Comprehensive Climate Analysis for Nevada

Technical Working Group Meeting 2

May 1, 2025

Presented by

Sustainability Solutions Group and
Ericka Aviles Consulting

Nevada Department of CONSERVATION & NATURAL RESOURCES

NEVADA DIVISION OF ENVIRONMENTAL PROTECTION

Overview

Agenda

Overview of Progress
10 minutes

Scenarios and Assumptions
30 minutes

Emissions by Sector
30 minutes

Discussion and Deep-Dive
40 minutes - participatory

Objectives

Share emission reduction scenarios and preliminary financial, workforce, and community benefit analyses.

Gather feedback on assumptions for scenarios, community priorities, and other factors that may influence emission reduction measures.

Gather suggestions for further analysis would be useful or relevant to interested parties in Nevada communities.

TWG 1

- Overview of modeling approach, and business as usual and business as planned scenarios.
- Discussed future scenarios, and key concepts or assumptions to consider in the emission reduction scenarios.

Housekeeping

Use the Zoom chat at any time to ask questions or make comments.

Raise hand to speak during discussion.

Be mindful of sharing time and listening to others.

Our Team – State of Nevada

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Engagement Lead

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Modelling Lead

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Analyst

Our Team – Consultants

Our Team – Consultants

Ericka Aviles Consulting

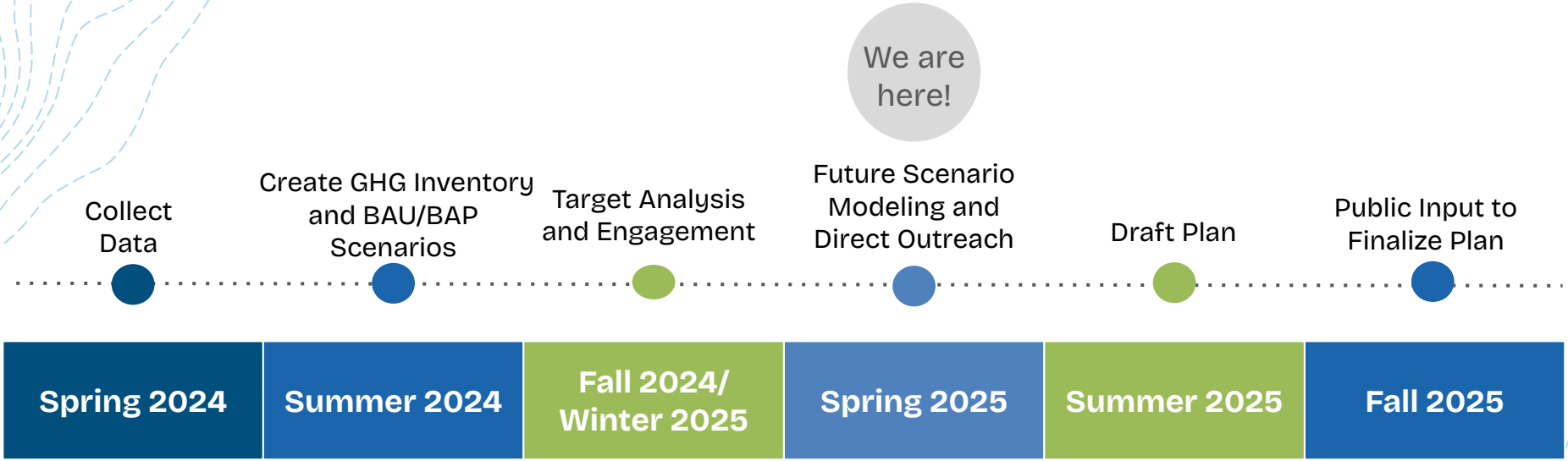
Ericka Aviles
Principal

Leiandra R. Gaskill
Project Manager

CCAN Purpose

Provide Nevadans with a key resource for making informed decisions about climate measures that may be helpful for them and their communities.

Process


We are here!
Collect Data
Create GHG Inventory and BAU/BAP Scenarios
Target Analysis and Engagement
Future Scenario Modeling and Direct Outreach
Draft Plan
Public Input to Finalize Plan
Spring 2024
Summer 2024
Fall 2024/ Winter 2025
Spring 2025
Summer 2025
Fall 2025

Process

Direct Outreach		Community Engagement		Communication	
Technical Working Group	Ongoing	Focus Group	Spring	Newsletters	Ongoing
LIDAC Key Informant Interviews		Regional Meetings (North, South, Rural online)	Fall 2025	Expanded Website	
Tribal Representative Interviews		Draft CCAN Open Comments		Presentation & Summary Report	Fall

Role of the Technical Working Group

Provide feedback and comments at key points of technical analysis.

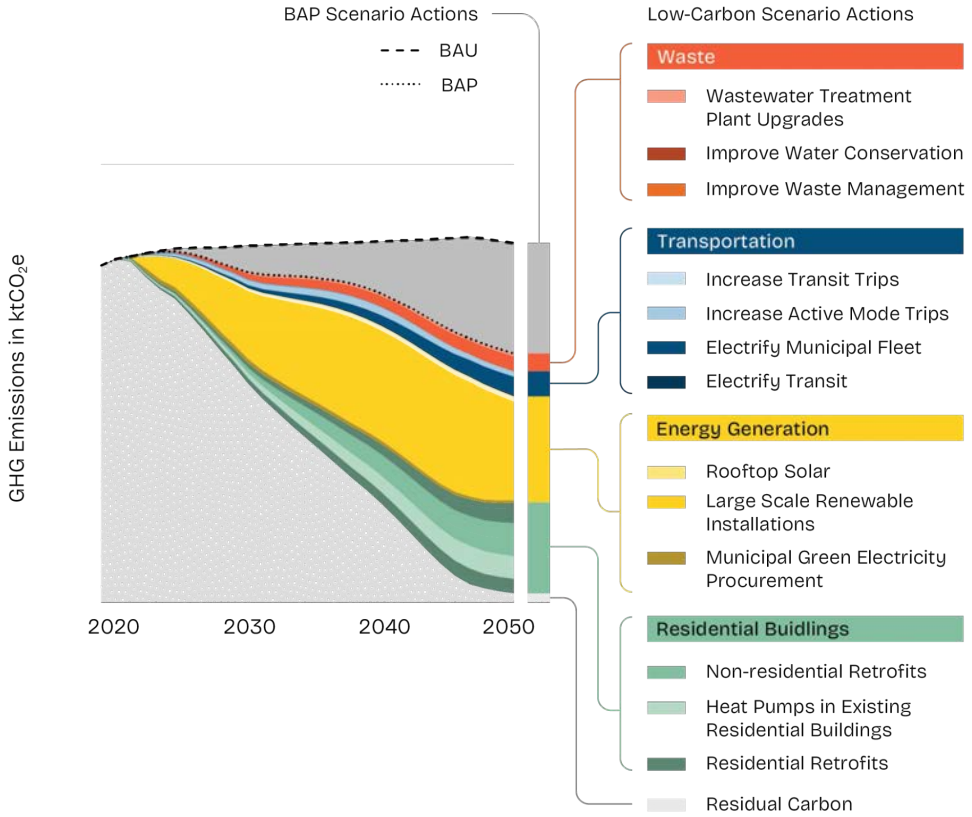
Support the broader engagement process.

Connect with your networks.

Future Scenarios Modelling

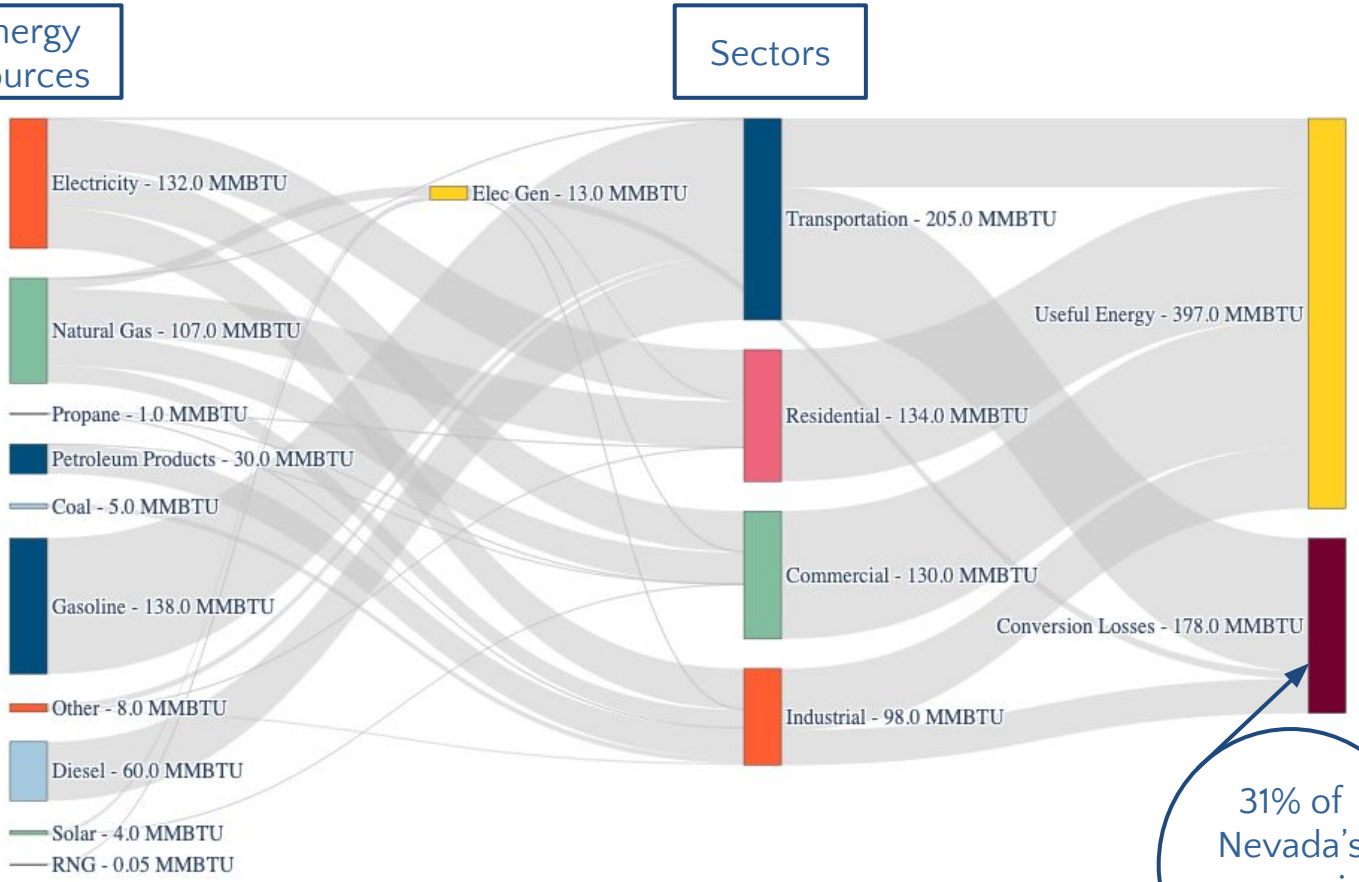
How To Build a Scenario

Colored wedges show the emission reduction potential of specific measures. The cumulative emissions reductions of measures get us to net-zero.



Starting Point:

Nevada's Energy System (2021)



31% of Nevada's energy is lost

The Modeled Scenarios

What would happen if...?

