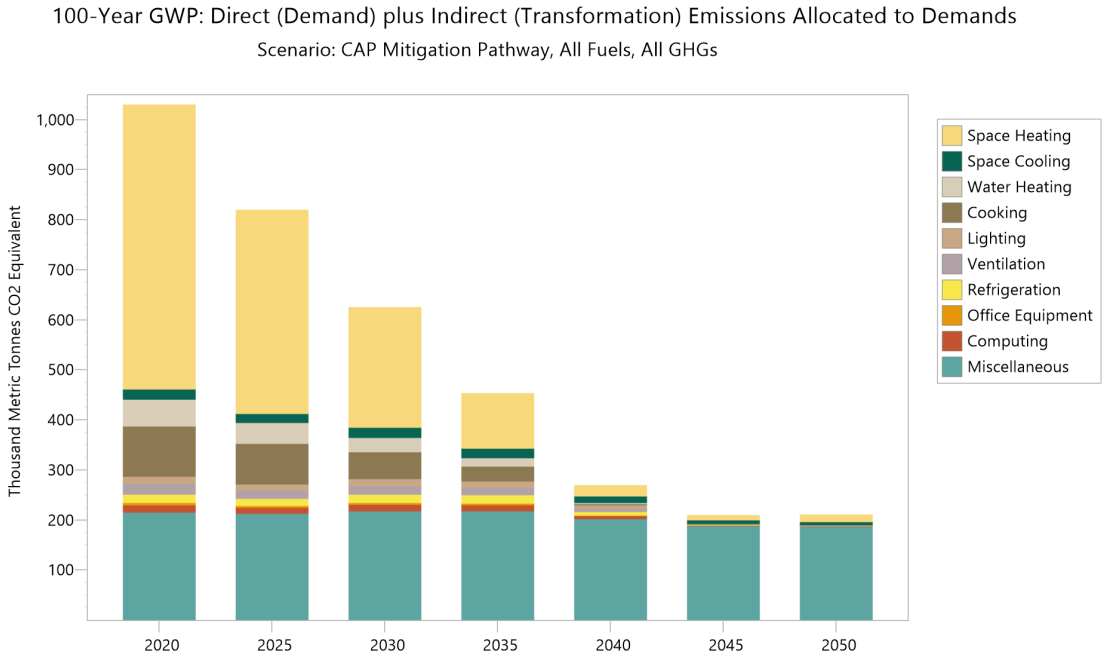
Buildings Sector – CAP Mitigation Scenario



Residential, primarily space heating

Heat pumps, shell efficiency.

Phase out of fossil cooking and water heating



Commercial, primarily space heating

Heat pumps, phase out of water and cooking fossil .

