

## Using GIS in the Classroom to Investigate Energy

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**Abstract:** This session presents an interdisciplinary science inquiry unit that uses a Geographic Information System to investigate the world's energy resources while promoting spatial thinking skills.

### **Description of the GIS Activities:**

#### *Where is the Best Place to Locate a New Solar Power Plant?*

Students use My World GIS to analyze annual average sunshine data to determine good locations for solar plants. Students investigate sunshine patterns at locations of existing and proposed solar power plants. Students analyze "newly planned" solar power plant locations in 2009 and will determine optimal locations to build new very large solar power plants.

#### *Where is the Best Place to Locate a New Wind Farm?*

Students use My World GIS to examine wind speed and land use patterns in Pennsylvania to determine the best place to locate a new wind farm in the Lehigh Valley.

#### *Investigating Hydroelectric Power Dams with My World GIS*

Students use My World GIS to examine and query features of hydroelectric dams in the United States. Students examine a shape file of 1,184 hydroelectric dams and analyze dams by height of dam, year of completion, river name, state name, watershed, reservoir volume, and capacity. Students examine the 10 most powerful USA dams. Students then create and analyze a layer of all Pennsylvania dams. Students query Pennsylvania dams by height of dam, year of completion, river name, state name, watershed, reservoir volume, and capacity.

#### *Investigating Coal Production and Consumption with My World GIS*

Students use My World GIS to investigate where coal reserves are located in the USA, and coal production and consumption for different countries. Students examine how coal consumption and production have changed over a 20-year period, 1984 - 2004, both worldwide and in the US. They also analyze relationships between coal consumption and country populations.

#### *Investigating Energy Resources for Navitas Isle with My World GIS*

Students analyze energy resources for Navitas Isle, a small island inhabited by 12,000,000 people. They will develop an energy policy for the island that has an efficient energy-resources mix with minimal impact on the environment. Students will apply and use GIS tools and knowledge from past activities to make decisions for the placement of solar power plants, wind farms, tidal power plants, geothermal power plants, biomass use, etc.