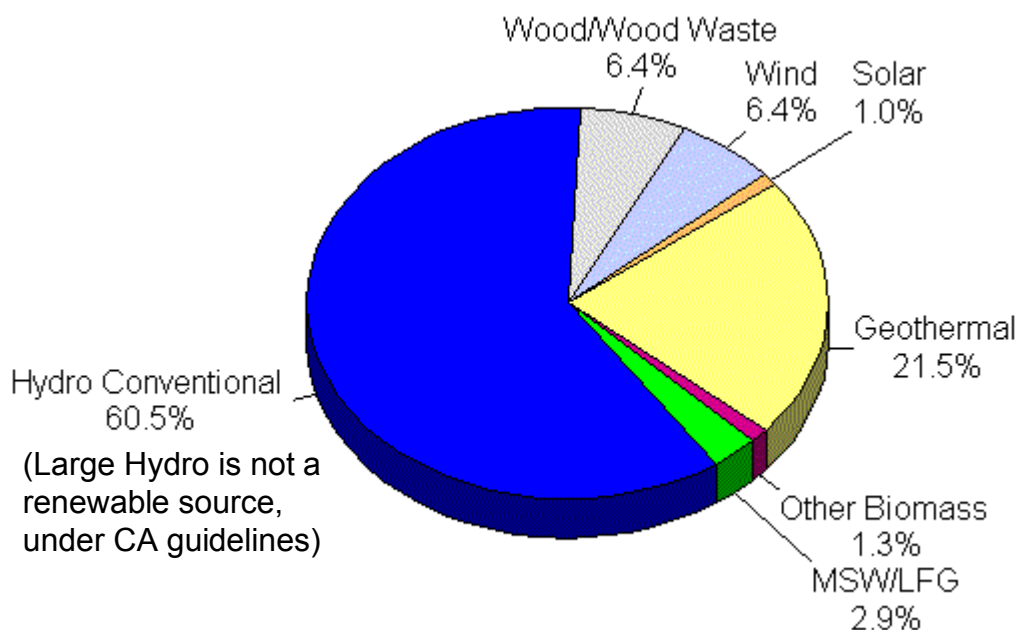


Renewable Energy in California

Renewable energy is less polluting than conventional power sources and is a key part of the State's Energy Action Plan.

Today, 11% of the state's electricity production comes from renewable or non-polluting sources

(source: California Energy Commission)



Renewable Energy is Expanding in California

California's Renewable Portfolio Standards (RPS) require that utilities obtain a specified amount of renewable energy as part of their portfolios.

California's RPS Standards:

- By 2010, 20% of power delivered to consumers will be from renewable sources
- Rises to 33% in 2020
- Other states have also passed these standards, but no two states have enacted exactly the same provisions.

Delivering Renewable Energy to our Communities

Renewable energy is frequently generated far from cities.

- Wind in the mountains and desert
- Small hydro in the foothills
- Biomass in remote forest regions
- Solar in the desert

The ISO's challenge: Evaluate new Transmission Lines to carry renewable power to the areas where it is used.

Biomass

Biomass is plant matter such as trees, grasses, agricultural crops or other biological material. It can be used as a solid fuel, or converted into liquid or gaseous forms, for the production of electric power, heat, chemicals or fuels.

- **Forest & agricultural waste products**

Wood is the largest biomass energy resource today. Other sources include food crops, grassy and woody plants, residues from agriculture or forestry, and the organic component of municipal and industrial wastes



