BREATHE

Reducing Emissions For A Resilient Region

Climate Action Pathway Session

JUNE 17, 2025

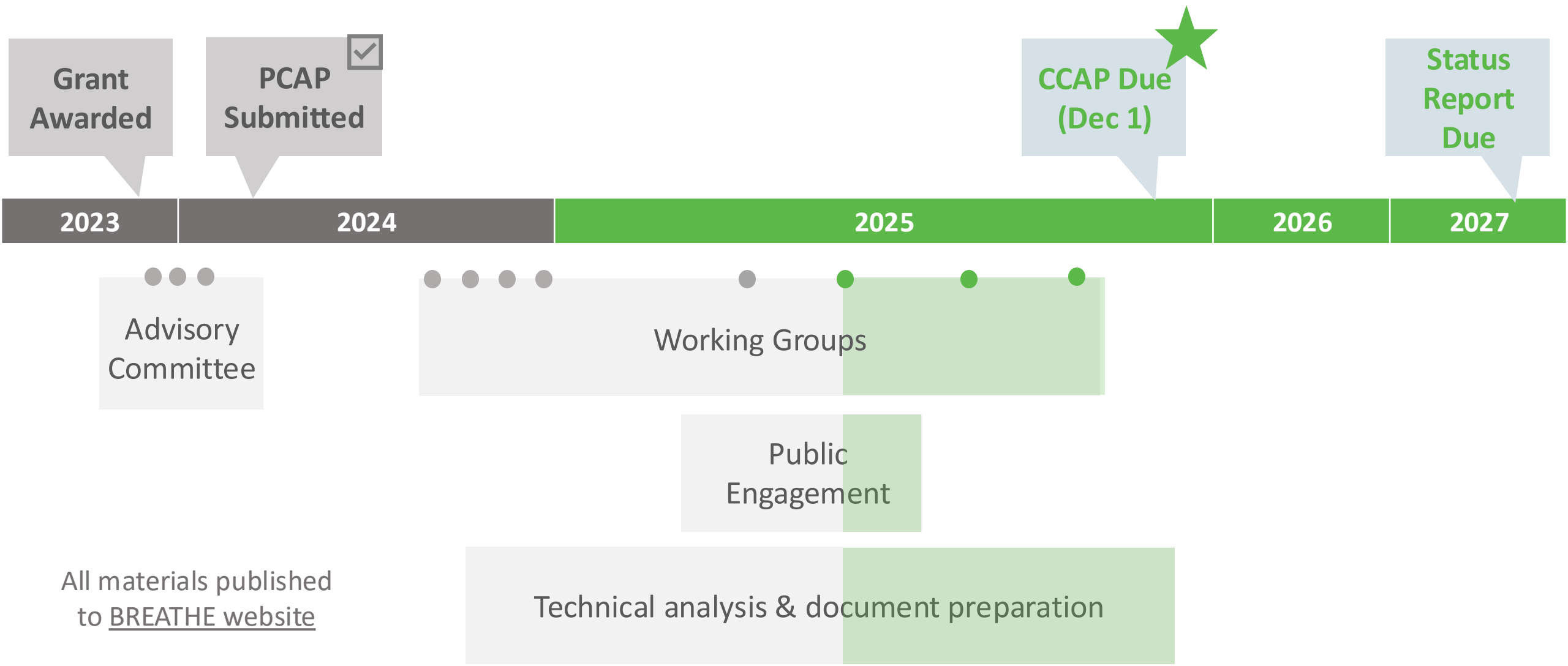
Session Goals

1. Present updated analysis on measures
2. Take a poll on current priority actions
3. Create a climate action pathway together for the GHG reduction measures.

Agenda

12:30-12:40	Welcome
12:40-1:25	Presentation
1:25-1:35	Q&A
1:35-2:30	Pathway Exercise

CCAP Development Timeline



All materials published to BREATHE website

Screening the CCAP Measures

Measure analysis requirements (from EPA)	Input from:
GHG emissions reduction projections	ICF modeling, incorporates technical feasibility
Costs	ICF modeling, incorporates economic feasibility
Air quality changes	ICF modeling
Stakeholder preferences and priorities	**Working group input (June meetings)**
Equity outcomes criteria and examples of application	**Working group input** (all meetings)
Authority to implement and key implementers	**Working group input** (April meetings) and assessment of political feasibility, partnerships, opportunities, and barriers
Resiliency benefits or disbenefits	**Working group input** (October and April meetings) and technical analysis
Other community benefits and disbenefits	**Working group input** (all meetings) and technical analysis

Our Commitment to Climate Action

The City and TPO remain committed to developing a Comprehensive Climate Action Plan (CCAP) that serves the entire region.

The CCAP will act as our region's **first-ever roadmap to guide policy, funding, infrastructure, community action, and more**.

