



Sustainable Transportation

Transportation, Equity, and Environmental Justice





Welcome!

The Sustainable Transportation lessons are designed to introduce students to sustainable transportation and its link to equity and environmental justice. Each lesson explores sustainable transportation topics such as electric vehicles (EVs) and transportation infrastructure and activates students' prior knowledge and experiences to explore how our transportation habits impact our health and the environment. In Lesson 1, students learn foundational information about EVs, compare EVs to traditional gas-powered vehicles, and apply their knowledge by considering the impact of electricity generation as a factor when choosing an electric vehicle. In Lesson 2, students explore charging station infrastructure as they choose their ideal vehicle for a long-distance road trip. Students also apply their knowledge of EV charging infrastructure by role playing city council members addressing EV equity within their community. Lesson 3 encourages students to apply their knowledge of sustainable transportation as they take on the role of urban planners in redesigning a busy street in their community. All lessons can be taught independently or sequentially and can be adapted to fit the needs and contexts of individual classrooms. Teachers are encouraged to incorporate their community's unique transportation challenges to help students connect what they are learning about long-term solutions that prioritize people and the environment.

This program includes:

- ✓ **Robust and engaging lessons** that encourage awareness, personal development, role-playing, and critical thinking with a range of teaching strategies, including presentations, videos, activities, role playing, technology integration, and community extensions.
- ✓ **Student worksheets** that engage students in real-world learning exercises.
- ✓ **PowerPoint presentations** that provide multimodal student engagement to amplify lesson activities and support classroom facilitation.
- ✓ **Suggested additional resources** to support teachers and students in further engaging in sustainable transportation and environmental justice topics.



This program was inspired by and made possible by Austin Energy, a publicly owned utility serving the city of Austin, Texas. Austin Energy is committed to implementing effective strategies for resilience in the face of climate-related threats and inspiring other cities to do the same!



Content Overview

These lessons provide core instruction related to sustainable transportation including electric vehicles, electric vehicle charging and transportation infrastructure.

LESSON 1: Transportation EV-olution



Photo Courtesy of Austin Energy

Estimated time needed: one 90-minute session

This lesson introduces students to electric vehicles (EVs) as a sustainable transportation option. Students explore the history of EVs, including why internal combustion engine vehicles pushed early EVs out of the market and why they are increasingly popular today. Students learn about the different types of EVs, the advantages and disadvantages of EVs, and how EVs compare to traditional, gas-powered vehicles. They research their community's electricity sources and consider the environmental impact of energy generation. The lesson ends with students weighing factors that influence transportation choices and identifying an electric vehicle that promotes sustainable transportation while also meeting their needs.

LESSON 2: EV Charging: Are We There Yet?



Photo Courtesy of Austin Energy

Estimated time needed: two 90-minute sessions, plus additional time for presentations

This lesson introduces students to electric vehicle (EV) charging technology and charging station etiquette, while guiding them to explore our current charging station infrastructure. Students compare EV and ICE vehicles while planning a long-distance road trip. They analyze their findings to choose a vehicle based on factors such as driving range, cost, total time and distance, and environmental impact. Students then apply their knowledge about EV charging infrastructure to participate in a role play activity, in which they examine EV adoption challenges related to equity, identify the people for whom those challenges have the greatest impact, and consider solutions to address those challenges. Students come together as a class to choose actions that can address the needs of their community—actions that promote accessible, sustainable transportation and environmental justice.



Content Overview, continued

LESSON 3: Transforming Transportation



Photo Courtesy of Austin Energy

Estimated time needed: one 95-minute sessions, plus time for presentations

This lesson begins by having students share what they know about sustainable transportation and consider the impact of our current transportation systems on aspects of our lives such as our health and the environment. Students are introduced to elements of a transportation system, including safety, cost, convenience, user experience, congestion, and environmental impact, as well as the need for infrastructure to promote sustainable transportation. Students then apply what they have learned about sustainable transportation by taking on the role of urban planners to redesign a busy street in their community, aiming to improve accessibility and advance environmental justice.



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Cover Image: Courtesy of Austin Energy

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