Low Carbon (LC)

- Accelerated clean grid
- Ambitious retrofits and building performance
- Net zero building code
- Transition to ZEVs
- Decarbonize industry

Mixed Fuels(MF)

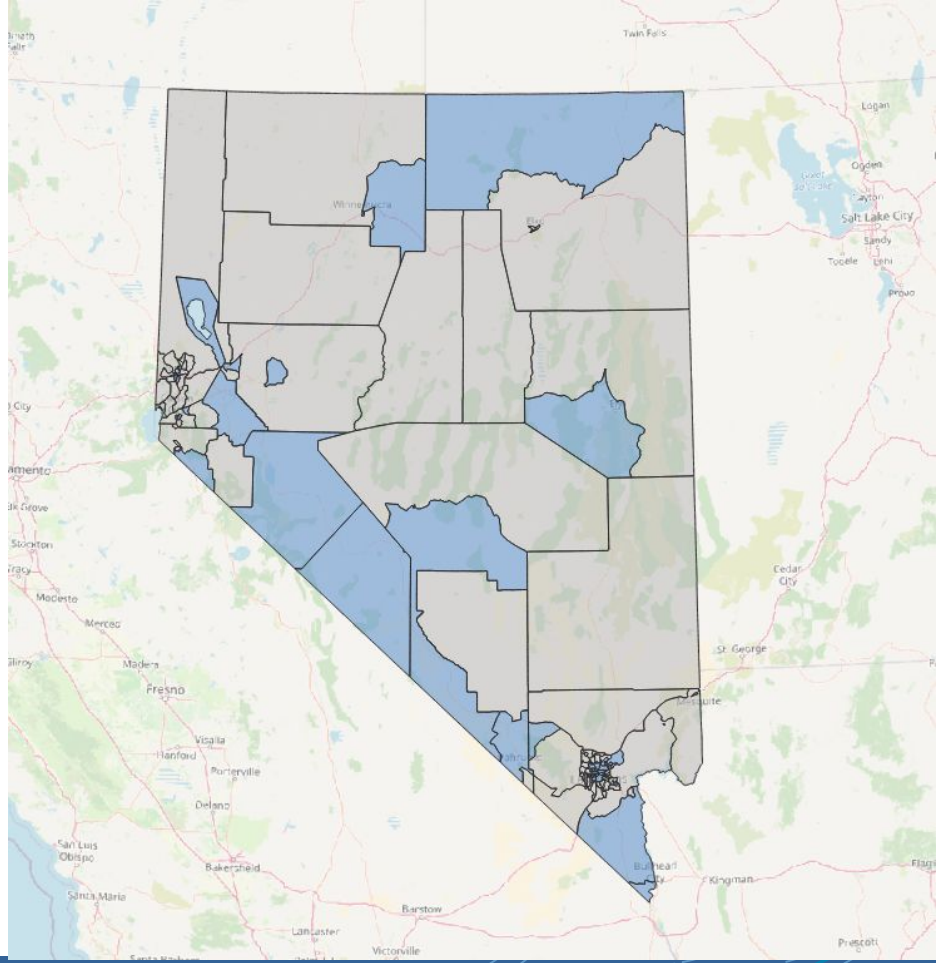
- Actions are more aligned with State's current goals
- Fossil fuels stay longer
- Transition is less aggressive
- More hydrogen and RNG are in the mix

Community-Driven (CD)

- Actions are focused on LIDAC areas first
- Accelerate distributing benefits to more people
- Active and public transportation is robust

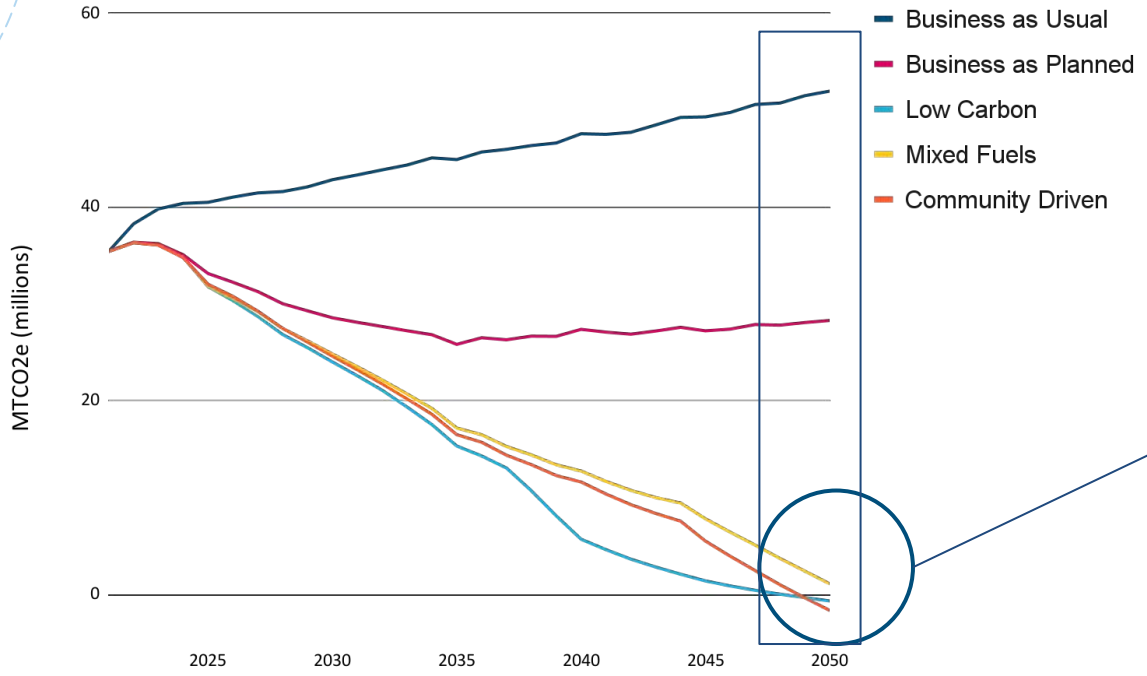
LIDAC Areas

In the Community Driven Scenario, actions are focused on prioritizing the most vulnerable and at-risk communities