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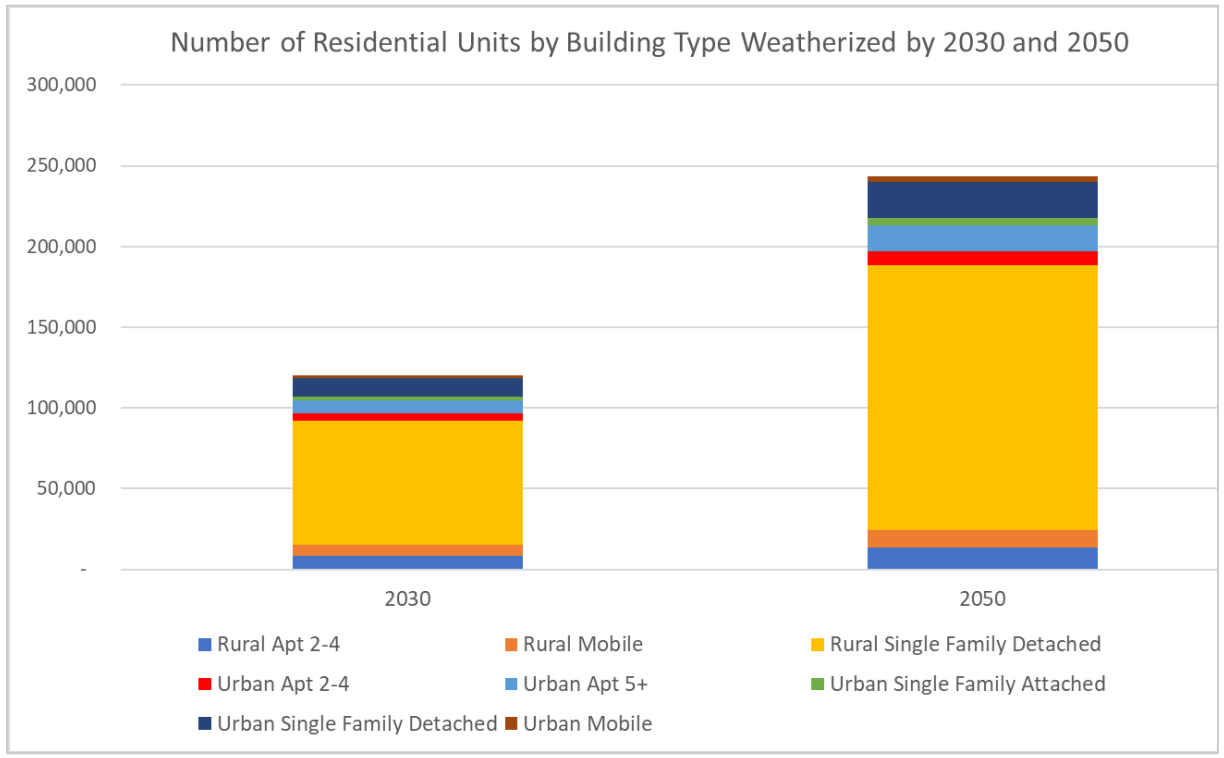
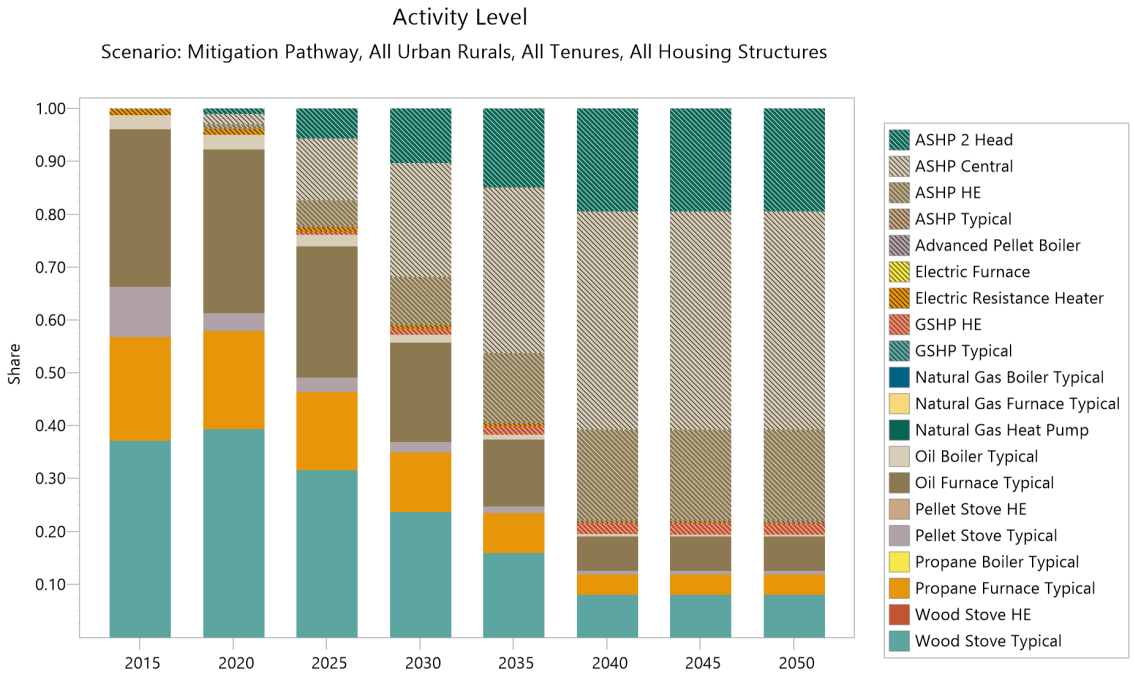
Residential Sub Sector – Weatherization and Heat Pumps – CAP Mitigation Scenario





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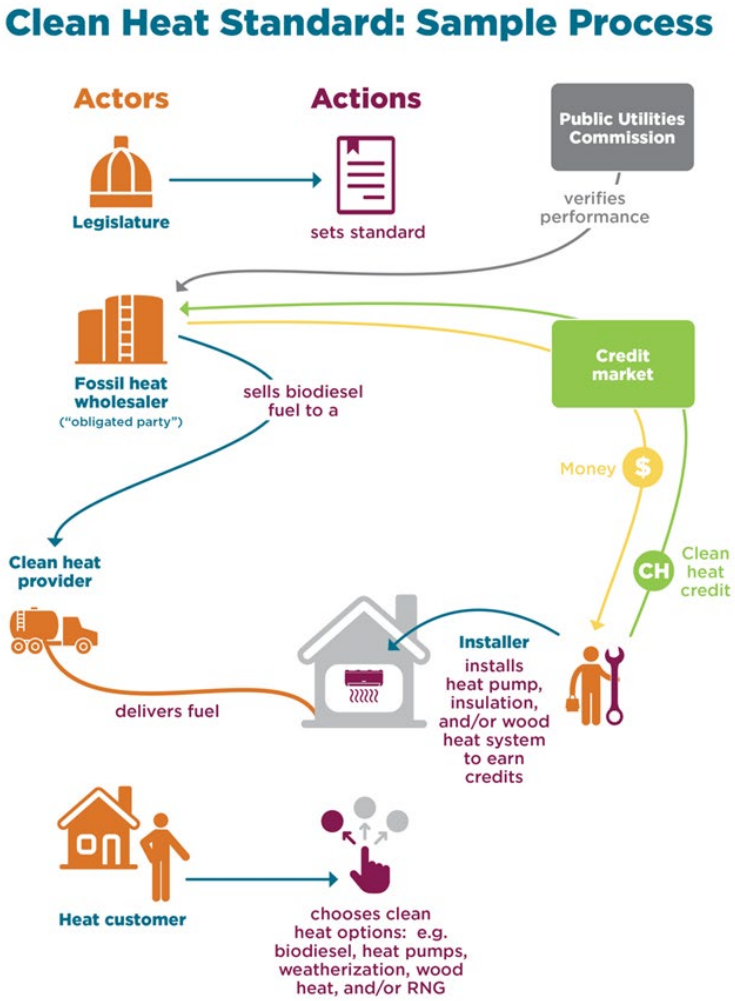
Buildings: Pathway Key Policies, Strategies & Actions

CAP Mitigation Pathway is consistent with and provides analytic support for evaluation of:

