

## Energy & Environment Exploration Module I



# Charting School Energy Resources



Modules by Green Map® System

Global Website:

[GreenMap.org/youth](http://GreenMap.org/youth)

Interactive:

[OpenGreenMap.org](http://OpenGreenMap.org)

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In this module, you will learn about Charting School Energy Resources and climate change while creating a Green Map. What is a Green Map? It is a locally-made map that uses universal Green Map® Icons to highlight the green living, natural and cultural resources in the mapmaker's community. There are hundreds of Green Map projects around the world, and each is as unique as the people making it!

You and your class (or group) will determine your Green Map's specific focus, its design and whether to include narratives, tips, photos and details about the sites identified by the icons. Plan how you will share it – will it be printed or a digital, mural or poster Green Map?

Created for NYC students, Green Map System's Energy & Environment Exploration Modules introduce activities and learning resources designed to help you create a greener and healthier city. Find out more inside!



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## CHARTING SCHOOL ENERGY RESOURCES

Climate change – what can your school do about it? Explore this module and you will learn about the energy resources your school uses, and how to promote better options and habits while creating a School Energy Resources Green Map. It's a powerful way to address many environmental and social problems, from global climate change to asthma to oil spills, all by acting locally, and thinking globally.

### A. PROJECT IDEAS

1. Calculate how much CO<sub>2</sub> your school creates. Download a carbon calculator ([clearwater.org/carbo.html](http://clearwater.org/carbo.html)) or online tools like the [MakeMeSustainable.com](http://MakeMeSustainable.com) calculator. See what changes you can make to lower the amount of CO<sub>2</sub> your school generates. See if some of the 'low-hanging fruit' (easiest changes) can be made before your map is completed, and add the measurable savings to the map! Every bit helps!
2. A carbon calculator can give you a quick view of your own energy consumption and emissions, including home, food choices, waste and transportation use. Your parents can help you find energy bills to enter in the correct amounts. Is there a difference from summer to winter in energy use? How can you and your family help lower the total?
3. Create a 3D model or "blueprint" of the energy sites around the school. Include your suggestions of ways to lower energy use. Where should solar panels or other generators go?
4. Propose ways your school could use less energy and resources. As they are implemented, ask for 10% of the future savings in the electric bill to support your school's environmental club or Green Map project.
5. Create an illustrated poster to educate students, teacher and administrators to use less energy and make better energy choices. Work together to make the poster multilingual.
6. Create an exciting multimedia (YouTube video, podcast, slideshow, etc.) energy tour of your school, or one about conserving energy. To post on [YouTube.com](http://YouTube.com), export as Quick Time Player File & upload it. Place the 'embed' code on your own or your school's website or blog.
7. Write a letter to your school principal with details on how the school could make better energy use and purchasing choices. Include a copy of your energy Green Map, and the photos, video and posters you made.

### VOCABULARY:

**Climate Change**

**Emissions**

**Fossil Fuels**

**Sustainability**

**Green Buildings**

**Fuel Cells**

**Geothermal Systems**

**Solar Panels**

**Bio-based Fuels**

**Wind or Water Power**



## B. CREATE A SCHOOL ENERGY RESOURCES GREEN MAP

1. Explore your school campus energy-related options and choose the specific area to map (school and school yard only, or add a block or two and extend the area if you are spending more time on it). You can, for example, chart Everyday Options, Investments, and Impacts or you can set your own themes.
2. Pick energy related sites that are located in your mapping area. For example, computers and air conditioners around your campus, CFL light bulbs (and day lighting) in your classroom, parking lots/bike racks/bus stops, and so forth. Record information about each chosen site on the field report form on the next page— consider asking a local expert (school facilities manager, teacher, etc.) to give you some pointers for site suggestions, too. What other information do you need?
3. Decide how will people use your map: online, as a poster, folding map, etc.?
4. Compile all students' field reports into a spreadsheet. Add Green Map Icons, descriptions, drawings, and photos to each site description. Then chart them on a base map. Or you can add them to an interactive map at [opengreenmap.org](http://opengreenmap.org)
5. Collect and include energy saving tips and encourage people to try online resources, too,
6. Design an activity graphic or add a photo about conserving energy.
7. Display and share your Green Map in your school library, at a community board or parent/ teacher meeting and/or online (upload a PDF of a scanned, photographed or computer-based map).



### FIELD REPORT: School Energy Resources Green Map

My name:	Date:
Place name:	City:
Site address:	Email / URL :
Audience:	
How does this connect to what you are learning in school? .....	
Image drawing: (attach image)	Digital photo title:
Reasons for including it on Energy Green Map: .....	
Would this site contribute to or help stop climate change? .....	
Description of site .....	
Could this site be made more energy efficient? How? .....	
Is this site dangerous to our health or environment? Why? .....	



