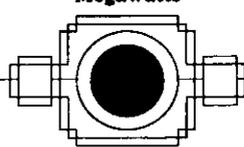


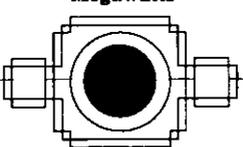
2,000-6,000 2,000-6,000 Megawatts 2,000-6,000



Hydro Power
Major Rivers Already Dammed

100 100 Megawatts 100

Purchase Cost \$300 Million

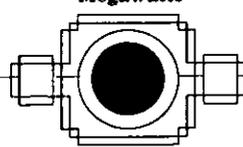


Operating Cost
Low - \$1 Million
Med - \$1 Million
High - \$1 Million

Wind Power
Annual Cost: \$30 Million

100 100 Megawatts 100

Purchase Cost \$500 Million

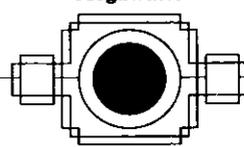


Operating Cost
Low - \$1 Million
Med - \$1 Million
High - \$1 Million

Wind Power
Annual Cost: \$50 Million

200 200 Megawatts 200

Purchase Cost \$1,000 Million

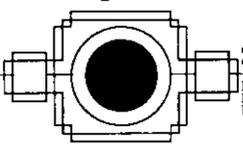


Operating Cost
Low - \$0 Million
Med - \$2 Million
Hi - \$10 Million

Solar Station
Annual Cost: \$100 Million

200 200 Megawatts 200

Purchase Cost \$1,600 Million

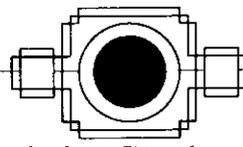


Operating Cost
Low - \$0 Million
Med - \$2 Million
Hi - \$10 Million

Solar Station
Annual Cost: \$160 Million

200 200 Megawatts 200

Purchase Cost \$2,000 Million

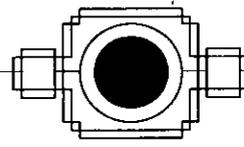


Operating Cost
Low - \$0 Million
Med - \$2 Million
Hi - \$10 Million

Solar Station
Annual Cost: \$200 Million

200 200 Megawatts 200

Purchase Cost \$800 Million

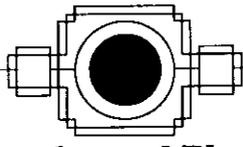


Operating Cost
Low - \$2 Million
Med - \$2 Million
Hi - \$2 Million

Geothermal Plant
Annual Cost: \$60 Million

200 200 Megawatts 200

Purchase Cost \$1,200 Million

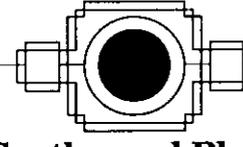


Operating Cost
Low - \$2 Million
Med - \$2 Million
Hi - \$2 Million

Geothermal Plant
Annual Cost: \$120 Million

400 400 Megawatts 400

Purchase Cost \$600 Million

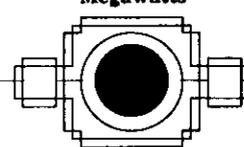


Operating Cost
Low - \$2 Million
Med - \$2 Million
Hi - \$2 Million

Geothermal Plant
Annual Cost: \$60 Million

100 100 Megawatts 100

Purchase Cost \$70 Million

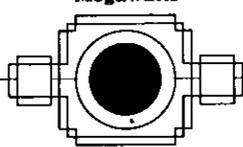


Operating Cost
Low - \$15 Million
Med - \$20 Million
High - \$40 Million

Cogeneration Project
Annual Cost: \$30 Million

500 500 Megawatts 500

Purchase Cost \$1,000 Million

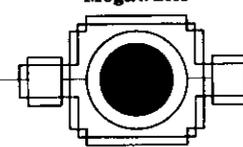


Operating Cost
Low - \$85 Million
Med - \$100 Mil
High - \$125 Mil

Coal Plant
Annual Cost: \$200 Million

300 300 Megawatts 300

Purchase Cost \$200 Million

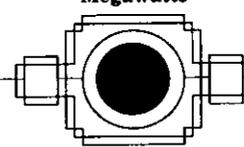


Operating Cost
Low - \$60 Million
Med - \$70 Million
Hi - \$135 Million

Combustion Turbine
Annual Cost: \$90 Million

200 200 Megawatts 200

Purchase Cost \$200 Million

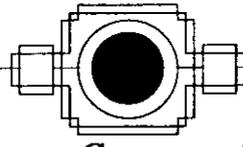


Operating Cost
Low - \$0 Million
Med - \$0 Million
High - \$0 Million

Energy Conservation
Annual Cost: \$20 Million

200 200 Megawatts 200

Purchase Cost \$400 Million

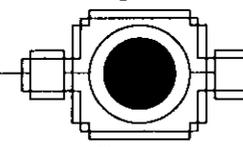


Operating Cost
Low - \$0 Million
Med - \$0 Million
High - \$0 Million

Energy Conservation
Annual Cost: \$40 Million

200 200 Megawatts 200

Purchase Cost \$800 Million

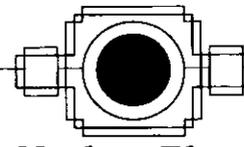


Operating Cost
Low - \$0 Million
Med - \$0 Million
High - \$0 Million

Energy Conservation
Annual Cost: \$80 Million

800 800 Megawatts 800

Purchase Cost \$4,000 Million



Operating Cost
Low - \$40 Million
Med - \$60 Million
High - \$75 Million

Nuclear Plant
Annual Cost: \$450 Million

Wind Power

Environmental Considerations

The greatest environmental impacts of wind turbines are visual. Some problems with television reception arise nearby. Areas suitable for siting large numbers of wind turbines tend to be far from load centers, making it necessary to build new transmission lines in most cases.

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Hydro Power

Environmental Considerations