- Clean Heat Standard,
- Rental Efficiency Initiative,
- Weatherization at scale,
- Fossil cooking and water heating phase out,
- Net zero new construction standards for residential and commercial,
- Increased demand response and coordinated load management



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Sector Modeling
Non-Energy

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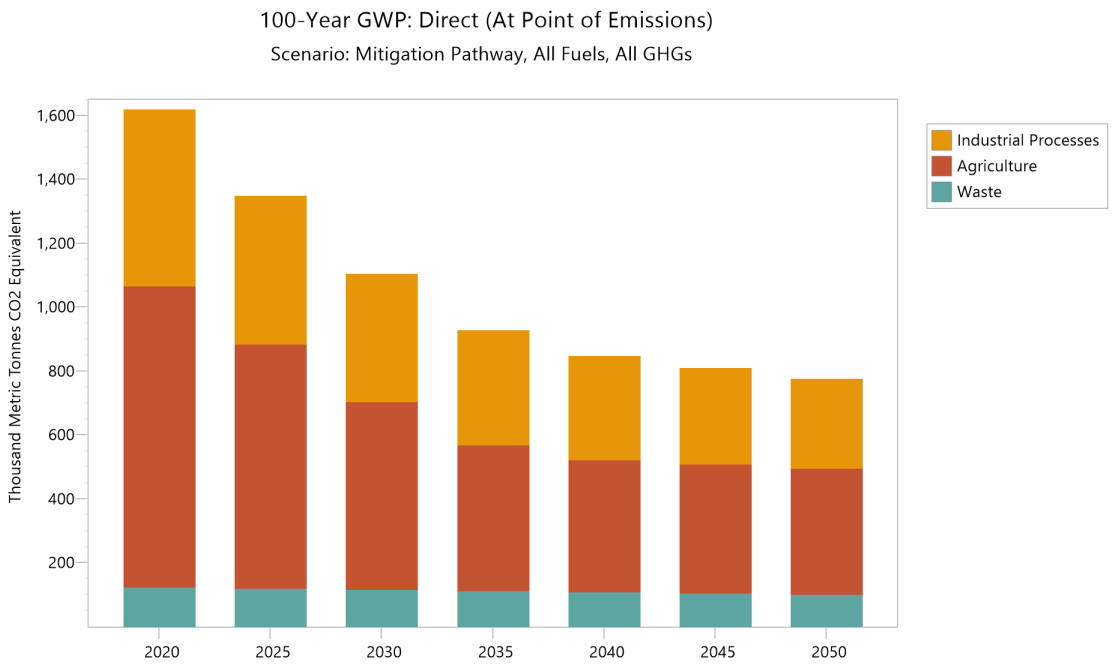
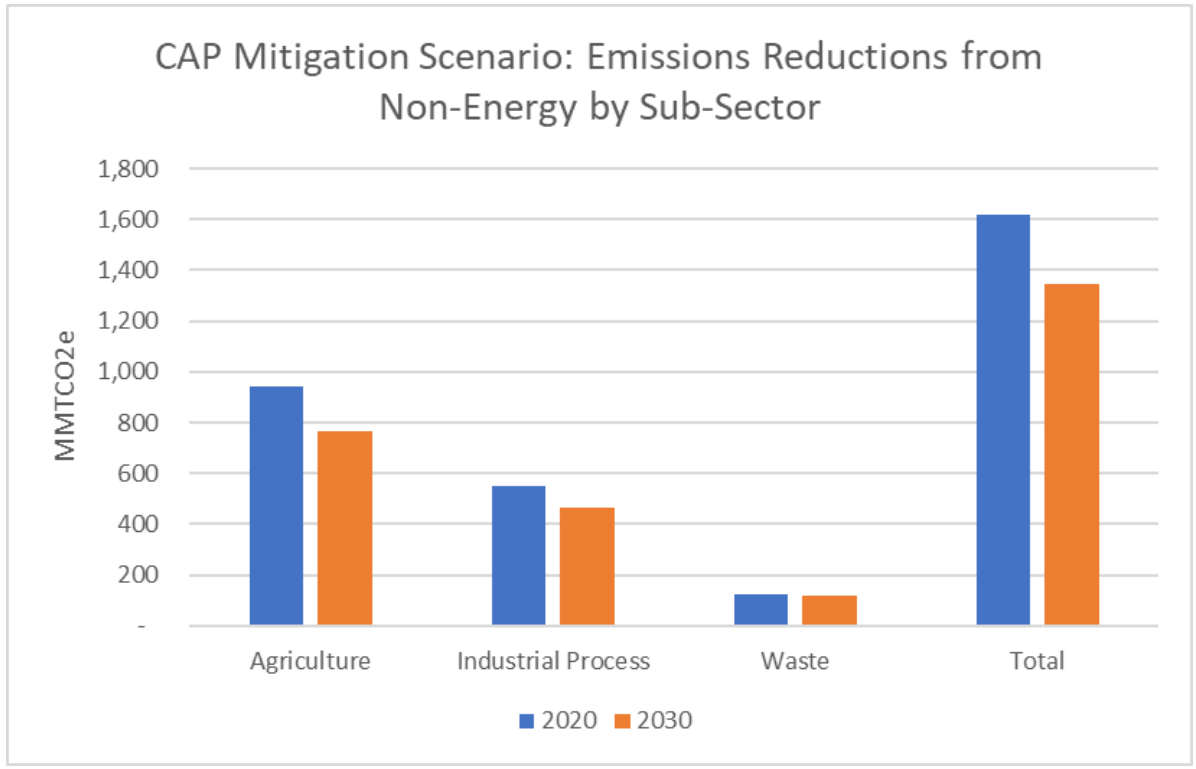
Non-Energy Sector – CAP Mitigation Scenario





Emissions reductions from 2020 to 2030 17%, and by 2050 52%.