## CIRCLE YOUR FIELD REPORT'S GREEN MAP ICON CHOICE



Solar energy



Wind energy



Alternative Fuel/  
Vehicles



School trees



Green roofs



Farmer's markets



Energy education  
resources



Green business &  
service



Water recycling



Reuse site



Energy  
Conservation



Danger zone



Power generation  
site

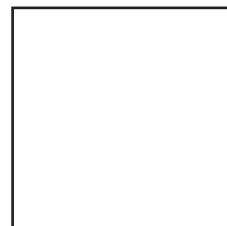
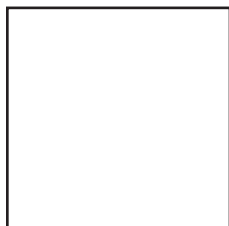
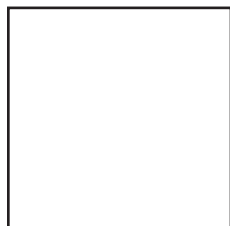


Traffic hazard Zone



Landfill

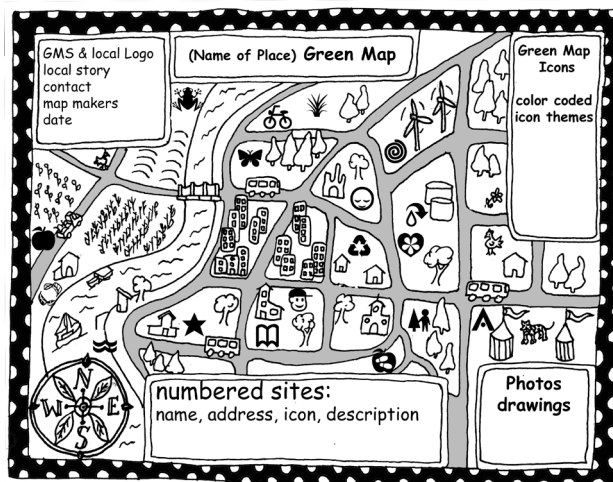
## DRAW YOUR OWN ICONS HERE



Example Mural Icon

## GREEN ENERGY ACTIVITIES

- Create a school retrofit or remodeling design to show how your school could use sustainable and alternative energy, such as solar, wind or bio-diesel.
- Research how a green roof could be added; how food waste could be composted; what additional materials could be recycled; and how local food (start with apples!) and how non-toxic cleaning products could be purchased for your school.
- Draw an image or make a model of your school with these proposed energy and related design changes.
- List 5 cool local vacations students your age could take locally instead of flying or driving somewhere far away. How would you get there? What would you do? How much CO<sub>2</sub> would be generated? Compare with a trip to Paris.



## C. RESEARCH & ESSAY QUESTIONS

1. Plan a school wide energy saving campaign!
  - a. Plan your campaign and how you will let everyone know the outcomes.
  - b. What uses the most amount of energy at your school? Theatre, gym, or field lights, or something else?
  - c. Are there motion detectors or low light-systems that help save energy? If not, why not?
  - d. How can you creatively encourage students and teachers to shut off computers, printers, & lights at the end of each day?
  - e. What additional steps can be taken to reduce the energy and 'eco-foot print' of the school?
  
2. Products from around the world are used in your school. How does this impact energy conservation?
  - a. Check the labels on your clothes, shoes, school supplies and food etc. Use a map of the world and draw out the distance the products traveled to get to your house/class room.
  - b. Would buying locally made products cut down on wasteful transportation? Why are so many products made overseas?
  - c. Does buying online or from catalogues add an extra burden or reduce it?
  
3. Explain where virgin paper, metals, plastics, glass come from and how it would save energy and resources if it was recycled and reused. What are some of the saved and raw materials?
  
4. Compare your local Green Map with other printed maps of your area. Discuss these questions in small groups!

Look at your local Green Map and list:

  - a. Which is the most aesthetically pleasing? Why?
  - b. Who is the map designed for? Is it adults, children or all ages? Is the 'target audience' residents or visitors?
  - c. What colors/color schemes convey the information on the map the best, and are the easiest to understand?
  - d. Which map is the easiest to read and understand? Why?
  - e. Which is the most technically advanced map? Does the advanced map communicate effectively?
  - f. Do you like the folding style of the maps or would you fold them differently?
  - g. What changes would you suggest for a second printing of your local Green Map?
  - h. Each student or group should present their findings from rating and comparing their different map
  - i. designs and information to the class.
  
5. Go to your local Green Map's website or map-maker office and find out:
  - a. How many Green Maps were printed?
  - b. What kind of inks & paper were used on the map?
  - c. How many people were involved in creating this Green Map?

## D. QUIZ

1. What contributes most to the emissions of carbon dioxide (CO<sub>2</sub>) and other greenhouse gases, and what can young people do about that?
2. How can the melting ancient glaciers in the Arctic affect our city?
3. What reflects more sunlight: glacier ice or melted glacier water? Which heats up the ocean more? (see “An Inconvenient Truth” DVD on climate change by Al Gore).
4. What is the difference between PV solar panels, solar hot water and passive solar? Which would be better for your school? Is it better to conserve energy or add solar power first?