If we act now, we have the power to:

1. Slow down global climate change by reducing greenhouse gas emissions in our region.*

2. Make our region more resilient to the impacts of climate change in the near- and long-term.

**Breathe focuses primarily on #1*

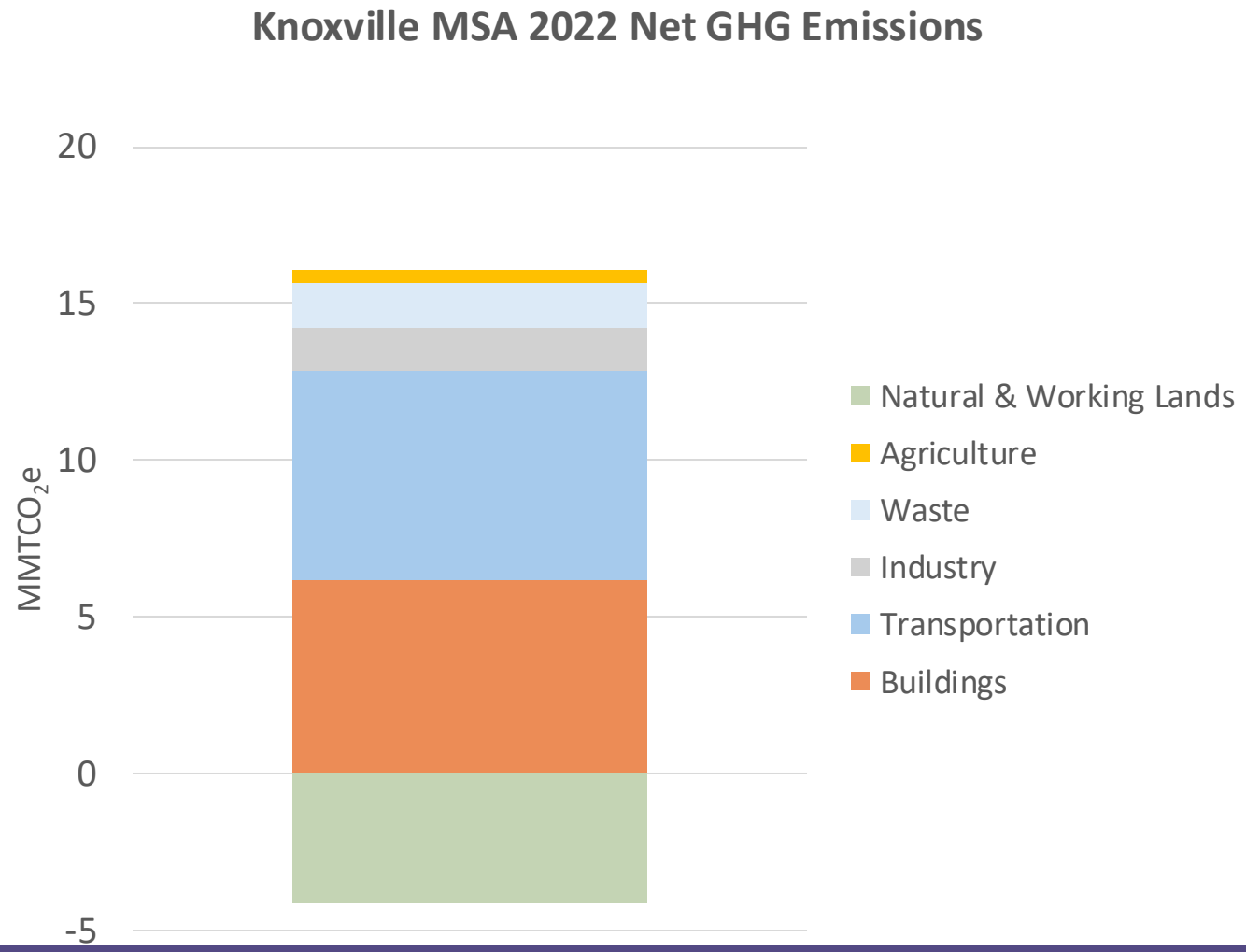
2022 Greenhouse Gas (GHG) Emissions Inventory

Gross Emissions: 16.0 $MMTCO_2e$

Net Emissions: 11.9 $MMTCO_2e$

Sectors:

- Transportation (42%)
- Buildings (39%)
- Waste (9%)
- Industry (8%)
- Agriculture (2%)
- Natural & Working Lands



BAU GHG Emissions Projections

What is the BAU?

- What GHG emissions will look like in 2050 if the region continues "**business as usual**"

What is the BAU based on?

- Sector-specific assumptions on existing policies, market trends, and population growth
- Historical GHG emissions data

If the Knoxville MSA takes no further action, the region will not be able to achieve net zero GHG emissions by 2050.