~2/3rds from Agriculture, 1/3rd Industrial Processes

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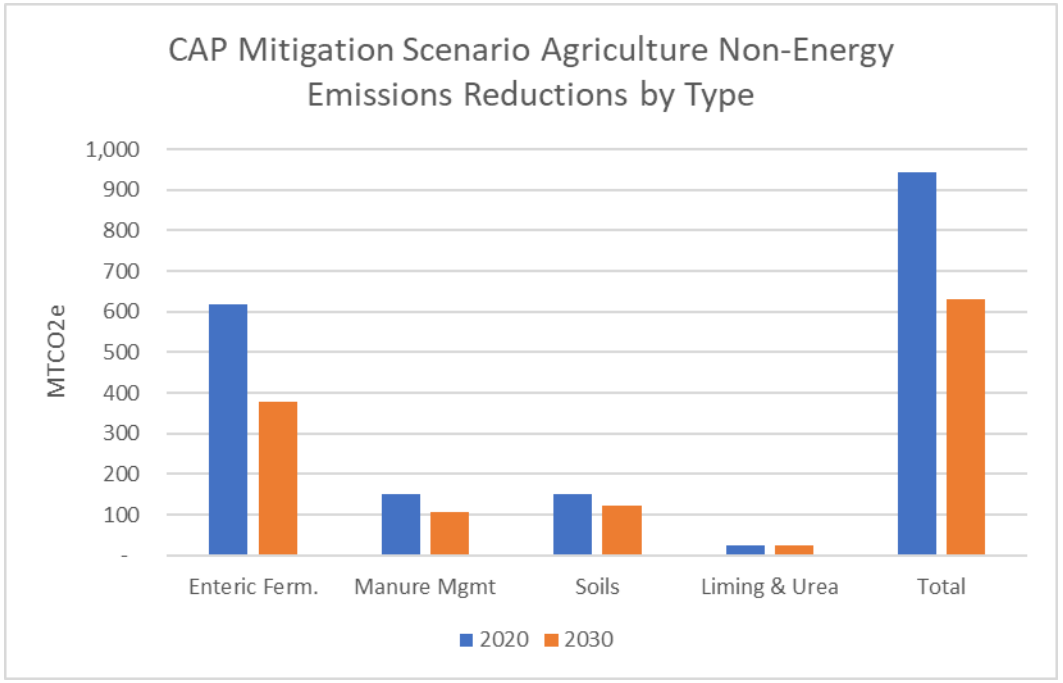
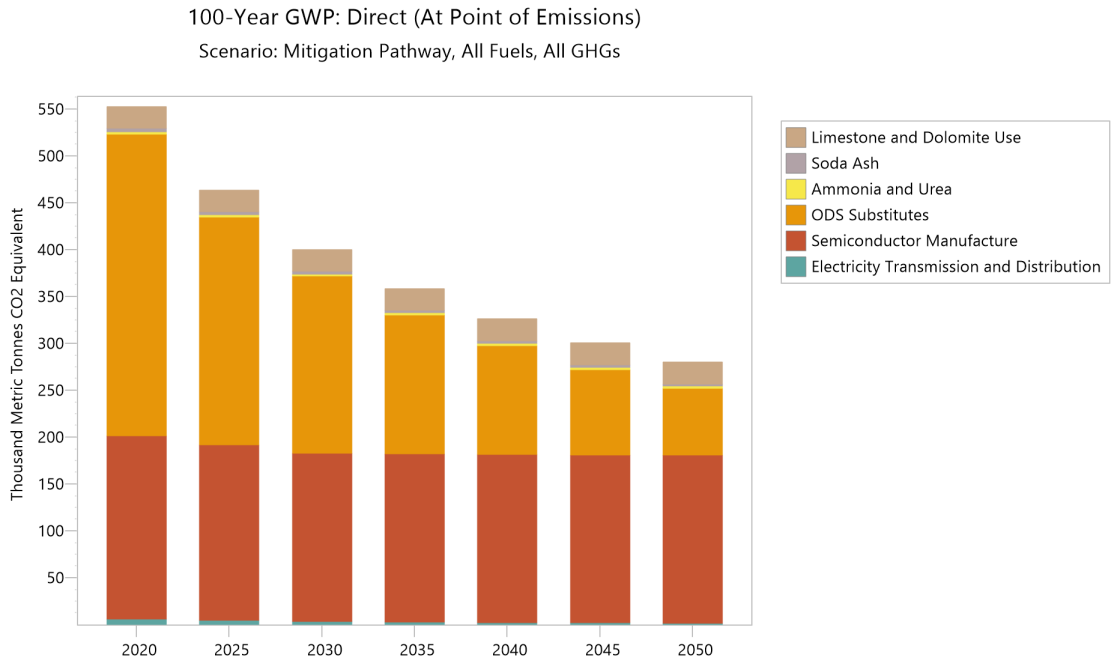
CAP Mitigation Non-Energy Emissions Reductions by Sub-sector