Scenario Comparison

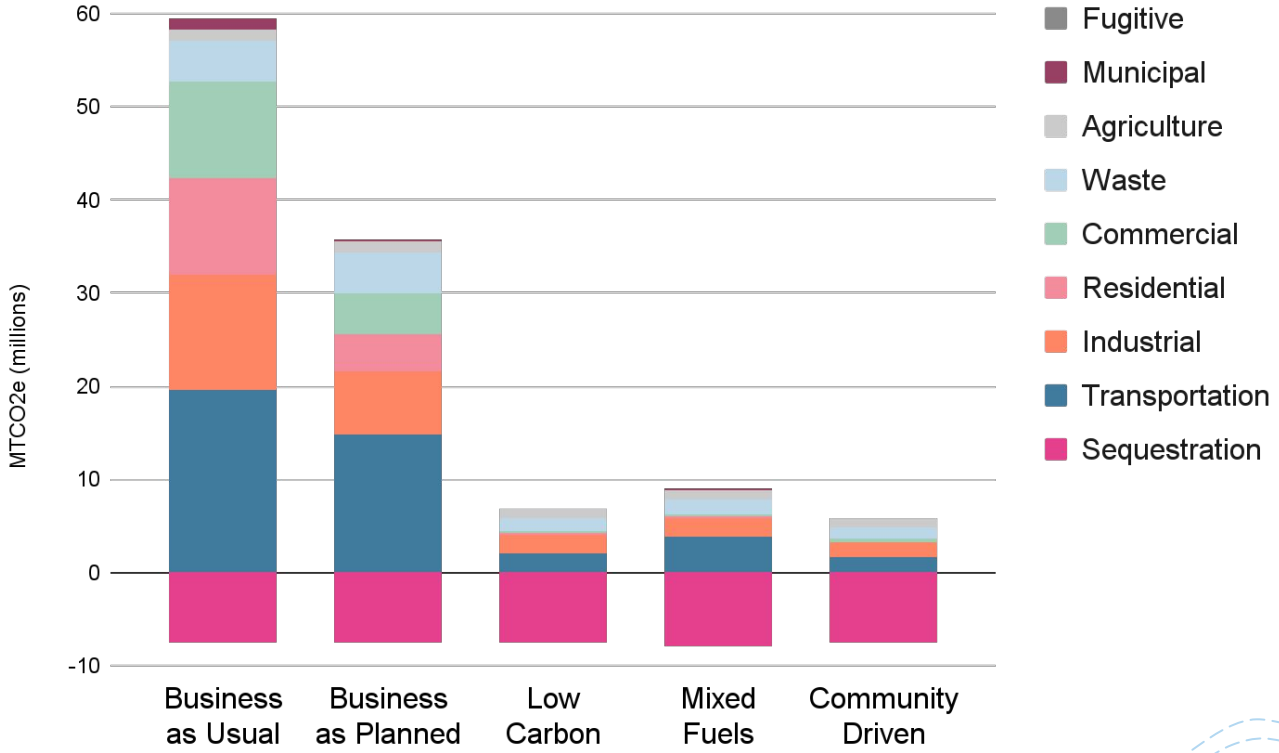
Total Net Emissions for Each Scenario



There are multiple pathways to zero emissions by 2050, or even earlier

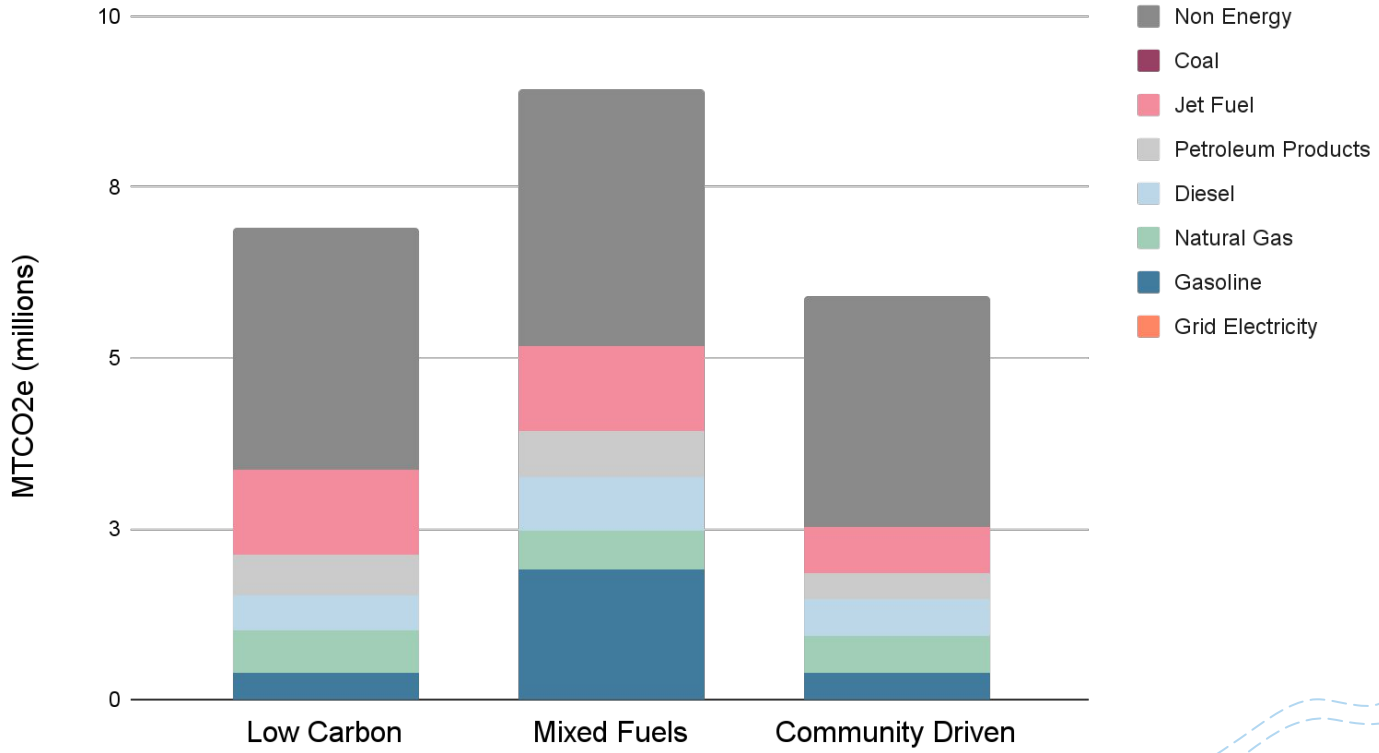
Scenario Comparison

Total Emissions for Each Scenario by Sector



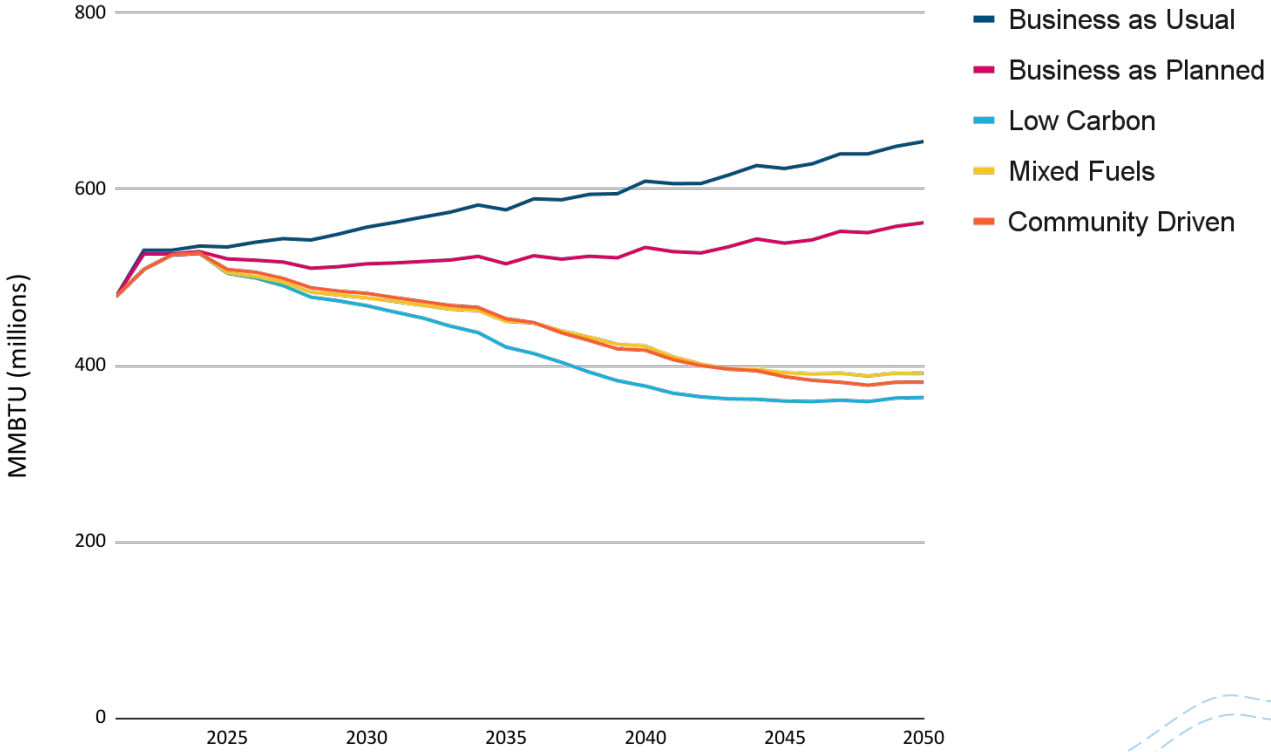
Scenario Comparison

Total Emissions for Each Scenario by Energy Source



Scenario Comparison

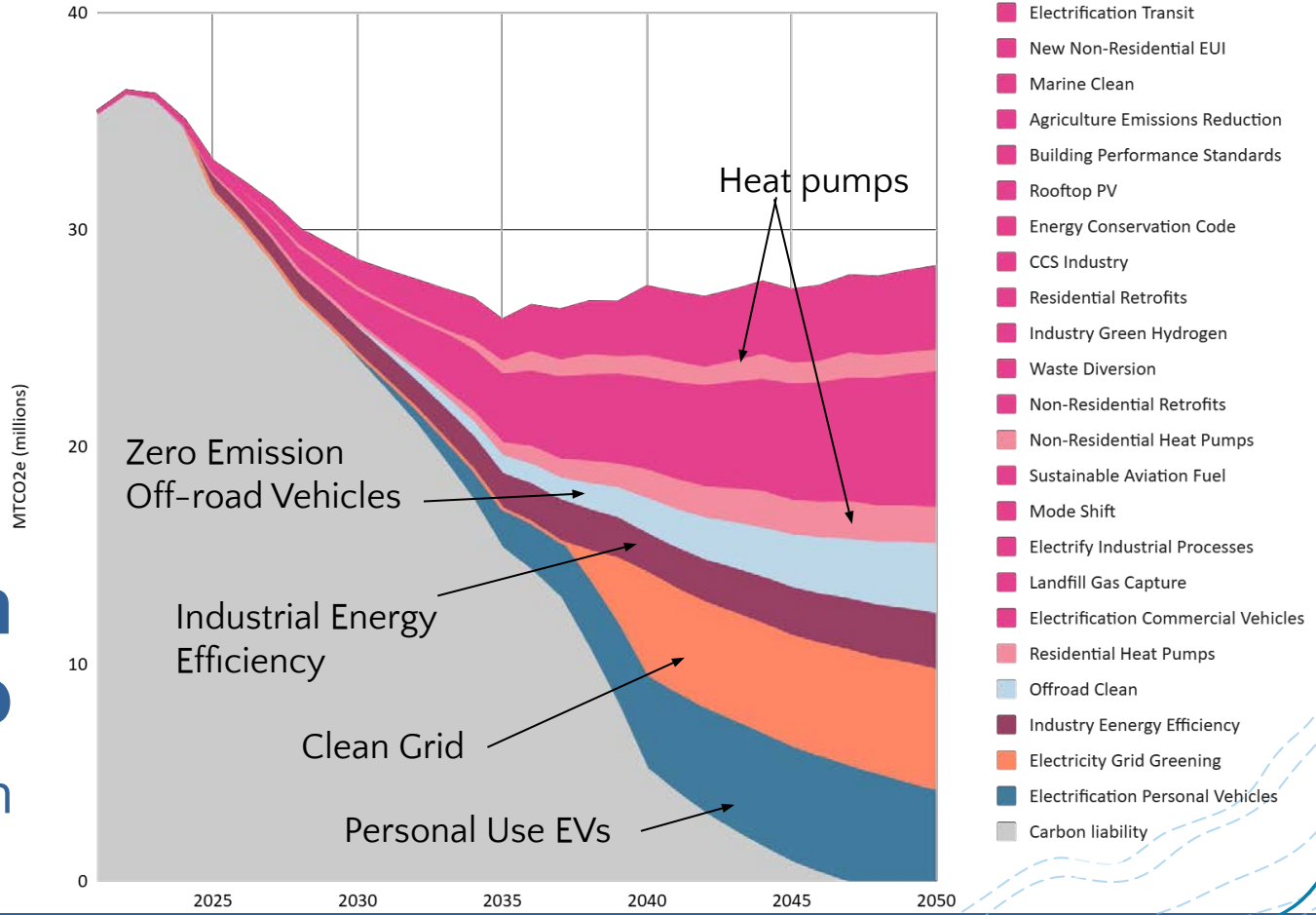
Total Energy Consumption for Each Scenario by Energy Source



How do we get there?