Dams flood upstream banks with their reservoirs, these are often important farming & wildlife areas. Upstream gravel beds may be under too much or too little water for fish to successfully hatch their eggs. Water temperatures rise in the reservoir, increasing diseases among fish populations. Fish migrating upstream or downstream are impeded or killed as they pass the dams. Dams sometimes reduce streamflows to the point that downstream pollution becomes an even bigger problem. Dams also provide protection from flooding that may be necessary for cities along the river banks downstream (like Portland, Oregon).

Solar Station

Environmental Considerations

The environmental impacts associated with solar power plants are relatively minor compared to coal, nuclear, & combustion turbines. Some solar plants do burn small amounts of natural gas. Solar plants that drive steam turbines are dependent on a good supply of water. Photovoltaics rely on highly toxic materials in the manufacturing process, but these can usually be controlled fairly well. Solar generating plants do require large amounts of land area, may have significant impacts on desert area ecologies.

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Geothermal Plant

Environmental Considerations

Geothermal plants have relatively few adverse environmental impacts. However, many potential geothermal sites are in wilderness areas. The impacts of any industrial site in a wilderness area must be considered - for example, access roads must be built, transmission lines, and the need for water. Waste water may be a problem for some types of geothermal plants, but this can often be put back into the ground at the same depth it came from.

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Combustion Turbine

Environmental Considerations

Combustion turbines typically burn natural gas, although they can also burn fuel oil or diesel if necessary. Natural gas burns much more cleanly than coal, producing substantially less air pollution. They do produce substantial amounts of nitrogen oxides which contribute to acid rain, and carbon dioxide which contributes to global warming. In addition, gas turbines may be very noisy when operating and should be sited away from residential areas.

Coal Plant

Environmental Considerations

Burning coal produces several kinds of air pollution. Sulfur & nitrogen oxides are thought to contribute to acid rain which may kill forests & fish. Burning coal also releases carbon dioxide which contributes to heating the earth. This is called global warming & could possibly cause droughts & starvation around the planet. The ash left over from burning coal is a toxic material that must be disposed of carefully. Coal plants must use a large quantity of water for cooling, waste water can be cleaned fairly well.

Cogeneration Project

Environmental Considerations

Cogeneration facilities typically burn natural gas or waste material to produce energy. Although these materials tend to burn more cleanly than coal, they do produce air pollution. Usually the pollution is less than other kinds of generation because cogeneration makes more efficient use of energy produced by burning the materials anyway. Sometimes there are concerns over very toxic materials produced from cogeneration plants that burn city garbage.

Energy Conservation

Environmental Considerations

Energy conservation has overall positive environmental impacts. Conservation reduces the need for other resources which do have negative environmental impacts. It reduces the need for transmission lines as well.

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Nuclear Plant

Environmental Considerations

Radioactive wastes need to be dealt with, there is not yet a permanent disposal facility for highly radioactive wastes. Potential for catastrophic accidents such as Three Mile Island in Pennsylvania and Chernobyl in the Soviet Union. Small amounts of radioactive materials are emitted in routine operations. Additional radioactive material is produced in mining operations. Nuclear plants need large amounts of water for cooling and must be sited on larger rivers or near the sea.