Agriculture, 70%+ from enteric fermentation

~15% from manure management, and

~10% from soils

Industrial Process – Almost all reductions are ODS substitutes

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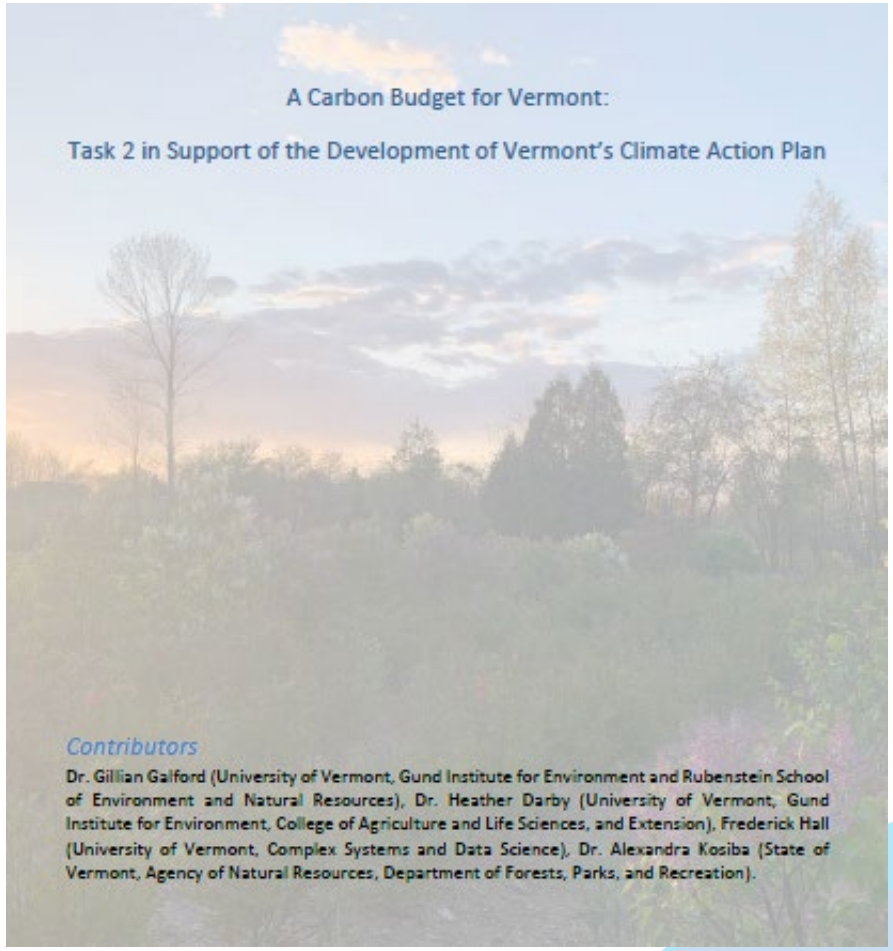
Non-Energy Pathway Key Policies, Strategies & Actions

CAP Mitigation Pathway reflects new findings from the Carbon Budget Report. Analyses support the following for Pathways:

- Practices to reduce enteric fermentation emissions,
- Manure management initiative,
- Practices to increase soil carbon sequestration,
- ODS substitutes including refrigerant management,
- Target reductions for semi-conductor manufacturing



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Sector Modeling
Electricity

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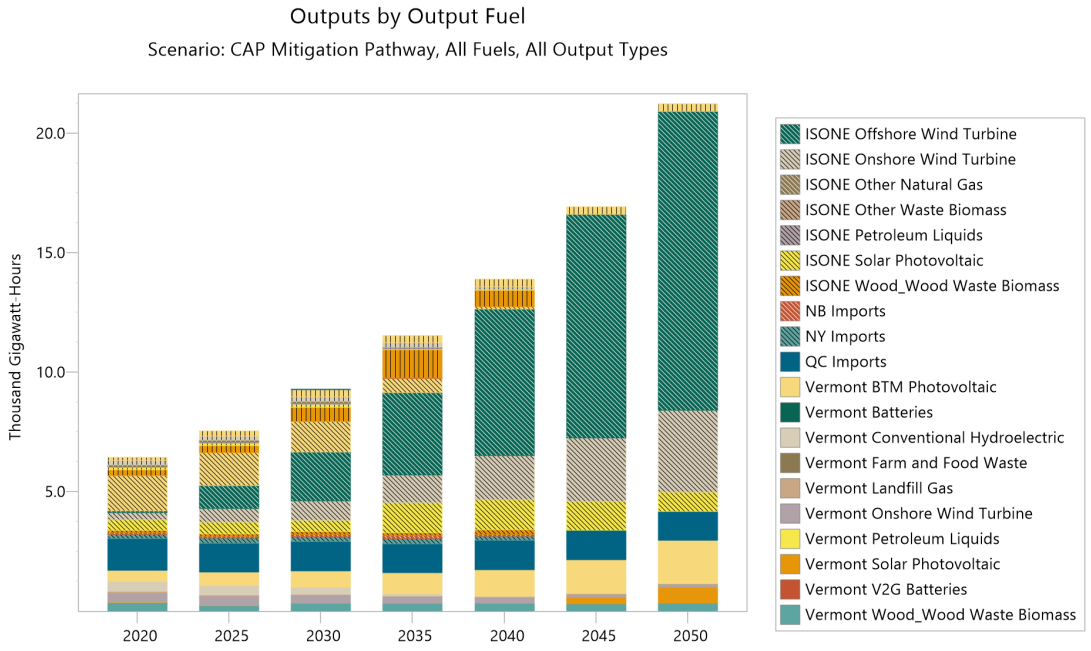
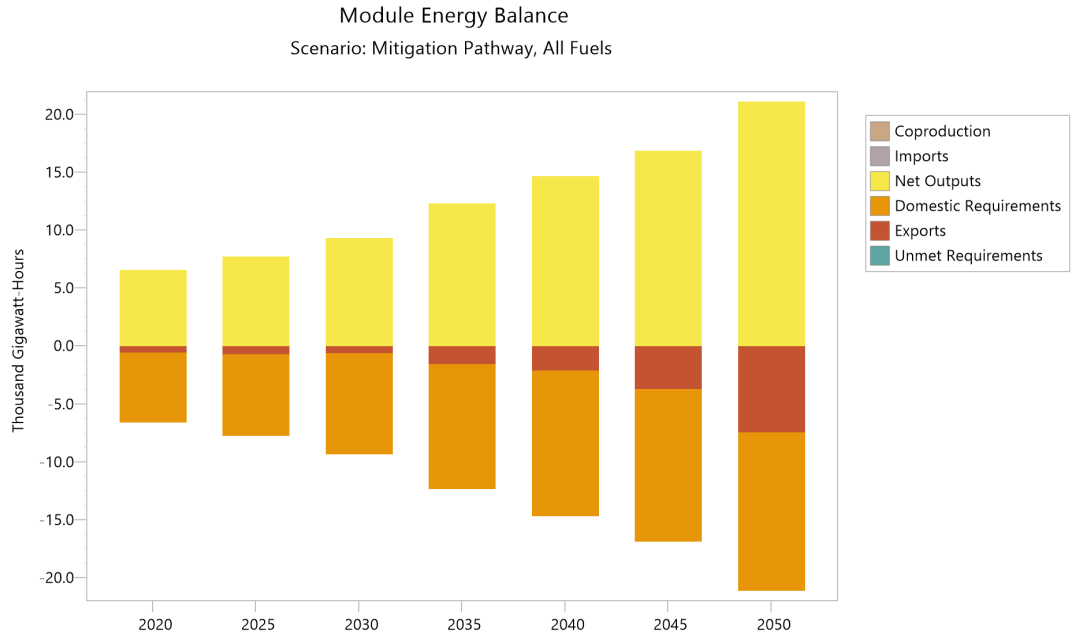
Electricity Sector – CAP Mitigation Scenario