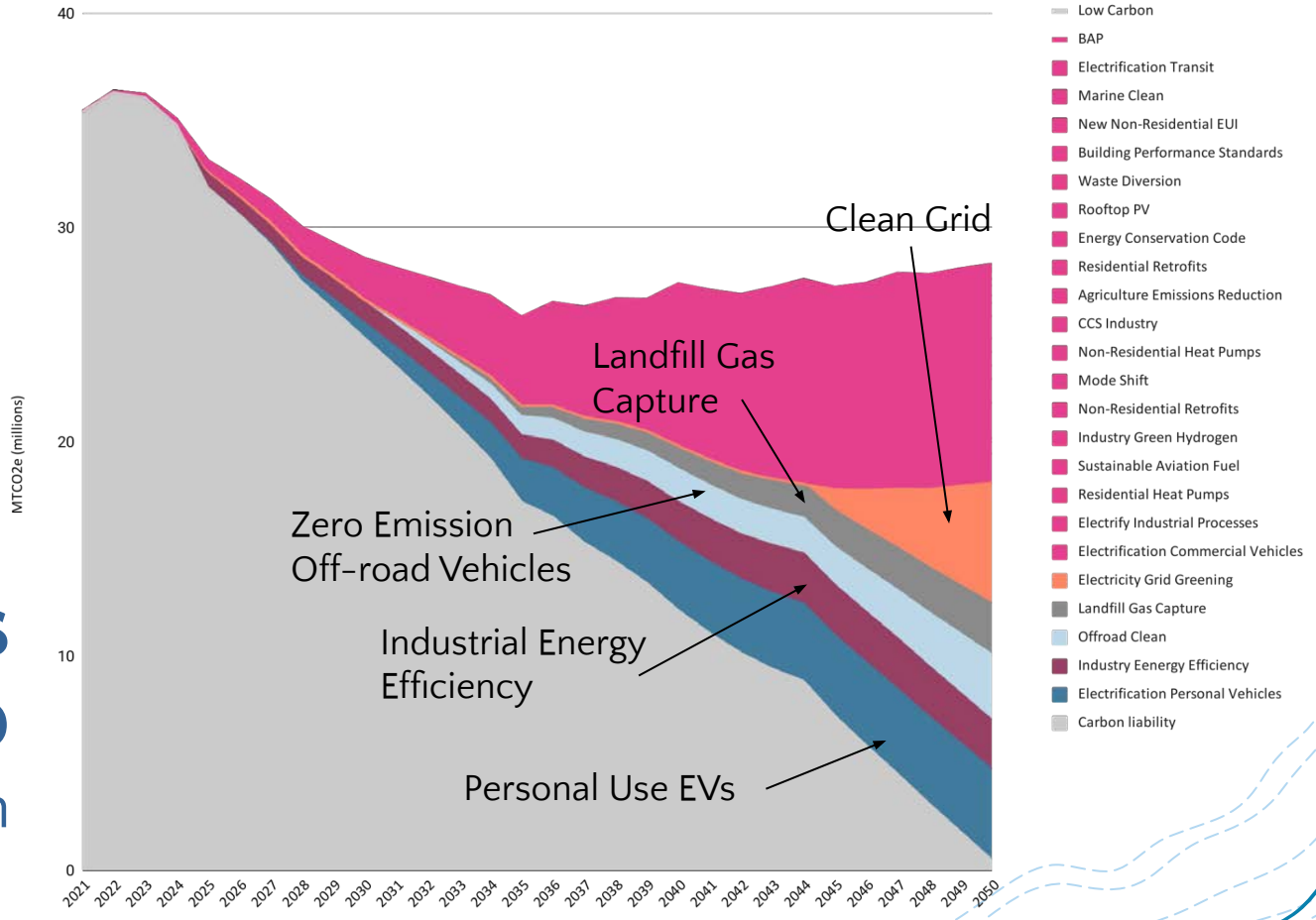
Low Carbon Scenario

Wedge Diagram



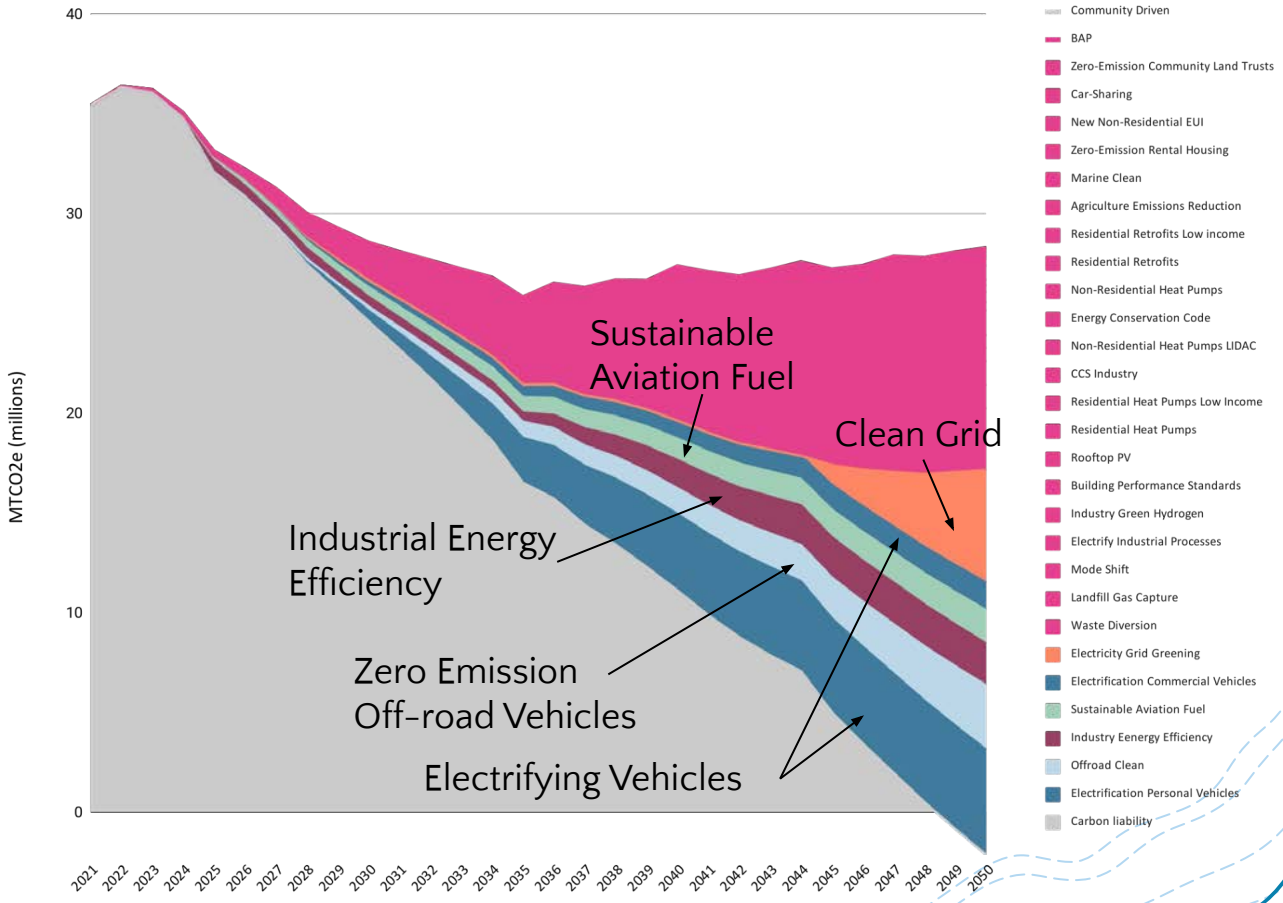
Mixed Fuels Scenario

Wedge Diagram



Community Driven Scenario

Wedge Diagram



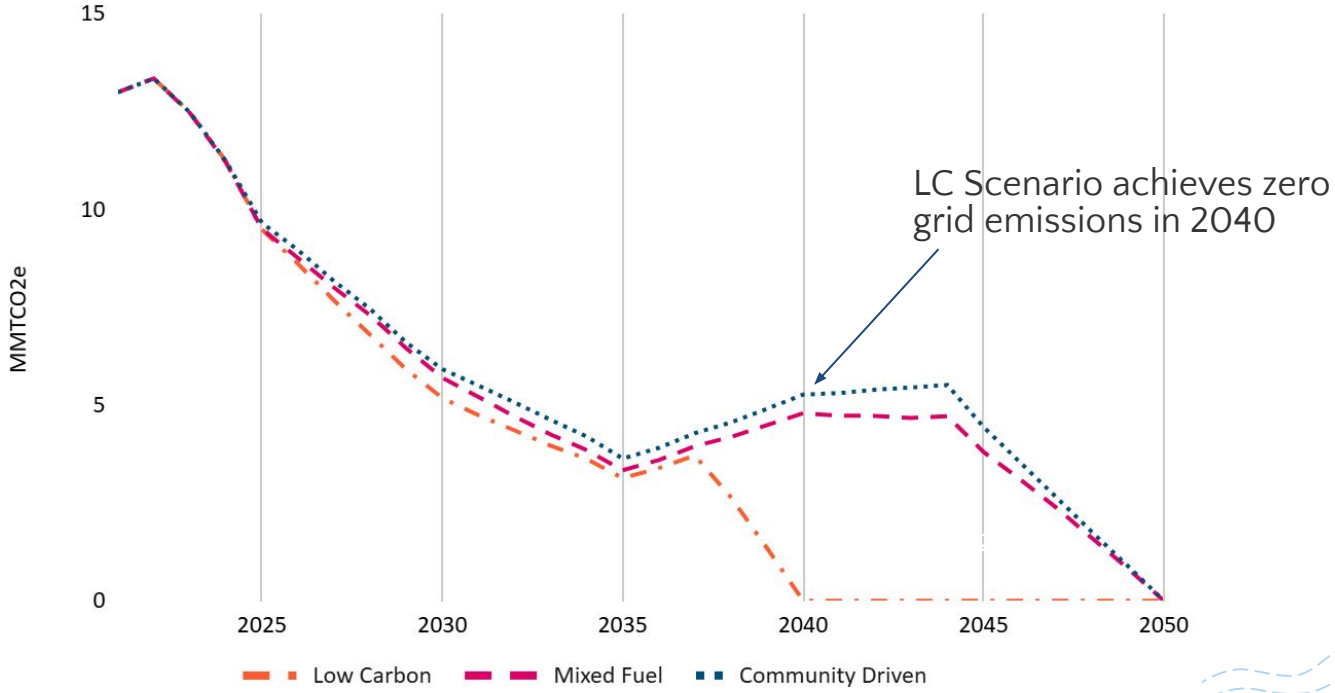
Energy System

Key Assumptions

- Accelerated clean electricity grid in Low Carbon Scenario, slower to transition in Mixed Fuels
- Residential and commercial solar installation increases in new buildings aligned with net zero building energy code adoption
- Increased on-site solar installation in existing buildings in Low Carbon and Community Driven scenarios. Slower adoption in Mixed Fuels.
- Community solar deployment accelerated in Community Driven Scenario