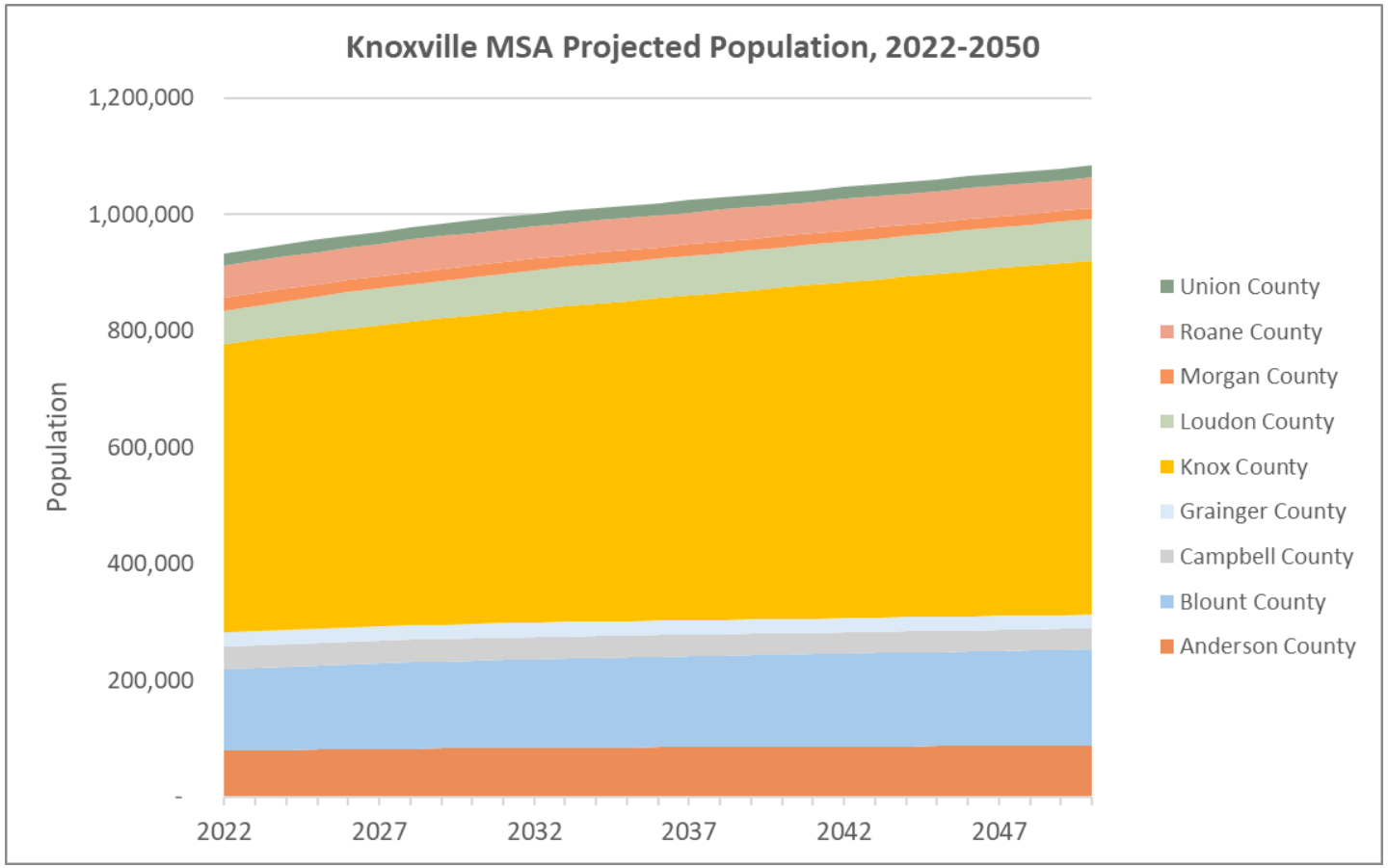
Knoxville MSA Demographics

Population

- 2024: 957,608
- Current population growth rates are well above state and national avg.
- 13% growth projected by 2050

Employment

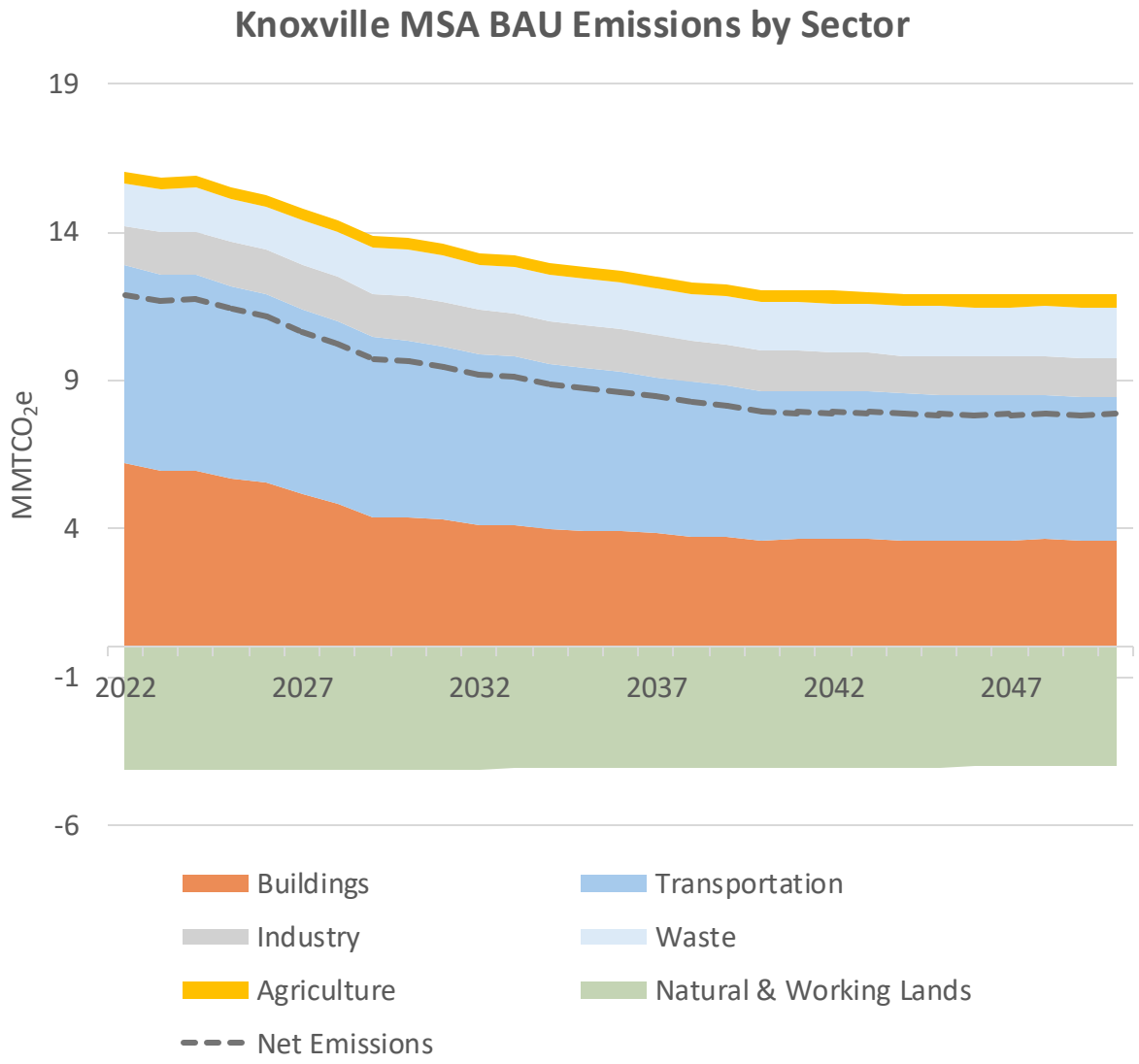
- Employment grew 1.5% in 2024, on par with state and national avg.
- Largest employment sectors:
  - Health Care and Social Assistance
  - Retail Trade
  - Manufacturing