Emissions from Electric Grid decline as gas, remaining coal and solid waste phase out by 2040.

Growth in Generation and capacity. Generation 6,600 GWh in 2020 → 9,300 GWh by 2030 and 21,200 GWh by 2050. Installed capacity 2.8 GW in 2020 to 4.1 GW in 2030 and 12.2 GW by 2050.

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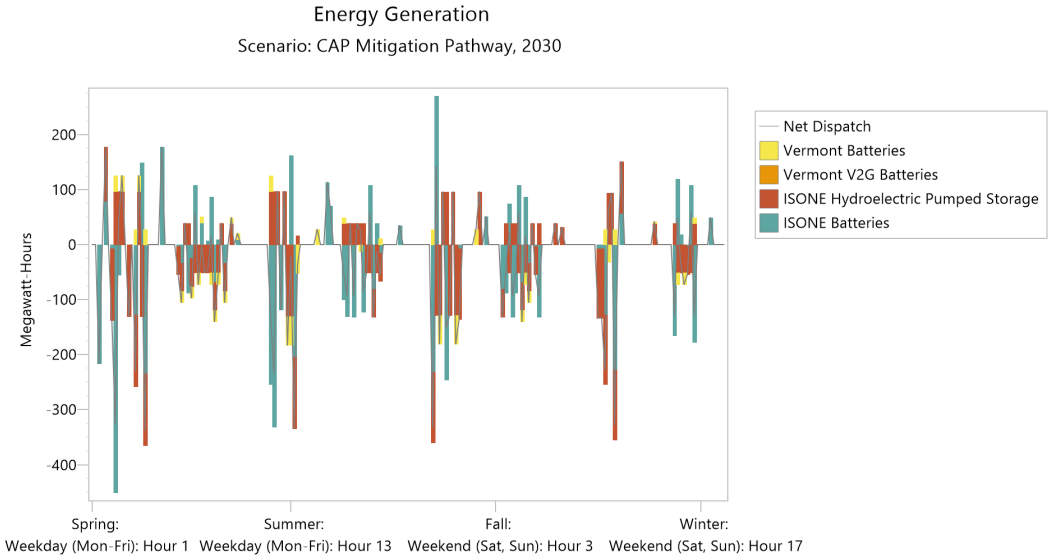
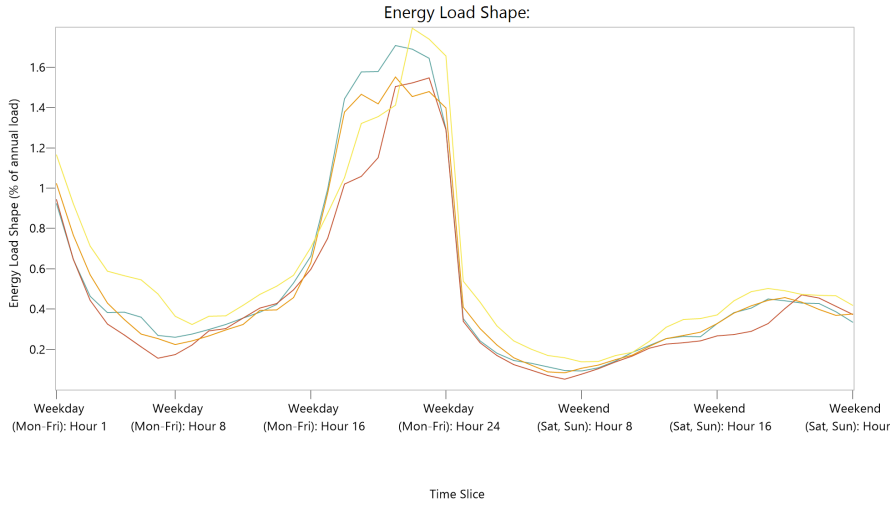
Electricity Pathway Key Policies, Strategies & Actions

