



Curriculum Units by Fellows of the National Initiative
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How Should I Get to School? A Life Cycle Assessment of DC's Public Transportation

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Life cycle assessments (LCAs) have been at the forefront of many decisive pieces of environmental legislation; serving municipalities, governments, and companies as a tool for decision making. To further promote depth of knowledge and systems thinking, students will develop individual LCAs with regards to the District of Columbia's public transportation system and decide which mode of transportation (i.e., bus, Uber, electric scooter, or metro) will be most energy efficient/cost effective for them. This three-week unit will integrate the physical principles of energy efficiency (i.e., conservation of energy and entropy) with economics (i.e., cost per kWh for metro, daily ridership cost). The locality of each student will affect their overall decision(s) based on availability of resources and access to various types of public transportation in their surrounding neighborhoods. This unit seek to address a rather simple question with underlying complexities and nuances, *how should I get to school?* Through the exploration of data analysis and modeling students will refine their skills in conceptual mapping with regards to energy networks among the transportation sector in the District of Columbia.

(Developed for Physics, grade 11; recommended for Physics and Engineering, grades 11-12)

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