BAU Summary

If no additional action is taken, total gross emissions decline 5% from 2022-2050

- Transportation and buildings are the largest emitting sectors today and remain so in 2050
- Emissions fall 47% from buildings and 27% from transportation, largely due to a cleaner grid
- Both sectors present the greatest opportunities for targeted reductions moving forward



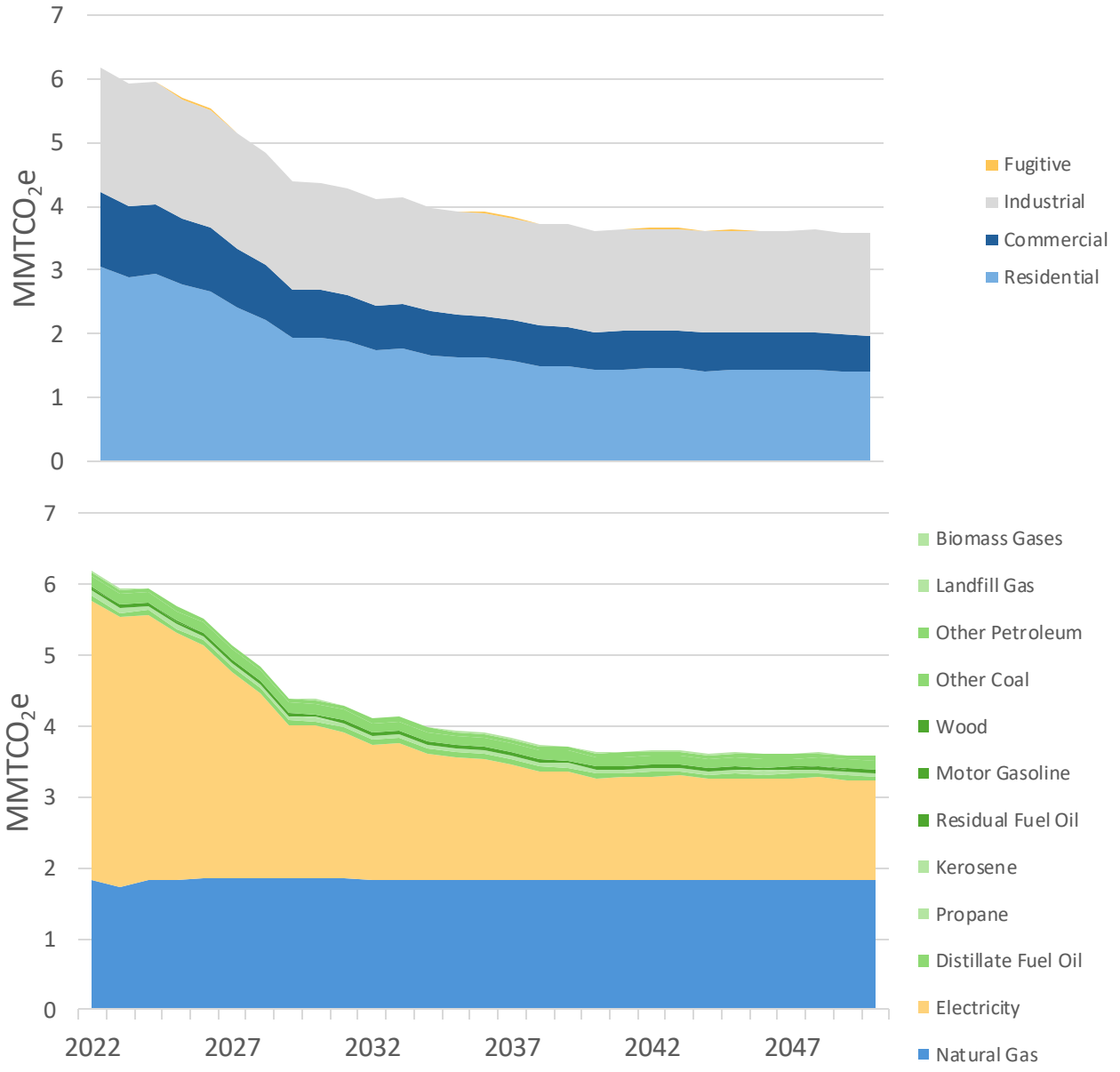
Buildings

- **Emissions decline primarily due to a cleaner electricity grid, despite rising electricity use.**
- Natural gas surpasses electricity as the largest emission source by 2050.
- Residential buildings lead in 2022 but are overtaken by industrial buildings by 2050.

