



Improving Air Quality with Solar Energy

Many states are seeking additional air pollution control strategies. Zero-emission solar technologies, such as solar electricity and solar water heating, can help air quality and energy officials in cities, states, and federal agencies improve air quality, achieve Clean Air Act goals, and reduce pollution control costs for both industry and taxpayers.

Solar technologies provide energy for heating, cooling, and lighting homes and heating water without any direct emissions; as a result, these technologies can help reduce air emissions and improve air quality. The use of solar energy systems on buildings displaces electricity generation from coal, natural gas, and oil power plants, which can reduce air pollutants such as nitrogen oxides, sulfur dioxide, and mercury; and greenhouse gas emissions such as carbon dioxide.

This fact sheet highlights two examples where solar technologies can help states meet regulatory requirements, and examines regulatory use (under cap and trade and state implementation plans) and voluntary use of the technologies to reduce air emissions.

New Jersey Solar Incentives Help Reduce Emissions

The state of New Jersey's Clean Energy Program helps reduce emissions by promoting use of clean energy technologies, including solar energy. The program promotes solar energy by providing strong state incentives for solar power purchases, including saving homeowners, businesses, and industrial facilities up to 60% on solar installations, low-interest loans for businesses and schools that use solar technologies, and grants for utility-scale projects. As of August 31, 2007, more than 2,351 solar energy systems have been installed statewide on residential, commercial, and public buildings. See the Renewable Energy section of the New Jersey Clean Energy Program Web site at www.njcep.com for more information.

A DOE pilot project worked to quantify displaced emissions from New Jersey's Clean Energy Program, including 1,505 MWh of generation from solar energy during the summer ozone season to displace an estimated 1.13 tons of nitrogen oxides (NOx). To prevent these emissions, New Jersey must also retire NOx allowances because it is within a NOx emissions "cap-and-trade" region. New Jersey has policies for its NOx emissions trading program that facilitate this—a renewable energy set-aside and provisions for aggregation of small projects to meet the minimum avoided emissions level to receive allowances. (For more on the state's activities, see www.nrel.gov/docs/fy08osti/41173.pdf).

Eastern States Using Solar to Help Meet Emissions Targets

On March 2, 2007, nine states in the Ozone Transport Commission (the 12 states on the East Coast from Virginia to Maine, plus the District of Columbia) signed a memorandum of understanding (MOU) titled, "Among the States of the Ozone Transport Commission Concerning the Incorporation of High Electrical Demand Day (HEDD) Emission Reduction Strategies into Ozone Attainment SIP Implementation Planning." This MOU commits six of the states to pursue reductions in HEDD NOx emissions by 135 tons per day (total) by 2012 at the latest, and it includes measures to achieve these reductions in their 2007 ozone state implementation plans. Long term, the use of solar energy to help meet emissions reductions has the potential to substantially reduce the HEDD problem by providing customer-sited generation that coincides with high demand.



Credit: Courtesy of Powerlight Corporation

This 1.8-megawatt solar electric system on the Santa Rita Jail in Dublin, California, consists of three acres of solar photovoltaic panels that help reduce the use of the facility's utility-generated electricity by 30%.

State HEDD Reduction Commitments

State	NOx (tons per day)	Percent Reduction from HEDD Units
CT	11.7	25%
DE	7.3	20%
MD	23.5	32%
NJ	19.8	28%
NY	50.8	27%
PA	21.8	32%
Total	134.9	

Source: Ozone Transport Commission (2007). "MOU 07-01 Concerning Incorporation of High Electricity Demand Days Emission Reduction Strategies into Ozone Attainment SIP." <http://www.otcair.org>.