## E. Look at your community's Green Map and list:

 3 bike organizations:			
 3 sites with solar energy:			
 3 ways to enjoy the waterfront:			
 3 types of public transportation:			
 3 ways you can use less energy:			
 3 community gardens/parks			
 3 ways you can waste less:			

### MORE YOU CAN DO!

- Turn off lights, TVs, computers, A/Cs and appliances (and unplug chargers) when not using them.
- Watch for printers and computers left on all the time.
- Wear a sweater indoors in winter so you can turn down heating.
- Close curtains/blinds on the sunny side on hot summer days.
- Invest in long-lasting compact florescent light bulbs - Save 75% on energy with CFLs!
- Walk, bike, carpool, or take mass transit to save on gas and emissions.
- Recycle and buy products with recycled materials and less packaging.
- Save energy with shorter showers. Have your school insulate the hot water tank and use a low flow showerhead, too.
- Help your school choose energy-efficient Energy Star equipment & appliances.
- Plant a tree at school. One tree can absorb one ton of carbon dioxide, and if placed well, can help insulate the school from hot summer sun and cold winter wind.
- Unplug chargers when not in use because they keep drawing energy even when nothing is being charged (cell phones, MP3 players, battery rechargers, etc.).
- Use power strips to turn off 'instant on' TVs and stereo systems or use a “Smart Power Strip” that shuts off power when a device is not being used.



## TAKE A FIELD TRIP!

Where exactly will you go? Here's some ideas:

- Visit a local business or public office that has built or retrofitted its building to be more environmentally sustainable. New buildings will usually have a LEED or other rating based on it's sustainability. Retrofitted buildings save even more energy than new buildings when the energy used in new construction is taken into account. Pay attention to how building energy consumption can be reduced, from solar panels and rainwater collection, to waste water recycling and green roofs.
  - Visit a local or regional farm. Buying local saves energy by reducing the amount of miles food has to travel, all the while supporting local agriculture.
  - Where does sustainable energy come from? Visit a solar or wind energy farm to see firsthand alternative energy resources at work.
- ♣ Check the your community's Green Map for more field trip ideas in your area.



## LINKS & RESOURCES

Learn all about EcoFootprinting  
🌐 [footprintnetwork.org](http://footprintnetwork.org)

Reporting on the Environment: 🌐 [Grist.org](http://Grist.org)  
"An Inconvenient Truth" (Al Gore's film)  
🌐 [Climatecrisis.net](http://Climatecrisis.net)

"The 11th Hour" (Leonardo DiCaprio's film)  
🌐 [11thHourAction.com](http://11thHourAction.com)

An interactive air pollution simulator:  
🌐 [Smogcity.com](http://Smogcity.com)

To learn about green rooftops:  
🌐 [GreenRoofs.org](http://GreenRoofs.org)  
Also see 🌐 [Coolroofs.org](http://Coolroofs.org)

Be sure to click Resources and see the Handbook's great ideas:  
🌐 [LiveEarth.org](http://LiveEarth.org)

An interactive air pollution simulator:  
🌐 [Smogcity.com](http://Smogcity.com)

Weather Channel to learn about local weather:  
🌐 [Weather.com](http://Weather.com)

Caluculate your impact :  
🌐 [Makemesustainable.com](http://Makemesustainable.com)

Rating different types of power service: 🌐 [Power-ScoreCard.org](http://Power-ScoreCard.org)

Climate change resources:  
🌐 [GreenHousenet.org](http://GreenHousenet.org)

EPA's Planet Protectors club for kids:  
🌐 [Epa.gov/epaoswer/osw/kids](http://Epa.gov/epaoswer/osw/kids)

Compare impacts of different lifestyles:  
🌐 [ConsumerConsequences.org](http://ConsumerConsequences.org)

Learn ways to make your school healthier:  
🌐 [HealthySchools.org](http://HealthySchools.org)

Climate change resources:  
🌐 [GreenHouseNet.org](http://GreenHouseNet.org)

United Nations Environment Program (TUNZA):  
🌐 [unep.org/Tunza/ep-rab](http://unep.org/Tunza/ep-rab)

Environmental education info:  
🌐 [Earth911.org/just-for-kids/](http://Earth911.org/just-for-kids/)

Epa.gov/epaoswer/osw/kids:  
🌐 [EPA's planet protectors club for kids](http://EPA's planet protectors club for kids)

Cartridge & cell phones recycling program:  
🌐 [GreenSchoolProject.com](http://GreenSchoolProject.com)

Weather Channel covers local weather and extremes/ preparedness:  
🌐 [Weather.com](http://Weather.com)

Carbon & Energy manager to see your impact:  
🌐 [MakemeSustainable.com](http://MakemeSustainable.com)  
Rating different types of electric generation:  
🌐 [PowerScoreCard.org](http://PowerScoreCard.org)

United Nations Environment Program (TUNZA) :  
🌐 [Unep.org/Tunza/](http://Unep.org/Tunza/)

Environmental education info:  
🌐 [Earth911.org/just-for-kids/](http://Earth911.org/just-for-kids/)

Learn ways to make your school healthier:  
🌐 [HealthySchools.org](http://HealthySchools.org)