Industrial Buildings vs. Industry

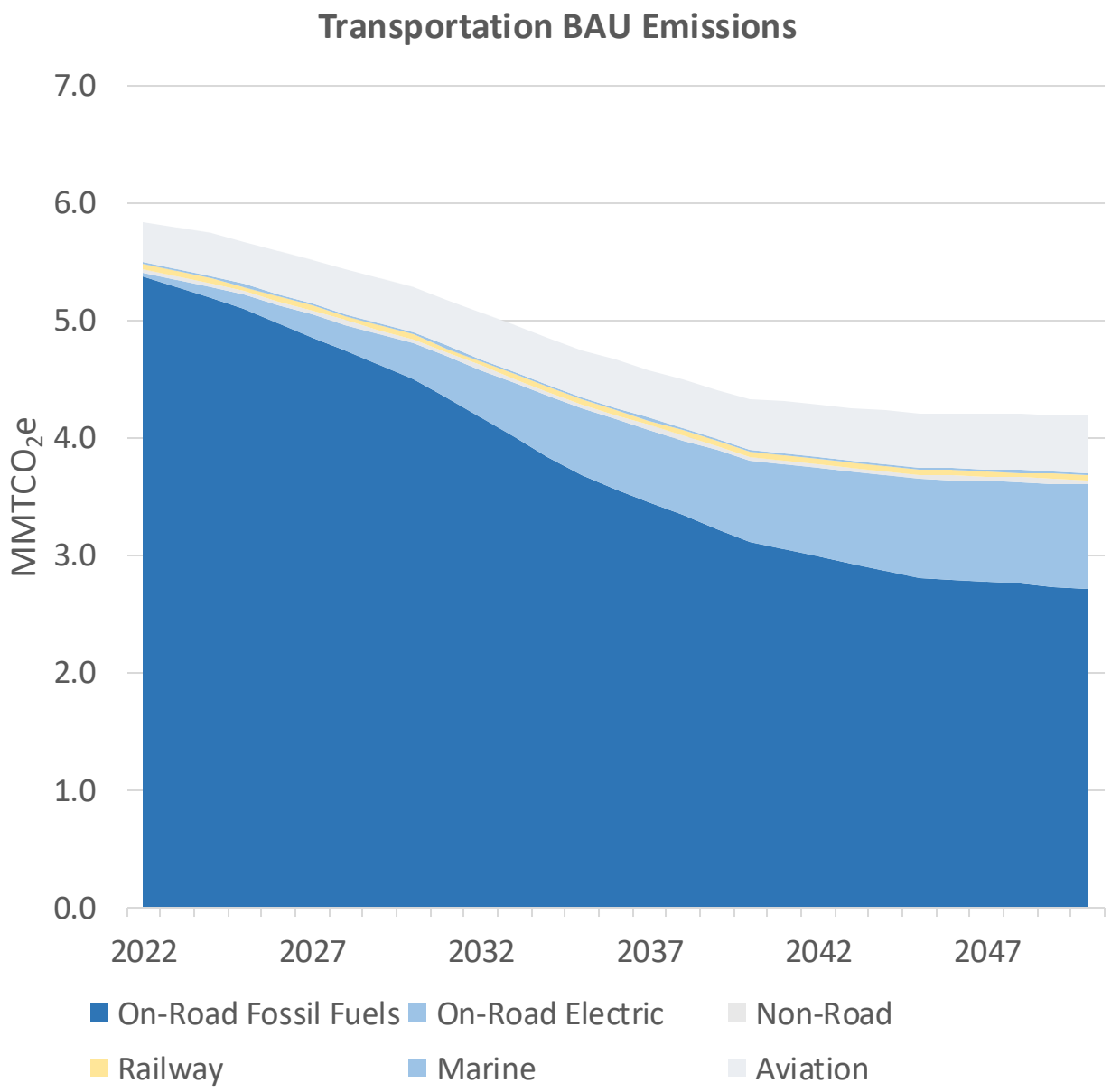
Buildings sector: Fuel combustion and electricity use from industrial facilities

Industrial sector: Industrial processes (e.g., CO_2 released from heating limestone to make cement) and product use (e.g., refrigerants)