CAP Mitigation Pathway reflects and provides analytic support for:

- Expansion of renewable energy standard to 100% after 2032,
- Investigation of demand response, flexible load management, and storage to address curtailment
- Potential for additional strategic electrification in industry
- Consideration of Local renewables focus





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Cross Cutting Results

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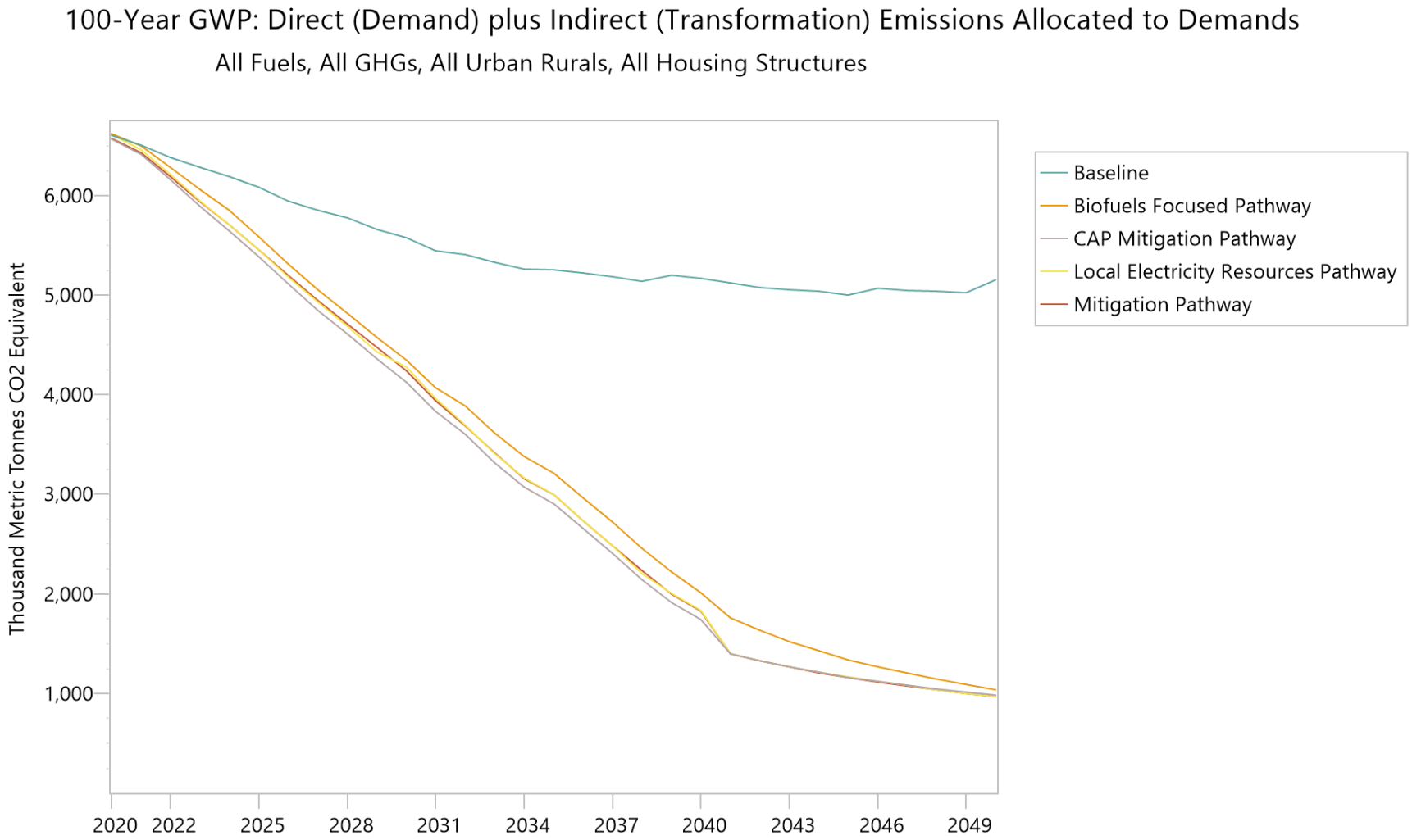
All Pathways Reflect Deep Multi-Sectoral Action