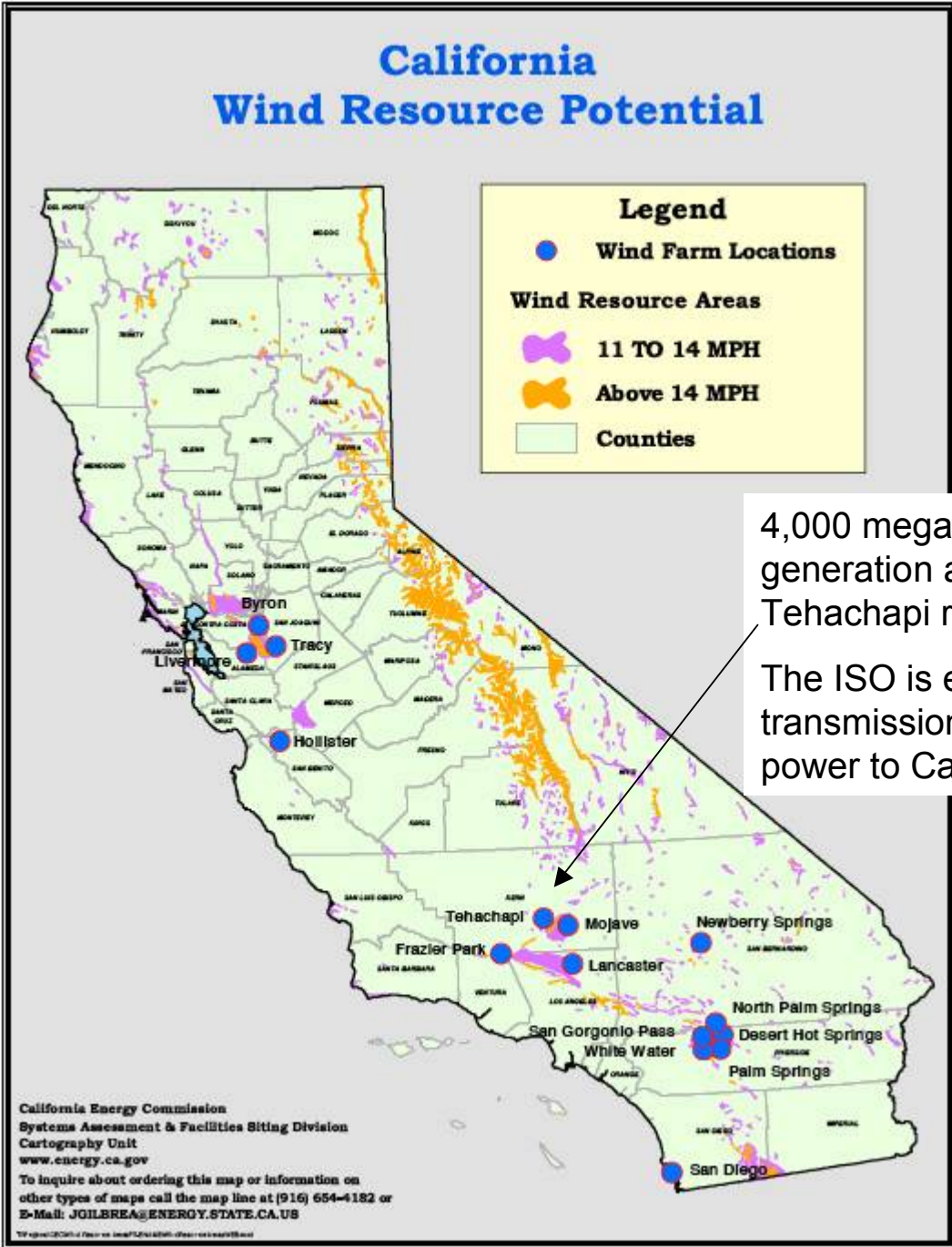
Other Biomass Energy Sources

- **Landfill methane gas**
- **Methane gas from cow manure**

Wind Generation

California is home to significant Wind Power Potential.

2,020 MW of wind capacity is installed in the State, producing 4,013 Gw-hrs in 2004.

