MASSACHUSETTS CLEAN ENERGY CENTER®

Massachusetts Climate Careers: Powering the Future

Transforming Transportation

What would need to change in order to make all cars and public transit electric?

Electric DC circulator bus at charging station.

Today's Agenda

- The Big Question and My Climate Goals
- Climate Watch and Discussion
- Clean Electric Transportation
- Design a Downtown Charging Network
- Takeaways and Closing

The Big Question

How can electric vehicles support our transition away from fossil fuels?

My Climate Goals

When you complete this lesson, you'll be able to:

1. Describe the benefits of electrifying transportation and explore solutions to some of the most significant barriers.
2. Identify climate-critical professionals who work on electric vehicles and charging infrastructure.
3. Discuss what communities need to electrify transportation fully.

Transportation Heroes

Roles in electric transportation projects:

- **EV technicians**: Maintain and repair electric vehicles
- **EV charging equipment technicians**: Install and service charging stations
- **Engineers (automotive and chemical)**: Design vehicle systems and improve battery technology
- **Car salespeople**: Educate customers on EV benefits and maintenance needs

Climate Watch: Video

Climate Watch Discussion

1. Why is it important for communities to be actively involved in clean energy projects?
2. What role do electricians and other skilled trades play in the clean energy transition?
3. What stood out to you most about this video and the idea of working in electric transportation?

MA Plan to Lower Transportation-Related Carbon Emissions

Strategy 1

Improve alternatives to personal vehicles for transportation

Strategy 2

Transition most vehicles on the road to electric vehicles

Transit-Oriented Development

Designing and building communities so that housing, shops, and offices are located near accessible public transit options

Transit-Oriented Development

- Reduces the need for cars by making public transit more accessible
- Lowers emissions by decreasing vehicle miles traveled
- Increases walkability and bikeability of communities
- Encourages a sustainable and livable community structure

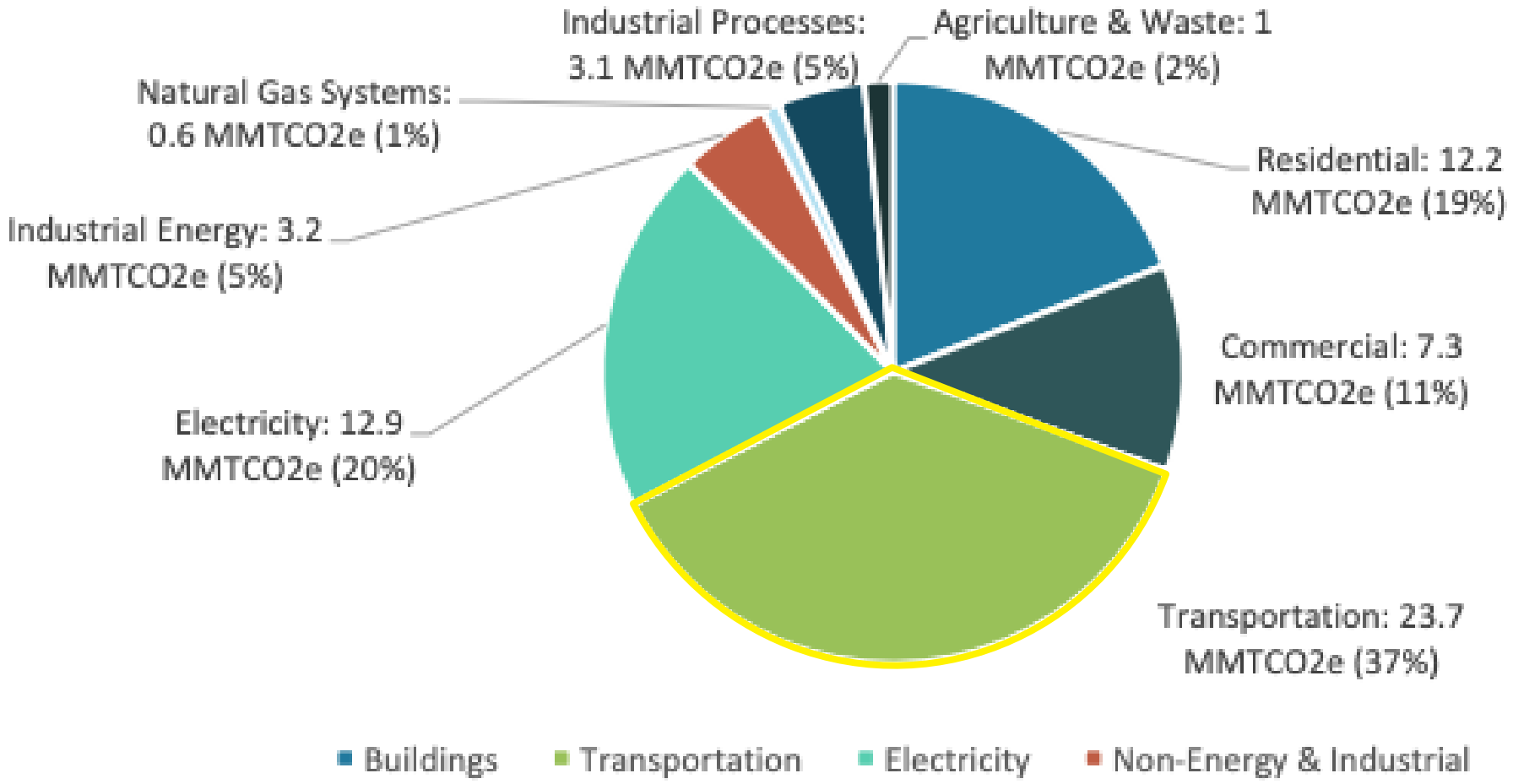
Electric Vehicles in Public Transit

MA plans to transition public transit vehicles to electric options to reduce emissions and improve air quality:

- Electric buses for densely populated urban areas
- Electric rail for high-traffic areas and long-distance travel
- Electric school buses for transportation in school zones

Why Electrify Transportation?

Figure 1.2. Distribution of Massachusetts GHG Emissions in 2020 (estimate)



Courtesy XXXXXX

Benefits of EVs

- Reduce air pollution
- Reduce noise pollution
- Use renewable energy sources
- Able to store and provide energy when needed

Courtesy XXXXXX

Challenges and Barriers

Resistance to transit-focused development projects

EVs and charging infrastructure are expensive.

Limited charging stations, especially in rural or crowded areas

Charging EVs on long trips is inconvenient.

Group Activity

The city planner wants a proposal for where to place EV chargers downtown.

In groups, design your network and prepare to present it to the city council for a vote.

Activity Debrief

Where will you place your stations? Provide your reasons.

How will you manage any concerns from the public?

Key Points

- Electric transportation helps reduce emissions, improve air quality, and support grid resilience.
- Barriers include cost, infrastructure limitations, and public resistance to change.
- Careers in EV technology are critical to achieving sustainable transportation.

Closing Activity

Before You Go

1. If you could add one feature to EV vehicles to speed up public transition, what would it be and why?
2. What do you think is the greatest challenge of transit-oriented development (TOD) projects?

MASSACHUSETTS
CLEAN ENERGY
CENTER®