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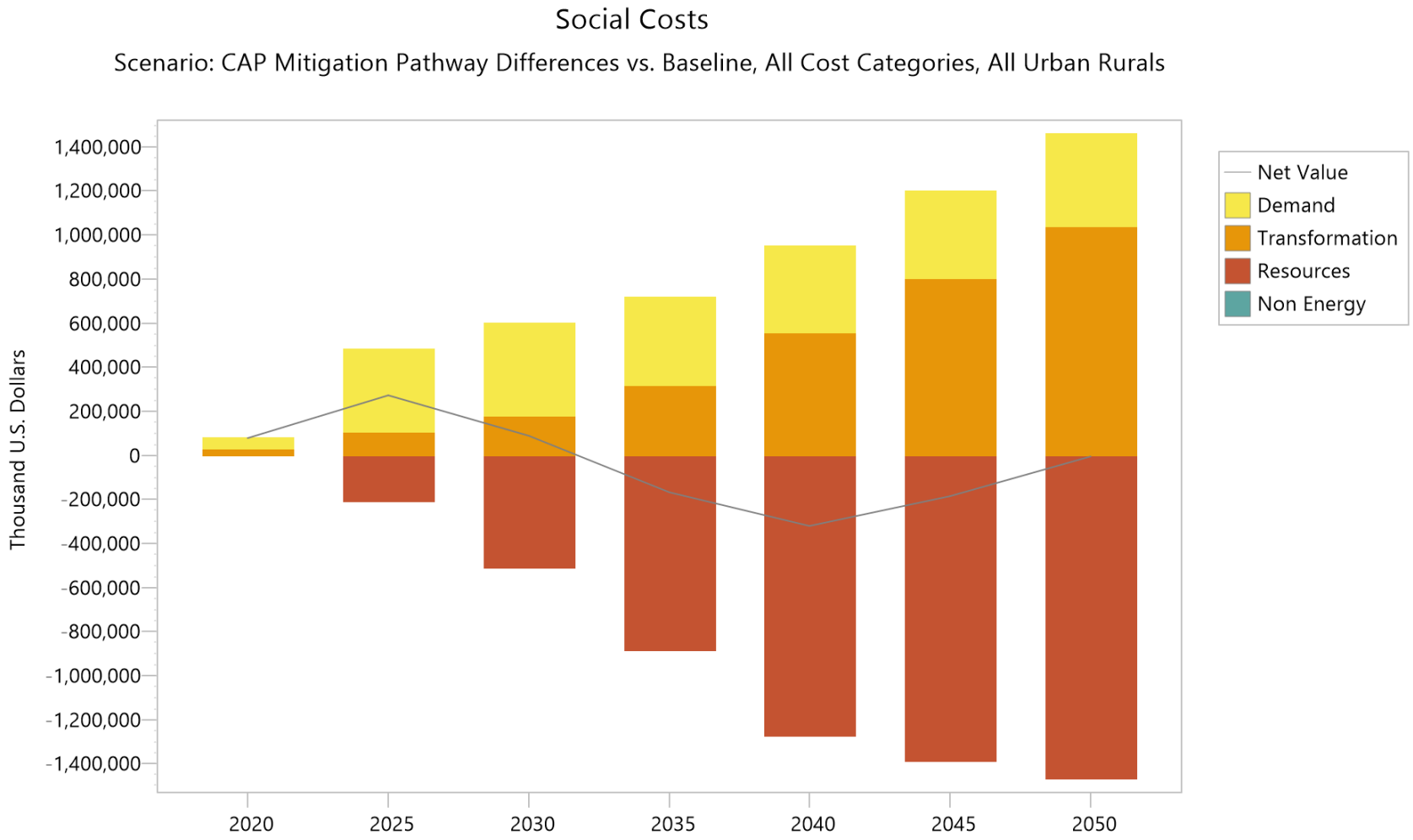
Economic: Early Demand Investments, Later Transformation



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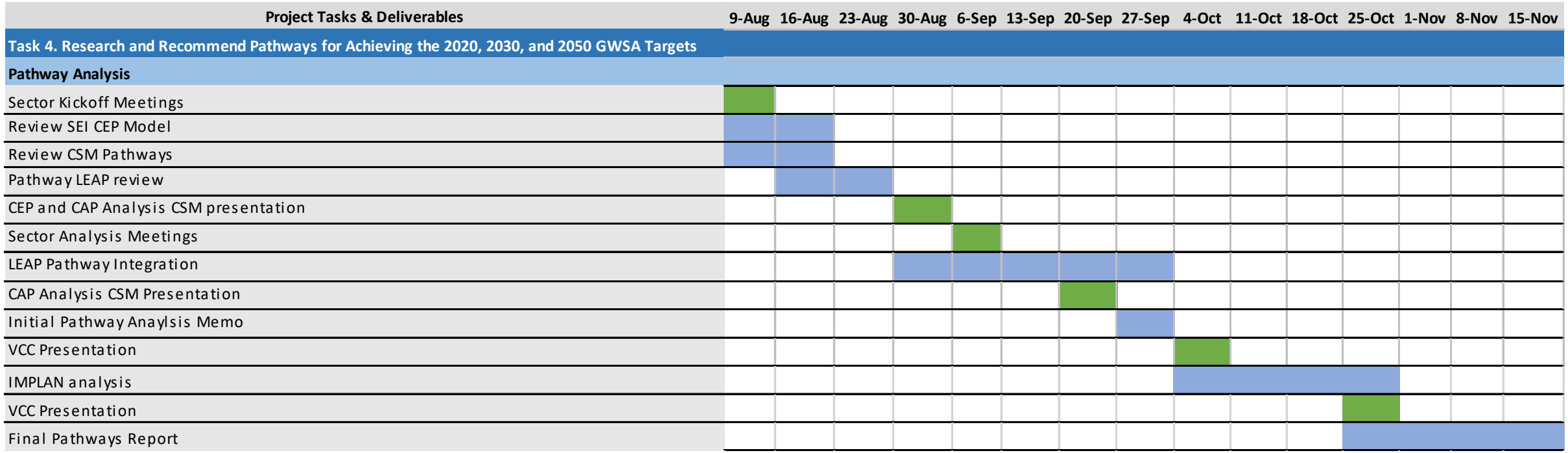
Timeline



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Questions and Discussion

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Thank You!

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