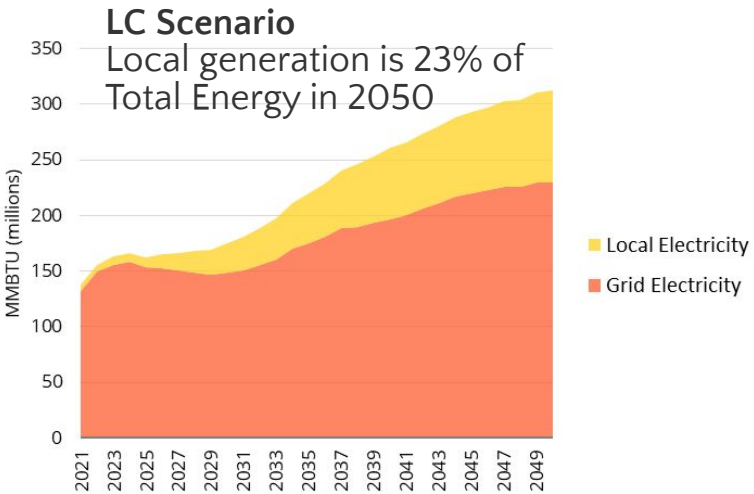
Comparison of Scenarios

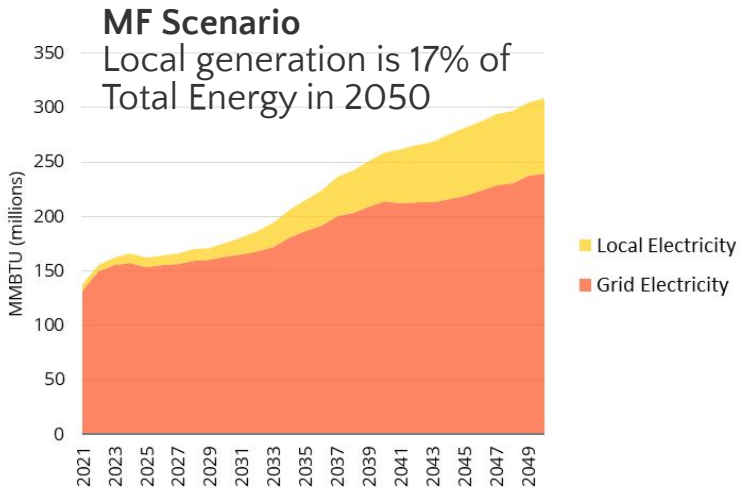
Total Emissions of Grid Electricity

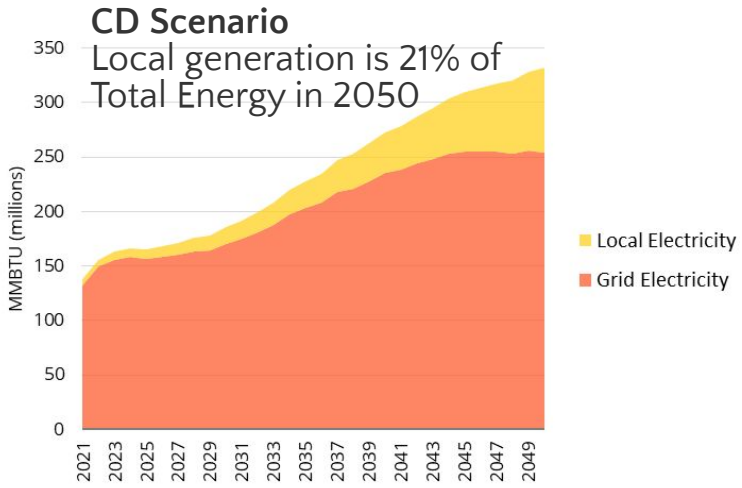


Comparison of Scenarios

Local vs Grid Electricity

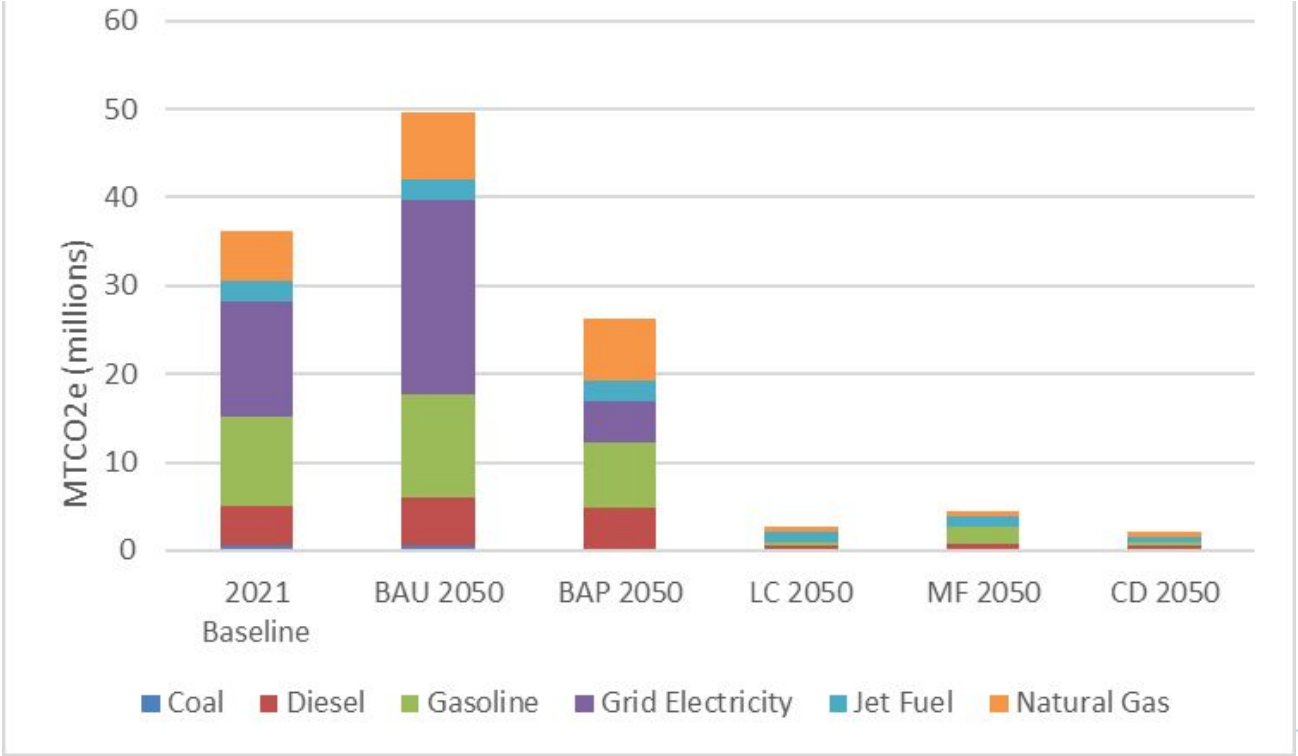






Comparison of Scenarios

Total Emissions by Energy Source



Buildings

Key Assumptions

- Net zero building energy code implemented
  - CD – 2027, LC – 2030, MF – 2036
- Residential buildings and commercial retrofits across scenarios
  - CD focus on retrofitting LIDAC areas first
- Community Land Trusts and Zero-emissions rental housing options in CD
- In all scenarios
  - Local governments adopt IECC at the same rate as the State
  - Building Performance Standards
  - Heat pump deployment in residential and commercial buildings, including replacing AC units with heat pumps

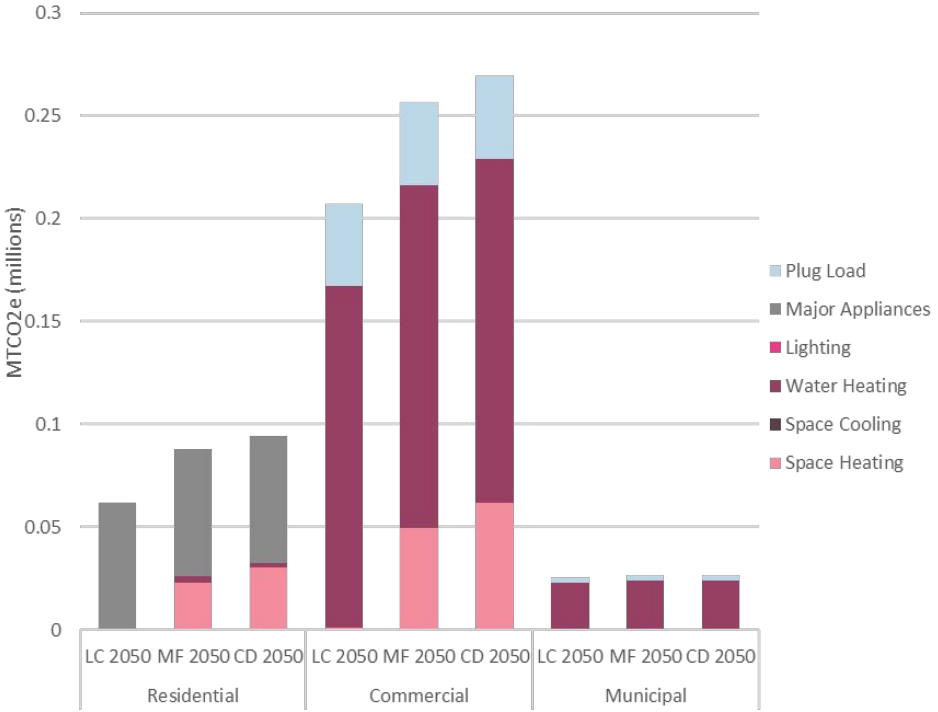
Comparing Scenarios

Total Building Emissions by Sector by End-Use

Aggressive measures to electrify buildings and clean up the grid reduce building emissions.

Comparing Scenarios

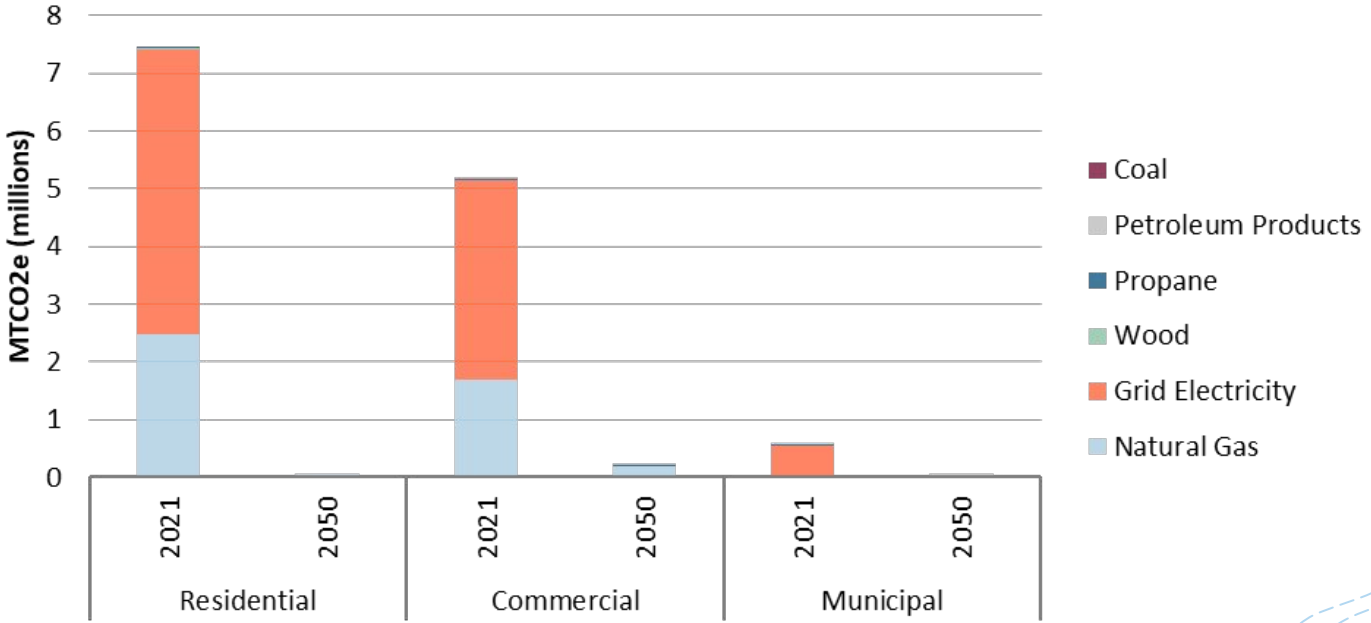
Total Building Emissions by Sector by End-Use