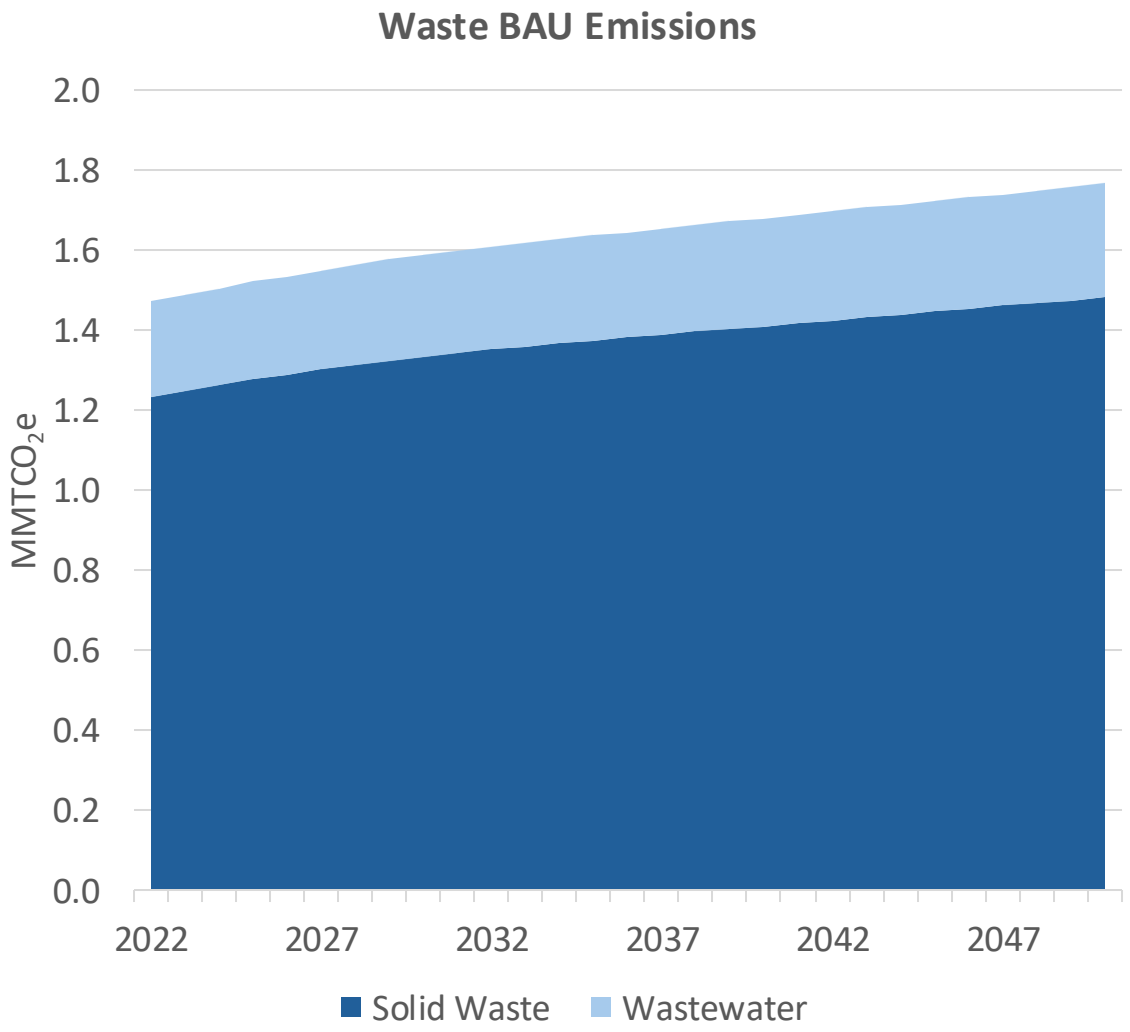
Transportation

- **On-Road gas powered vehicles account for majority of today's emissions**
- Emissions decline significantly by 2050, driven by electrification and decreasing vehicle miles traveled (VMT)
- Emissions for some sources are projected to grow despite increasing EVs on the road and decarbonizing the electric grid.



Waste

- Emissions from waste and wastewater increase by 2050 as the sector keeps up with demand associated with population growth.



Agriculture

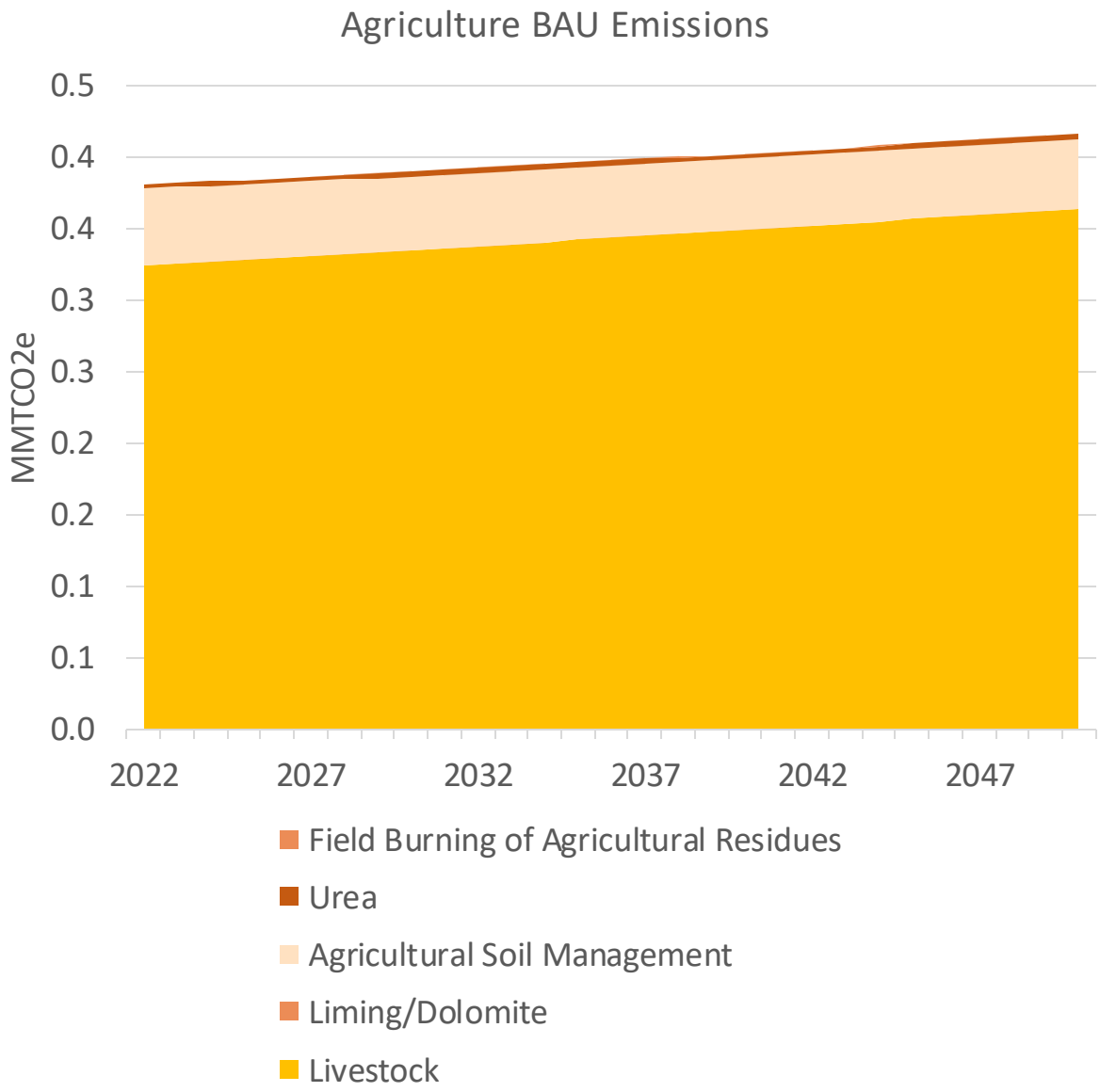
- Emissions from livestock account for largest share and increase steadily by 2050