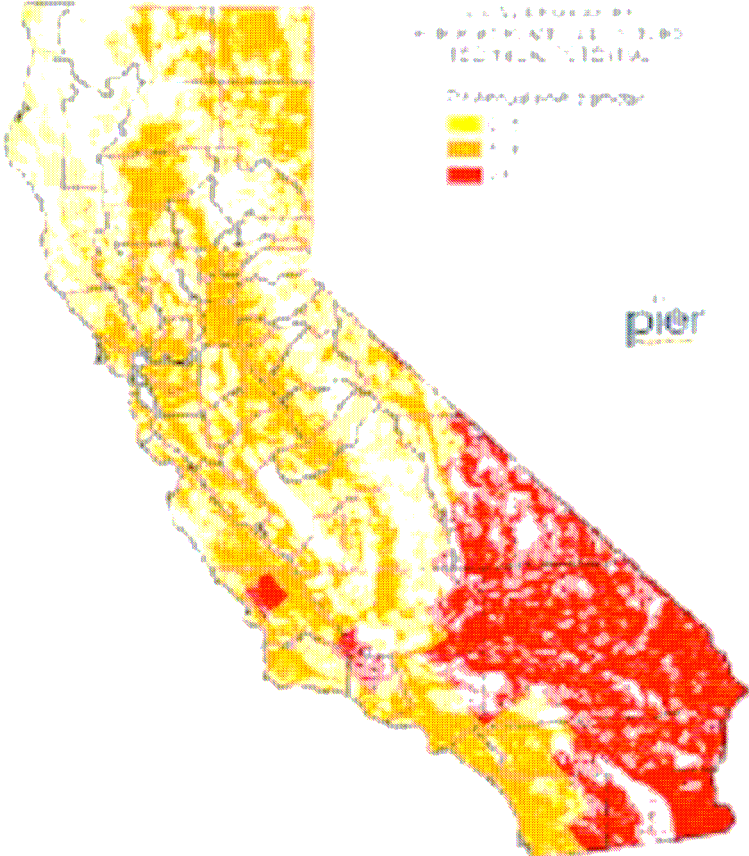


Solar Energy

California's is home to great solar energy potential.

Our Southern Desert is among the best regions in the U.S.

Figure 3: Technical PV Potential



Two Types of Solar Power

1. Solar photovoltaic

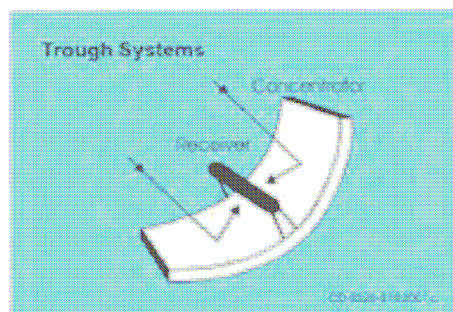
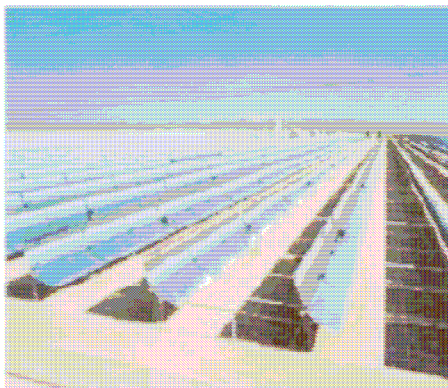
Convert s Sun's energy directly to electricity.



The State's Million Solar Roofs program, called the California Solar Initiative, is an 11-year, \$2.9 billion incentive program to install 3,000 MW of solar on a million homes, businesses, farms, schools and municipal buildings.

2. Solar thermal

Mirrors concentrate the sun's energy into heat conductors that transfer it to conventional steam turbine engines.



Geothermal Energy

California is home to 25 Known Geothermal Resource Areas (KGRAs), 14 of which have temperatures of 300F degrees or hotter.



New Transmission Lines deliver this clean power to cities.

Geothermal Energy

Geothermal energy is heat that flows to the surface from hot water and/or steam reservoirs or heated rock formations.

The geothermal energy potential in the Earth's mantle amounts to 50,000 times the energy of all oil and gas resources in the world.

California's geothermal power plants have an installed capacity of about 1,900 megawatts, displacing 2.5 million tons of CO₂ emissions annually, the equivalent emissions from 6.3 billion miles of passenger car use.

Installed Geothermal Power Plant Capacity:

Geothermal Resource Area	County	Existing MW	Percent of Total
East Mesa	Imperial	73	4%
Heber	Imperial	100	5%
Salton Sea (Including Westmoreland)	Imperial	350	19%
Coso Hot Springs	Inyo	300	16%
Geysers	Sonoma/ Lake	1000	53%
Honey Lake (Wendel-Amedee)	Lassen	6	<.1%
Long Valley Mammoth Pacific Plants	Mono	40	2%
California Installed Totals		1870 MW	