Heat pumps are the driving force in emission reduction in the building sectors

Low Carbon Scenario

Total Building Emissions by Sector by Fuel Type



Across scenarios natural gas makes up the remaining fuel types

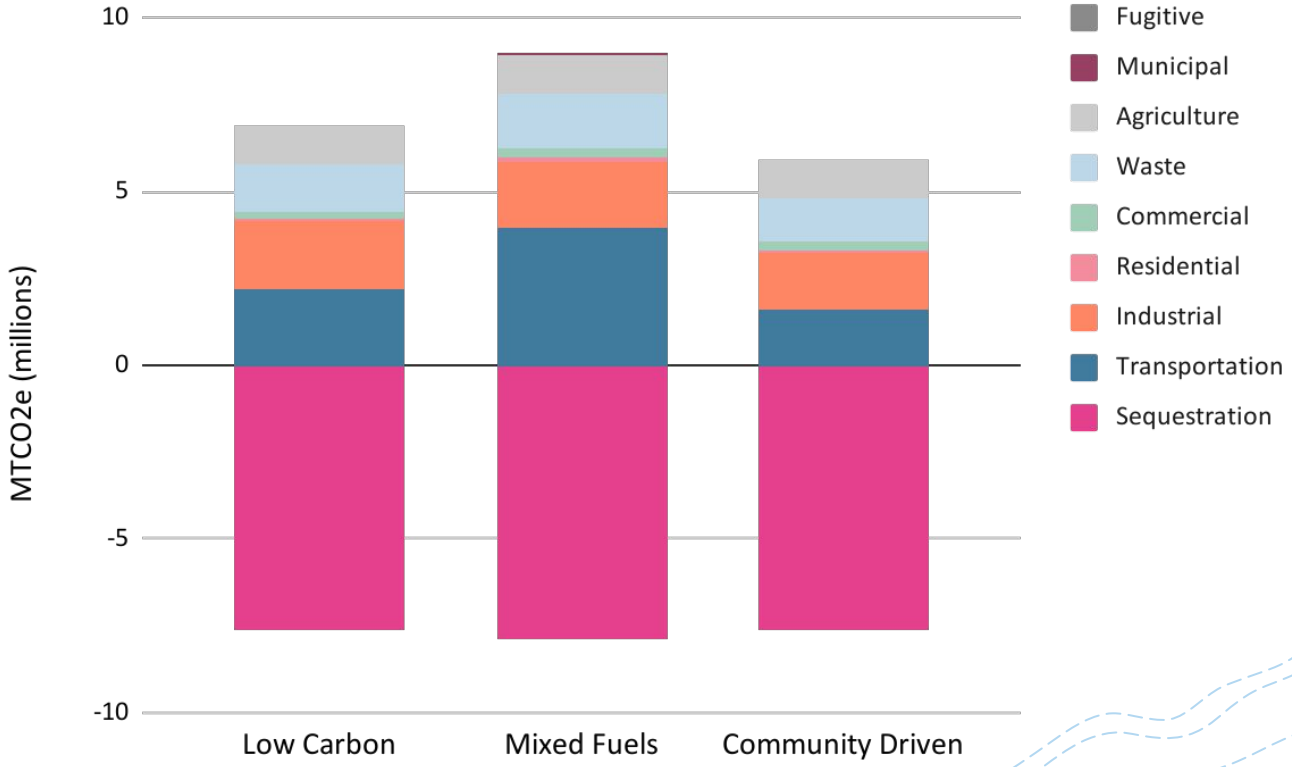
Transportation

Key Assumptions

- Ambitious active/transit mode share shifts in Community Driven Scenario
- Accelerated electrification of personal use vehicles in Community Driven and Low Carbon Scenarios
- More hydrogen vehicles and slower transition to ZEVs in Mixed Fuels Scenario
    - Community Driven Scenario also increase hydrogen use at a higher rate
- Car sharing program in Community Driven Scenario
- Increased use of SAF in Community Driven Scenario to reduce resident exposure to jet fuel.
- In all scenarios
    - Transitioning off road vehicles from ICE
    - Expanding charging infrastructure

Comparison of Scenarios

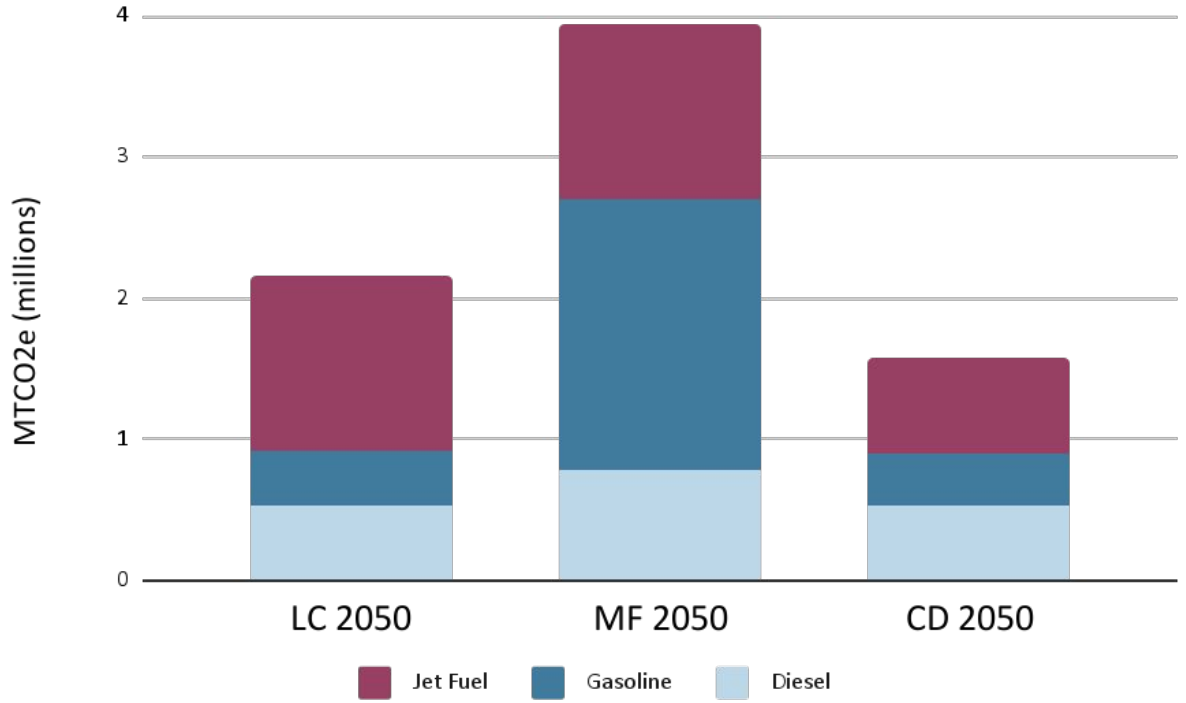
Total Emissions by Sector in 2050



Transportation remains one of the biggest challenges across all scenarios in 2050.

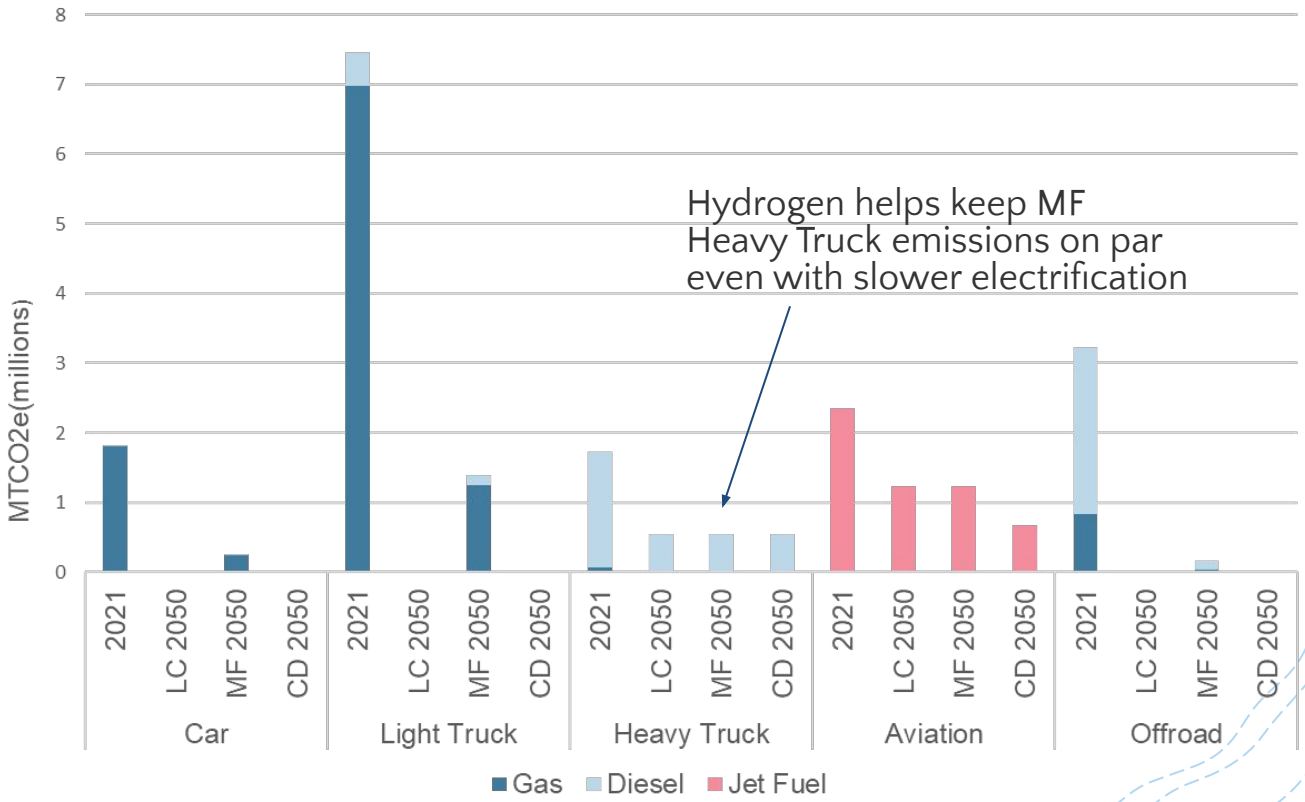
Comparison of Scenarios

Total Emissions by Fuel Type



Comparing Scenarios

Total Transportation Emissions by Vehicle Type



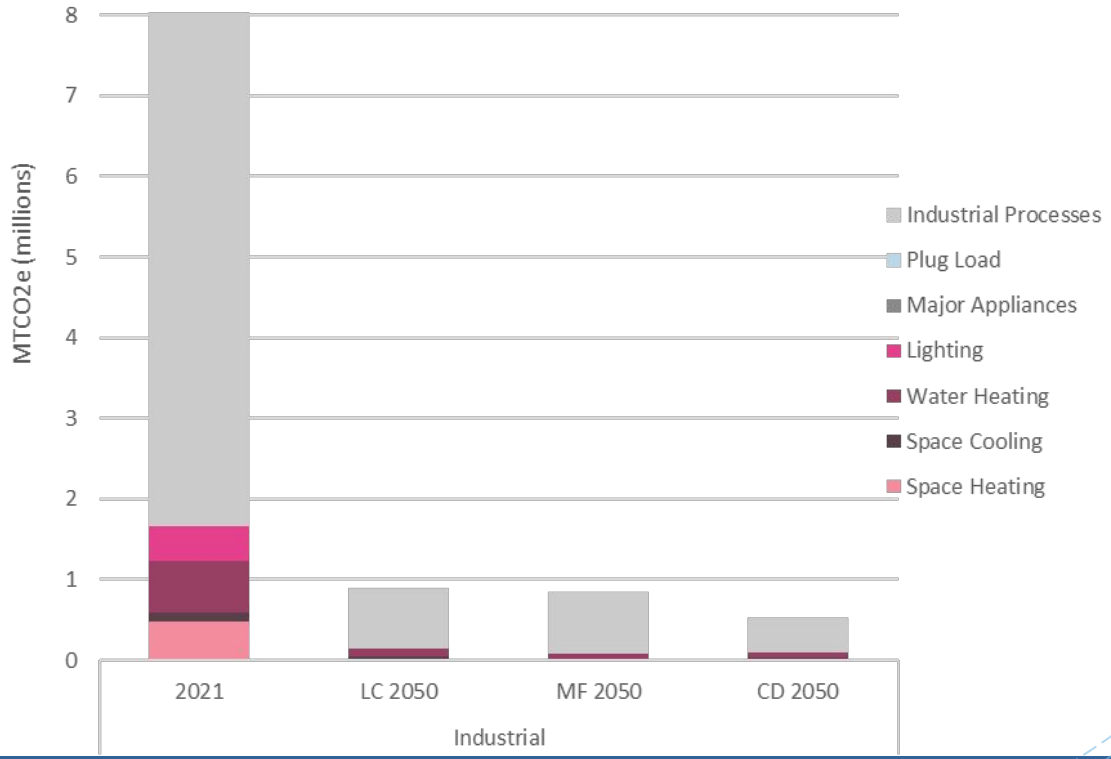
Industry

Key Assumptions

- Accelerated energy efficiency and electrification in Low Carbon Scenario.
- Increased hydrogen use in Mixed Fuels and Community Driven Scenarios
- Community Driven Scenario focuses on decarbonizing industry near LIDAC communities first. Increase electrification of industrial processes overall.
- In all scenarios:
    - Electrify industrial processes
    - Increase on-site renewables
    - Carbon capture, utilization, and storage