Emission Sources

Livestock: digestive processes and manure management

Agricultural Soils: soil management activities (e.g., irrigation, drainage, tillage practices) and indirect processes (e.g., fertilizer run-off)

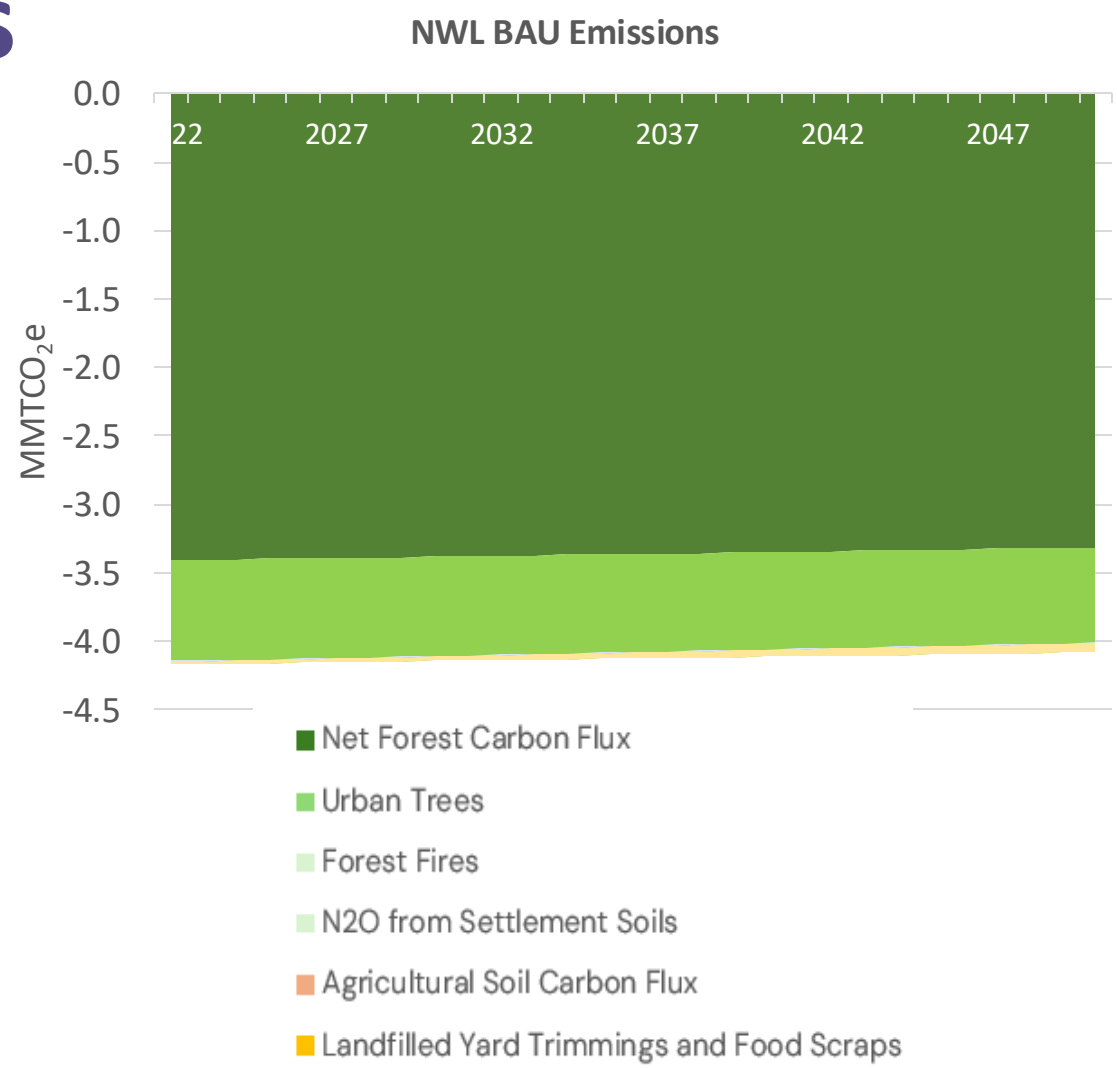
Urea & Liming/Dolomite: fertilizer use and soil enhancement



Natural & Working Lands

Natural and working lands sector is associated with **net negative GHG emissions** because plants and soil sequester emissions

- Forests are projected to store less carbon by 2050 than they do today, largely due to development and land conversion



