

# Choosing a GREEN Car

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**INTRODUCTION:** Environmental issues are important to everyone living on the earth today. Global warming, air pollution, and use of non-renewable resources are all sources of concern. This project uses online government information to compare cars on the following variables: annual petroleum consumption, greenhouse gas emissions, and air pollution score. Greenhouse gases refer to emissions that cause global climate change. Air pollution refers to vehicle emissions that are harmful to human health and/or cause smog.

**NCTM STANDARDS:** Data Analysis & Probability, Communication, Connections, Representation, Problem Solving

**MATERIALS:** Computers with Internet connection and spreadsheet software

**GOALS:** Students will collect online data, represent it in a table and a graph, and analyze outcomes to draw conclusions.

**ACTIVITIES:**

- Working in small groups, students will select five different cars to research.
- Using the <<http://www.fueleconomy.gov>> website, they will find each car and record the annual petroleum consumption, greenhouse gas emissions, and air pollution score. See Worksheet.
- Students will record the data in a spreadsheet and construct a line graph to represent it visually.
- Each group will submit a report, including their table, graph, and conclusions about choice of car.

**ASSESSMENT:** Group reports will be graded using attached rubric. Each individual student will submit a reflection about the data-driven decision process and their thoughts about “going green.”

# Choosing a GREEN Car

1. Go to: <http://www.fueleconomy.gov>
2. Click on “Find and Compare Cars” or “Hybrids, etc.”
3. Select a “Model Year” and then a “Make”
4. Select a car. Click “Compare.”

**www.fueleconomy.gov**

Find and Compare Cars | Gas Mileage Tips | Gasoline Prices | Your MPG Will Vary | Why is Fuel Economy Important? | Your MPG | Hybrids, Diesels, Alt Fuels, Etc. | Tax Incentives | Extreme MPG

U.S. Department of Energy | Print the Fuel Economy Guide | U.S. Environmental Protection Agency

**2006 Saturn Ion**

Use Your Gas Prices & Annual Miles | Switch to Metric units | Compare side-by-side

**Estimated New EPA MPG**

REGULAR GASOLINE

MPG ratings for this vehicle have been revised

23 City | **26** Combined | 32 Hwy

Compare to Official EPA Window Sticker MPG

**MPG Estimates from Drivers Like You**

Average based on 5 vehicles.

Learn more about "Your MPG"

Lo 25 → Hi 34

30.4

View Individual Estimates | Disclaimer

**Energy Impact Score**

**Annual Petroleum Consumption**  
(1 barrel=42 gallons)

13.2 barrels/year

Environment

Worst Best

**Greenhouse Gas Emissions\***

16.2 3.5

7.1 tons/year

**Air Pollution Score**

0 6 10

Show Scores for California and Northeast States  
Show Detailed Air Pollution Information

**More about emissions....**

- What's the difference between air pollution and greenhouse gas emissions?
- Want more info? See EPA's Green Vehicle Guide

5. Record data in table.

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See <http://www.fueleconomy.gov>

Car	Annual Petroleum Consumption	Greenhouse Gas Emissions	Air Pollution Score

Notes:

**Annual Petroleum Consumption** indicates the number of barrels of petroleum used by the vehicle each year. This includes fuel burned by the vehicle as well as petroleum used in producing, refining and delivering it. Using fewer barrels is better.

The **Greenhouse Gas Emission** rating shows the annual amount of greenhouse gases emitted by the selected vehicle in relation to the lowest and highest amounts emitted by other vehicles. Greenhouse gases refer to emissions that cause global climate change. A lower score is better.

The **Air Pollution Score** represents the amount of health-damaging and smog-forming airborne pollutants the vehicle emits. Air pollution refers to vehicle emissions that are harmful to human health and/or cause smog. Scoring ranges from 0 (worst) to 10 (best). A higher score is better.

### Choosing a GREEN Car – Scoring Rubric

	Excellent		Satisfactory		Below Expectations	
	5	4	3	2	1	0
Internet Research _____	Students effectively navigated Internet and easily gathered information from electronic database.		Students navigated Internet and gathered information from electronic database.		Students required assistance to navigate Internet and gathered information from electronic database.	
Data Table _____	Data are presented accurately and neatly in table.		Data are presented mostly accurately and neatly in table.		Data table contains several inaccuracies and/or is not neat.	
Graph _____	Graph is appropriate and accurately represents data. Graph includes title, legend, and labels.		Graph is appropriate and mostly accurately represents data. Graph includes title, legend, and labels.		Graph may not appropriately represent data and has inaccuracies and/or is missing titles, legend, or labels.	
Analysis and Conclusions _____	Students carefully analyzed the information collected and drew appropriate conclusions supported by evidence. Mathematical reasoning was evident.		Students' conclusions could be supported by stronger evidence. Level of analysis could have been deeper. Mathematical reasoning was mostly adequate.		Students' conclusions simply involved restating information. Conclusions were not supported by evidence. Mathematical reasoning was not evident.	
Individual Reflection _____	The reflection responds to the group process and to thoughts on "Going Green." The paper is well written and organized with complete sentences and no mechanics problems.		The reflection responds somewhat to the group process and to thoughts on "Going Green." The paper is well written and organized with complete sentences and few mechanics problems.		The reflection does not clearly respond to the group process and to thoughts on "Going Green." The paper is poorly written and not well organized with several mechanics problems.	

**Total** \_\_\_\_\_

Comments:

Sample Solution:

Car	Annual Petroleum Consumption	Greenhouse Gas Emissions	Air Pollution Score
Accord	13.2	7.1	6
Taurus	17.1	9.2	3
Prius	7.4	4.0	8
Hummer	22.8	16.2	6
Viper	26.3	14.1	2