Comparing Scenarios

Industrial building emissions by End Use



Hydrogen

- Significant increases will be required to achieve decarbonization in the industrial sector
  - Low Carbon Scenario – 3,267,311,376 MJ/year
  - Mixed Fuels Scenario – 5,592,648,959 MJ/year
  - Community Driven Scenario – 4,548,145,064 MJ/year
- Nevada already has the largest hydrogen production plant in the world in North Las Vegas – Air Liquide/AirGas

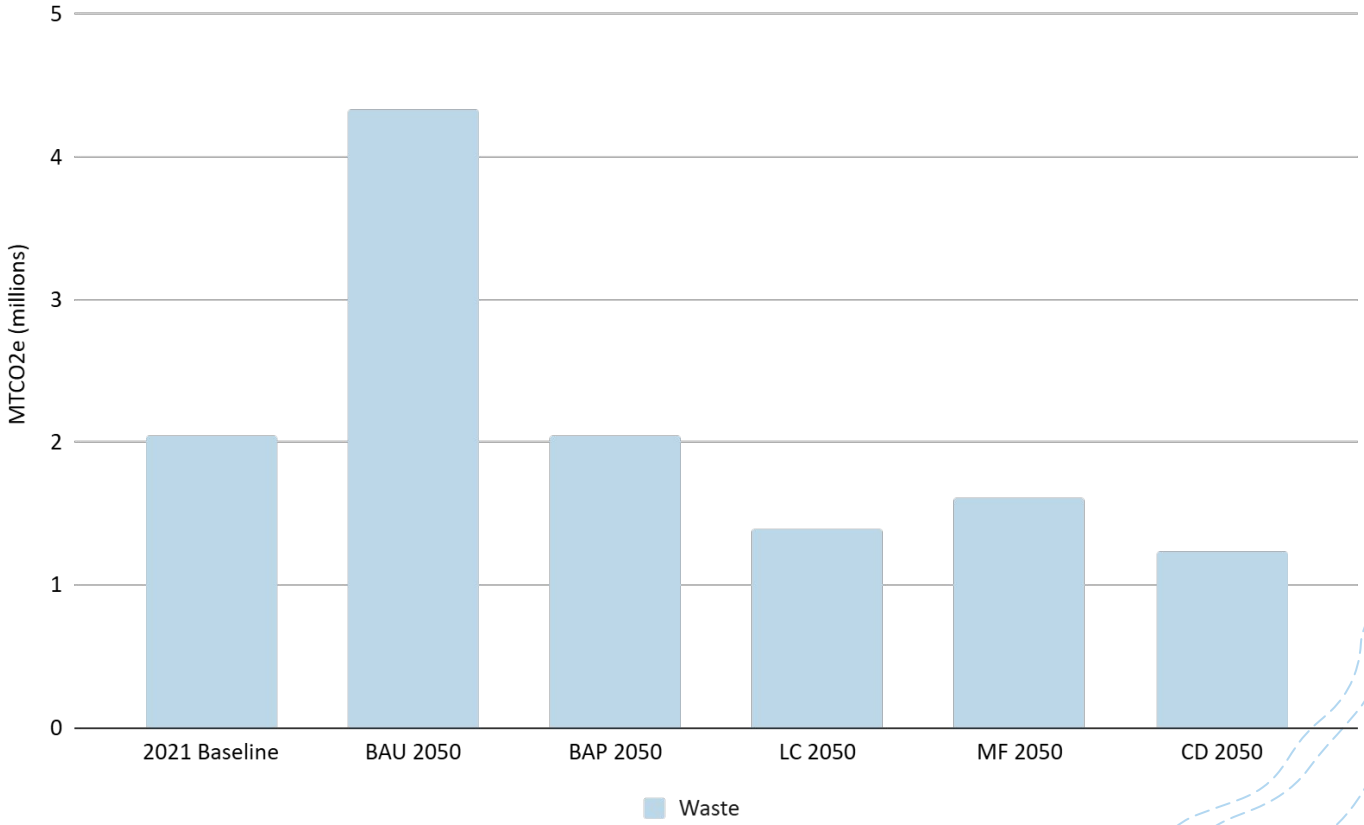
Waste

Key Assumptions

- Mixed Fuels Scenario has increased landfill gas capture and renewable natural gas.
- Higher rates of recycling and composting achieved in Low Carbon & Community Driven Scenarios with the broadest increased access to waste management services in the Community Driven Scenario.

Comparing Scenarios

Waste Emissions



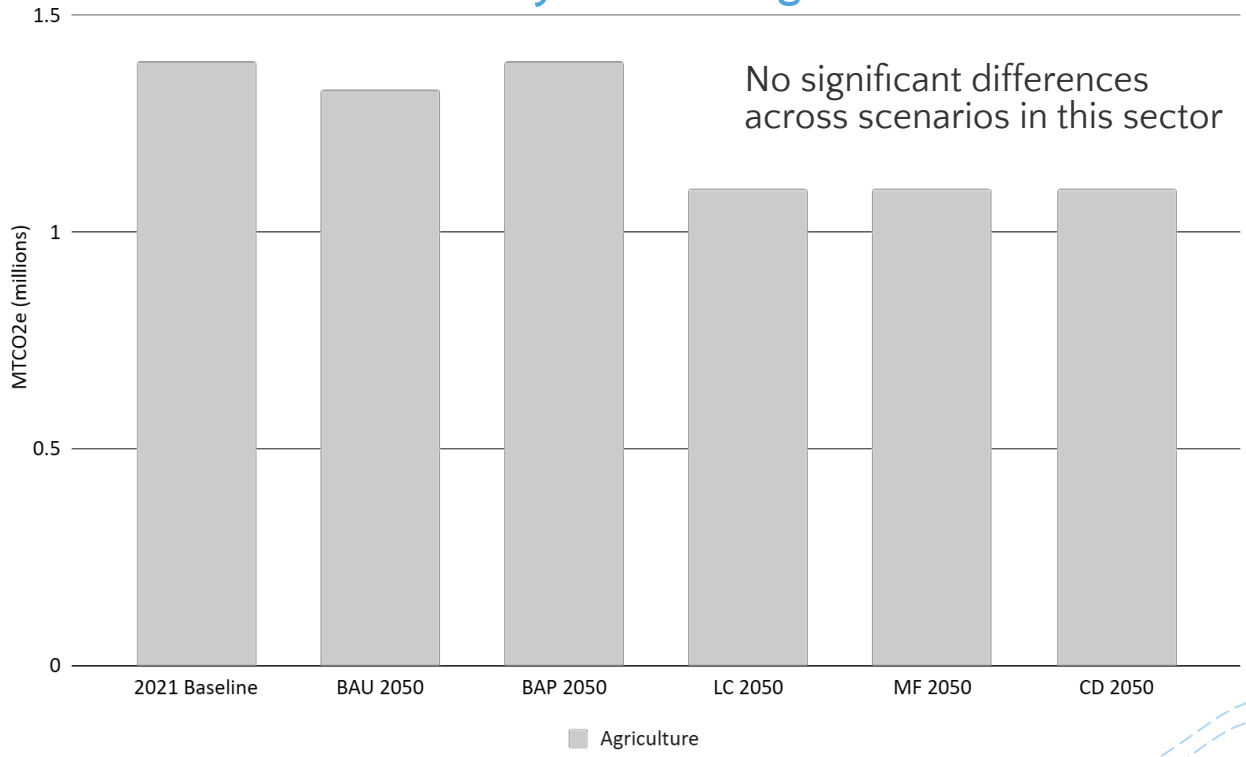
Natural Systems and Agriculture

Key Assumptions

- Community Driven focuses on increasing urban tree canopy in LIDAC communities first
- In all scenarios:
  - Increasing training and deployment of no till and grazing management practices
  - Brownfield remediation

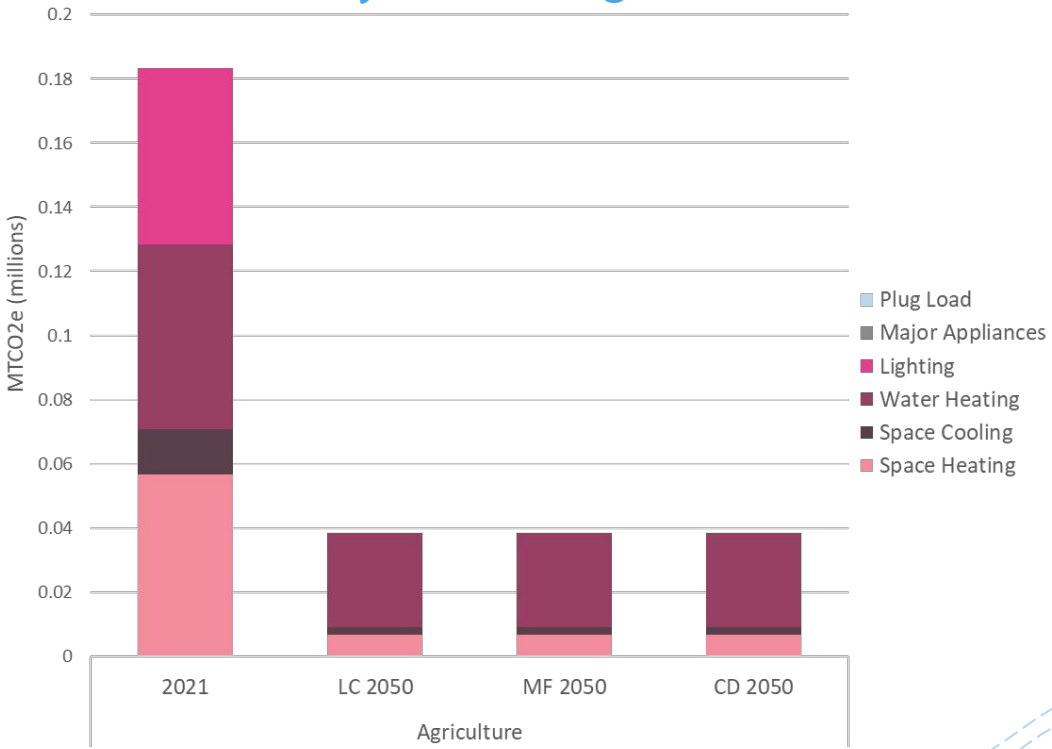
Comparing Scenarios

Emissions by Sector – Agriculture



Comparing Scenarios

Emissions by Sector – Agriculture



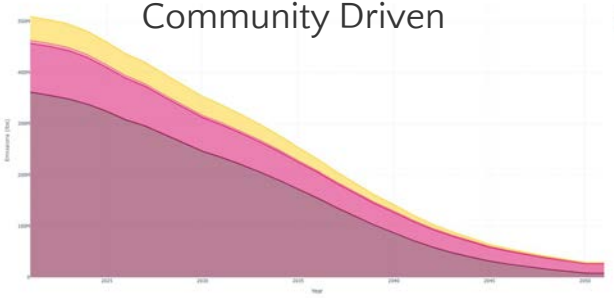
Space and water heating and cooling are electrified similar to commercial buildings