Co-Benefits You Want to Achieve in Knoxville: Social/Equity

Investment into community spaces

- Increased green spaces and tree canopy cover

Creation of new jobs

- Opportunities through EV expansion and building efficiency efforts

Increased accessibility

- Expanded EV rideshare options
- Expanded public transit and reduced wait times

Help low-income communities install energy efficiency upgrades

- Incentives and technical support to make improvements affordable and accessible
- Lower energy bills

Co-Benefits You Want to Achieve in Knoxville: Public Health

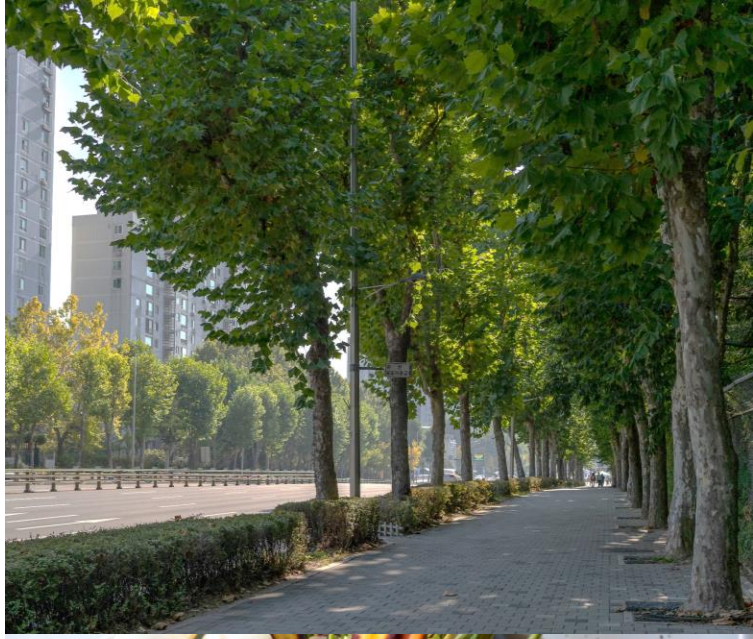
Improvement of air quality

- Optimization of freight routes and expansion of electric school buses decreases exposure to harmful fumes and improves overall air quality. This protects respiratory health.

Protection against urban heat island (UHI) effect

- The enhancement of tree canopy defends against UHI and protects community members from high heat exposure.

- **Healthy food**
  - Farming partnerships make fresh fruits and vegetables more accessible and encourage people to make healthier choices.



Co-Benefits You Want to Achieve in Knoxville: Economic and Workforce Development

Creation of job opportunities within Knoxville

- Jobs to advance sustainable construction, manufacturing, EV deployment

Professional development opportunities

- Linking trade schools and training programs to CCAP projects and demand
- Introduce green careers to youth (Ex: Planting initiatives, school gardens, field trips)
- Creation of employment pathways for highschoolers (Ex: Electricians)

Creation of circular economy

- Restaurants are connected to farmers and organics processing facilities

ACTION:

OUTCOMES	Environmental Resilience	Access to Innovation	Economic Opportunity	Community + Capacity Building	Quality of Life	Other Benefit:	Other Benefit:	Other Benefit:
Likely Benefits:								
Project Purpose Statement:								
Key Partners: [Who needs to be included?]								
Important Considerations and Unintended Consequences:								

	Yes	No	Recommend with Reservations
Recommend Moving Forward:			

CCAP Sector or Climate Measure:

CCAP Equity Outcomes Matrix

- ● Major potential benefits
- ◐ Moderate potential benefits
- ○ Some potential benefits
- – No anticipated benefits and might add burden

Across CCAP Sector Measures:	Environmental Resilience	Access to Innovation	Economic Opportunity	Community + Capacity Building	Quality of Life
Measure B1: Increase uptake of energy efficiency and weatherization of residential, commercial, and industrial buildings.	○	○	○	○	○
Measure T10: Expand and improve public transit infrastructure to create safe, reliable and affordable options for the region.	●	●	●	●	●
Measure E12: Develop, invest in, and provide marketing outreach and education around distributed clean energy options, including onsite solar and community choice solar.	◐	◐	◐	◐	◐
Measure A18: Create opportunities for, reduce barriers to, and increase education about small-scale farming and benefits.	–	–	–	–	–

Setting ourselves up for an actionable plan

1. **Assess where we are.** What climate action is ongoing in the region? What actions, actors, or organizing can we leverage to create workable measures that address our GHG reduction needs?

2. **Decide where we want to go.** Which GHG reduction measures could achieve economy-wide GHG reductions? Can these measures also achieve co-benefits for our community like improved health, economic, and social outcomes?

3. **Understand what: must happen, should happen, could happen, or won't happen**

Activity: Identifying Critical Climate Actions

Impact + Feasibility

- At your sector table, your breakout group will select 3-5 measures to work on.
- Participants will work together to sort each action into **must happen, should happen, could happen, or won't happen.**

- As you discuss the action, think about questions like:
  1. *Which actions have notable feasibility concerns vs. which ones are "low hanging fruit"?*
  2. *Which actions are interdependent on each other for implementation?*
  3. *Which actions are critical to achieving your priority benefits?*

Feel free to make your voice heard through sticky notes!

Knoxville Regional Climate Action Prioritization

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Get Involved With Next Steps!

- August/September: CCAP draft released to working groups for comment
- October/November: CCAP publication
- Fill out the action survey using this link or QR code: https://forms.office.com/r/kCcxxE4fSz

For more information, contact us at **contact@knoxbreathe.org**

Be on the lookout for
Public Engagement Events in Summer 2025!