

# Renewable Energy Debate: Student Activity

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## Learning Goals

- Students will understand the need to move beyond a petroleum based energy system.
- Students will understand the need to diversify the global energy portfolio.
- Students will be able to effectively communicate this new information by having a thorough understanding of differing viewpoints.

## Scenario

In a heroic attempt to curb climate change, the City Council of Nocarbondale, Illinois is meeting to devise a plan to restructure their entire transportation system with economic stimulus funds. The entire town has been invited to this meeting, along with representatives from all of the major energy sectors and transportation niches.

The City Council (your teachers) is giving each group a chance to make a case for their approach to Nocarbondale's new transportation plan. There will be time for discussion and questions after each presentation. At the end of the meeting the group will be asked to come to a consensus as to how the city will spend its funds. Will we be purchasing a whole fleet of ethanol ready cars for the town? Will we all be using public transportation? Will we be using petroleum for the rest of our lives?

## Procedure

1. Students should organize themselves into teams.
2. Each team will be assigned an energy source or transportation alternative to research.
3. Teams will conduct Internet research on their topic. The goal of this research is to prepare a 5 minute presentation advocating your assigned topic. The team should also be prepared to answer questions and address concerns that may be raised by other teams. We have provided each group with a list of Internet resources to help you get started. Feel free to seek out additional sources.

**Research should focus on the cost, environmental impacts, and social impacts pertaining to:**

- **Short-term benefits**
  - **Long-term benefits**
  - **Short-term concerns**
  - **Long-term concerns**
4. Once your team is prepared for your 5 minute presentation and follow-up questions from the audience, sign-up for a presentation slot.

## Sources of Information

### Petroleum

[http://www.eia.doe.gov/oil\\_gas/petroleum/info\\_glance/petroleum.html](http://www.eia.doe.gov/oil_gas/petroleum/info_glance/petroleum.html)

<http://www.goarticles.com/cgi-bin/showa.cgi?C=651190>

<http://www.opec.org/home/>

<http://www.api.org/>

### Public Transportation

<http://www.publictransportation.org/>

<http://www.transitchicago.com/>

[http://www.firstgroup.com/corporate/csr/environment/benefits\\_of\\_public\\_transport.php](http://www.firstgroup.com/corporate/csr/environment/benefits_of_public_transport.php)

<http://people.hofstra.edu/geotrans/eng/ch6en/conc6en/ch6c4en.html>

### Natural Gas

[http://www.eia.doe.gov/oil\\_gas/natural\\_gas/info\\_glance/natural\\_gas.html](http://www.eia.doe.gov/oil_gas/natural_gas/info_glance/natural_gas.html)

<http://www.eia.doe.gov/kids/energyfacts/sources/non-renewable/naturalgas.html>

<http://www.naturalgas.org/environment/naturalgas.asp>

<http://www.energyjustice.net/naturalgas/>

[http://www.afdc.energy.gov/afdc/fuels/natural\\_gas.html](http://www.afdc.energy.gov/afdc/fuels/natural_gas.html)

### Ethanol

<http://www.afdc.energy.gov/afdc/ethanol/index.html>

<http://www.eia.doe.gov/kids/energyfacts/sources/renewable/ethanol.html>

[http://www.nrel.gov/learning/re\\_biofuels.html](http://www.nrel.gov/learning/re_biofuels.html)

[http://www.ucsusa.org/clean\\_vehicles/technologies\\_and\\_fuels/biofuels/the-truth-about-ethanol.html](http://www.ucsusa.org/clean_vehicles/technologies_and_fuels/biofuels/the-truth-about-ethanol.html)

<http://www.eia.doe.gov/oiaf/analysispaper/biomass.html>

## Biodiesel

<http://biodiesel.org/what-is-biodiesel/biodiesel-fact-sheets>

<http://www.afdc.energy.gov/afdc/fuels/biodiesel.html>

[http://www.nrel.gov/learning/re\\_biofuels.html](http://www.nrel.gov/learning/re_biofuels.html)

[http://www.ucsusa.org/clean\\_vehicles/technologies\\_and\\_fuels/biofuels/biodiesel-basics.html](http://www.ucsusa.org/clean_vehicles/technologies_and_fuels/biofuels/biodiesel-basics.html)

<http://www.eia.doe.gov/oiaf/analysispaper/biodiesel/>

## Electric Car

<http://www.fueleconomy.gov/Feg/evtech.shtml>

<http://auto.howstuffworks.com/fuel-efficiency/vehicles/electric-car.htm>

<http://www.afdc.energy.gov/afdc/vehicles/electric.html>

<http://www.evworld.com/index.cfm>

<http://phev.ucdavis.edu/>

## Fuel Cells

[http://www.ucsusa.org/clean\\_vehicles/technologies\\_and\\_fuels/hybrid\\_fuelcell\\_and\\_electric\\_vehicles/](http://www.ucsusa.org/clean_vehicles/technologies_and_fuels/hybrid_fuelcell_and_electric_vehicles/)

<http://www.fueleconomy.gov/feg/fuelcell.shtml>

[http://www.afdc.energy.gov/afdc/vehicles/fuel\\_cell.html](http://www.afdc.energy.gov/afdc/vehicles/fuel_cell.html)

<http://www.fuelcells.org/>

<http://www.nfcr.uci.edu/2/default.aspx>

## Questions

1. During the debate which transportation alternative seemed like the most viable option? Why?
  2. What was the final consensus of the group? Do you agree? Why, why not?
  3. Popular media and scientific research both point to a future without petroleum based fuels. Is the only option to abandon petroleum as a fuel source? Why has petroleum been such a success as a transportation fuel?
  4. What is the value of understanding all of the alternative transportation options available? Why not just pick the best one and throw everything behind it?
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