Reducing Co-pollutants

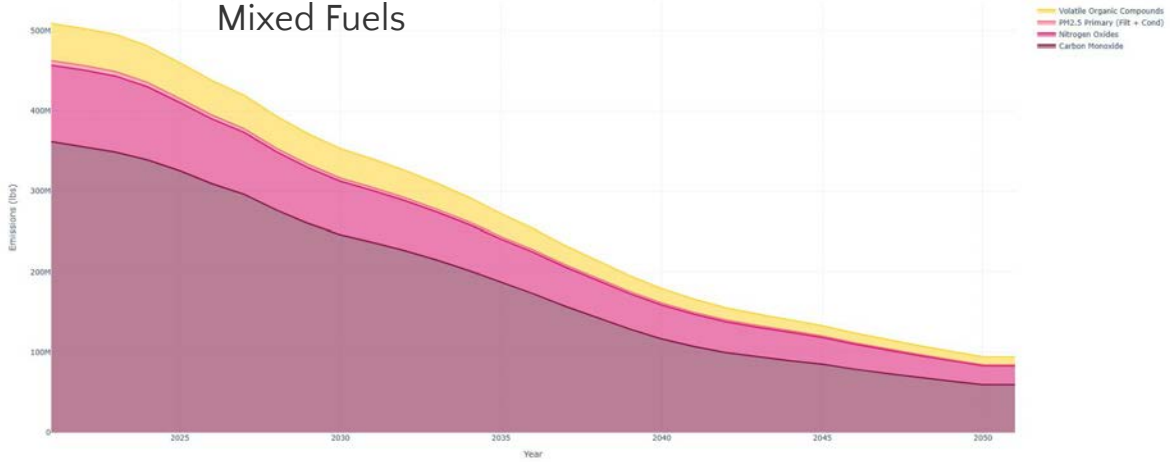
Comparing Scenarios

Co-pollutant Reductions Overall

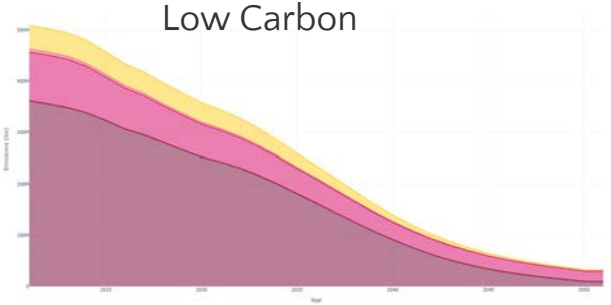
Community Driven



Mixed Fuels



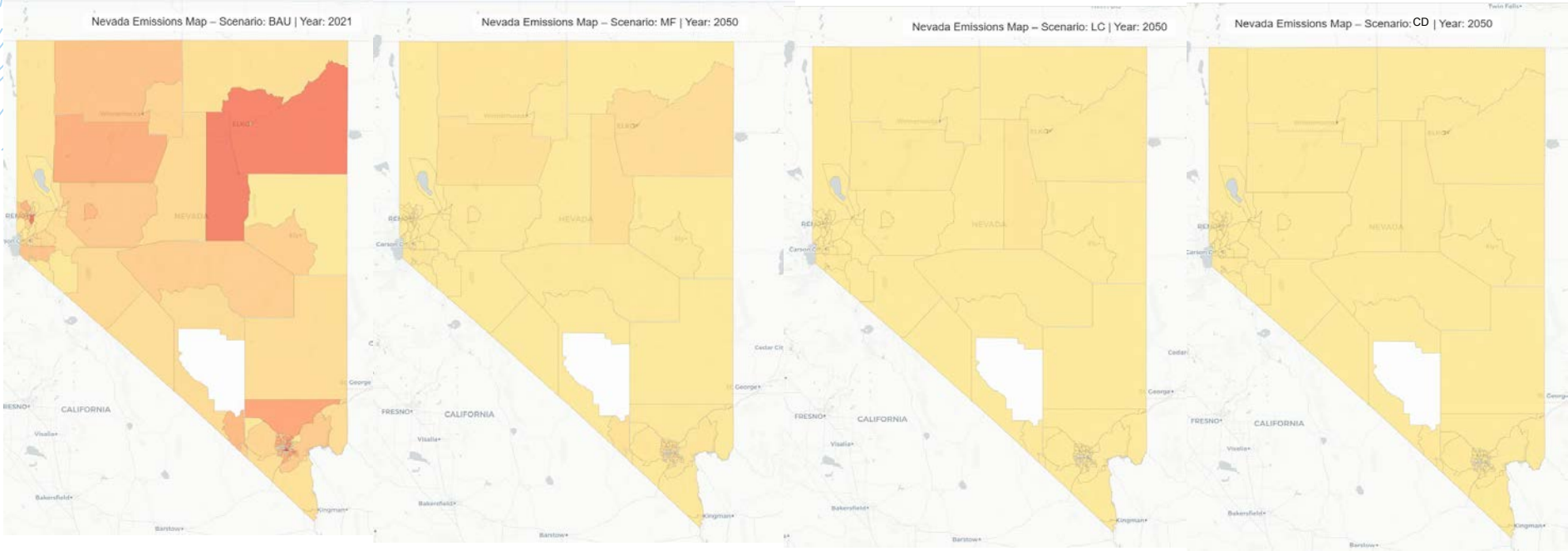
Low Carbon



Achieving nearly identical pollutant reductions in the CD and LC scenarios

Comparing Scenarios

Co-pollutant Reductions Overall



Next Steps

Upcoming Engagement

- July: Next TWG meeting to cover Financial Analysis and Draft Analysis overview
- September: Regional Community Meetings to present Draft and open Public Comment Period
- November: Submission to EPA and Presentation of Final CCAN

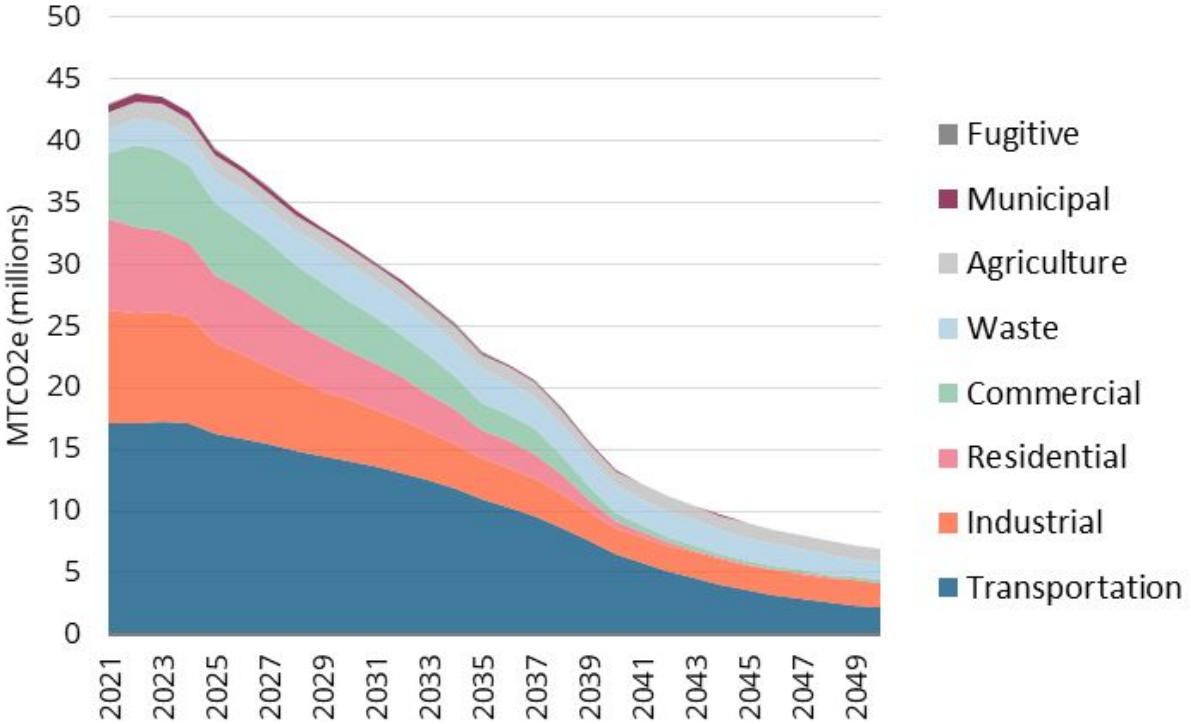
Thank You

ndep.nv.gov/air/climate-pollution-reduction-grant

Email: ndep.cprg@ndep.nv.gov

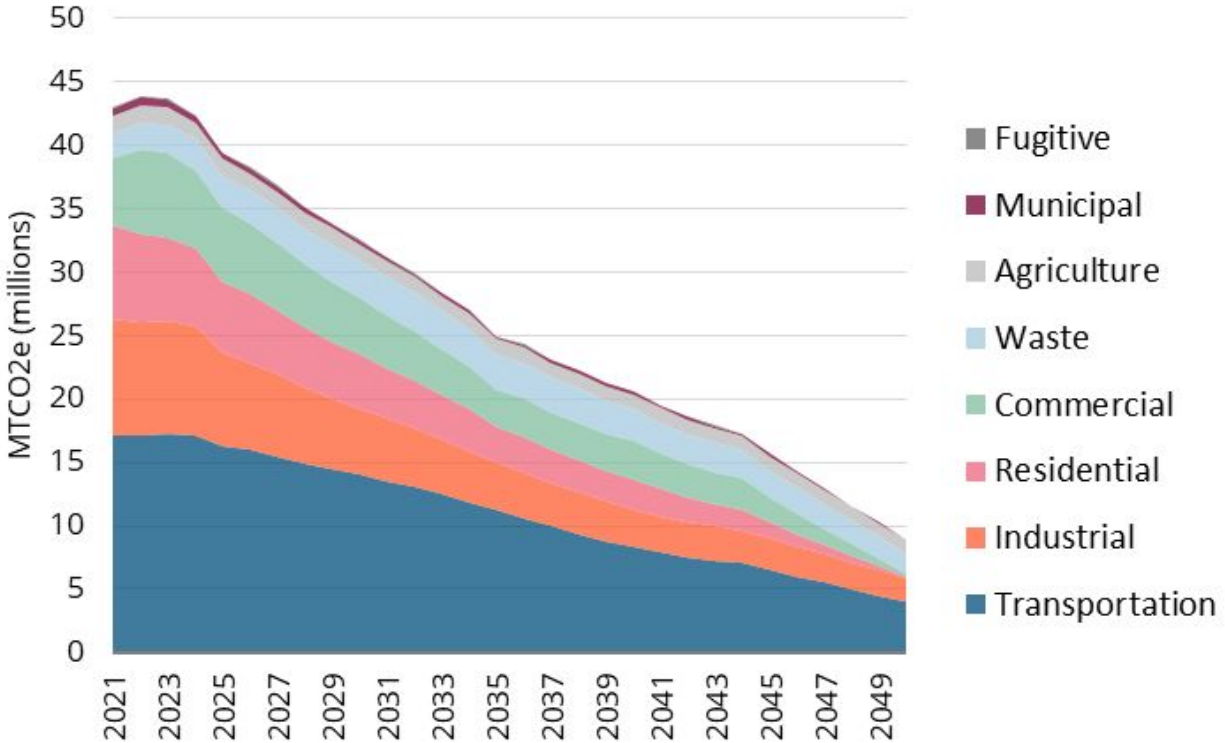
Low Carbon Scenario

Total Emissions by End-use Sector



Mixed Fuels Scenario

Total Emissions by End-use Sector



Community Driven Scenario

Total Emissions by End-use Sector