

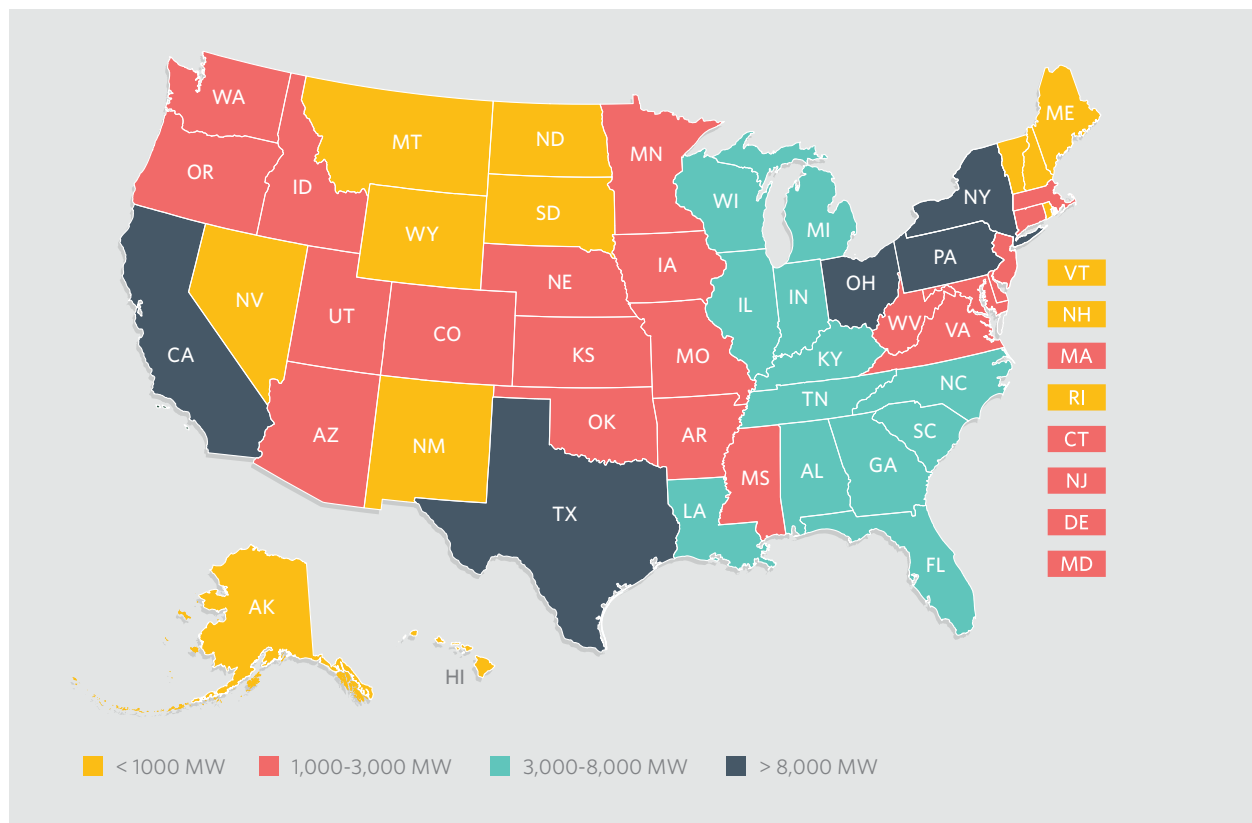


Industrial Energy Efficiency in New Jersey

Overview

Combined heat and power, or CHP, technologies provide reliable electricity, mechanical power, or thermal energy by capturing heat left over from electricity generation. District energy takes heat from a CHP system to heat or cool entire complexes, such as a university campus, office park, or downtown area. More recently, a process called waste heat to power, or WHP, has been used to capture heat released during industrial processes that convert raw materials into products. These on-site technologies allow businesses to achieve energy efficiencies of up to 80 percent. Technologies such as CHP and WHP represent tremendous potential to reduce energy consumption in New Jersey's industrial sector, saving manufacturers money and creating energy businesses and jobs.

Distribution of Potential CHP Capacity in Federal Sites



Source: U.S. Department of Energy

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State and regional statistics

New Jersey has a strong manufacturing sector. Manufacturing accounts for 8.46 percent of the state's total output, \$45.93 billion in 2013, and employs 6 percent of the nonfarm workforce.

Source: National Association of Manufacturers

New Jersey ranked 13th in the nation in energy use in 2011. The industrial sector represents more than 12 percent of the total energy consumed statewide.

Sources: U.S. Energy Information Administration State Energy Data System Rankings and U.S. Energy Information Administration New Jersey Profile

New Jersey ranked seventh in the nation for new CHP added capacity between 2005 and 2010. The state added 18 new facilities totaling 14.1 megawatts during that period.

Source: American Council for an Energy-Efficient Economy

Currently, 226 sites in the state generate more than 3,082 MW from CHP.

Source: U.S. Department of Energy

States With Most Reported Power Outages

| 2011 | 2012 | 2013 | 2014 |
|-----------------|-------------------|-------------------|-----------------------|
| 1. California | 1. California | 1. California | 1. California |
| 2. New York | 2. New York | 2. Texas | 2. Texas |
| 3. Texas | 3. Texas | 3. Michigan | 3. Michigan |
| 4. Michigan | 4. Michigan | 4. Pennsylvania | 4. Pennsylvania (tie) |
| 5. Pennsylvania | 5. New Jersey | 5. Ohio | 4. New York (tie) |
| 6. Illinois | 6. Pennsylvania | 6. New York | 5. Ohio |
| 7. Ohio | 7. Ohio | 7. Virginia | 6. New Jersey |
| 8. New Jersey | 8. Washington | 8. New Jersey | 7. Washington |
| 9. Washington | 9. Illinois (tie) | 9. Washington | 8. Illinois |
| 10. Wisconsin | 9. Virginia (tie) | 10. Massachusetts | 9. North Carolina |

Source: Blackout Tracker

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State policies support CHP

New Jersey's goal of 1.5 GW of CHP by 2020 is being supported by the state's Large Scale Combined Heat and Power-Fuel Cell Program that is offering \$100 million to enable nursing homes, hospitals, and wastewater treatment plants to develop projects that will allow them to operate independently from the grid.

The New Jersey Clean Energy Program offers incentives for several types of small combined CHP and fuel cell systems that have a generating capacity of 1 MW or less and are located behind the meter of an existing electric or natural gas customer that pays the Societal Benefits Charge.

Source: New Jersey Economic Development Authority

Still, more needs to be done for the state to meet its CHP goal. New Jersey has repeatedly raided clean energy funds aimed at promoting the building of such systems as well as scaled back money it raises from ratepayers for clean energy programs. Improving federal tax credits can help states meet their goals while providing economic benefits.

Examples of Newly Installed CHP Facilities in New Jersey

| City | Organization | Facility | Application | Year operational | Capacity (kW) | Fuel type |
|---------------|-------------------------------|--------------------------------|-------------------|------------------|---------------|-------------|
| Atlantic City | Atlantic City District Energy | Midtown Thermal Control Center | District energy | 2012 | 6,000 | Natural gas |
| Atlantic City | DSM Nutritional Products | DSM Nutritional Products | Office buildings | 2012 | 9,520 | Natural gas |
| Burlington | National Gypsum | National Gypsum | Pulp and paper | 2012 | 3,400 | Natural gas |
| Montvale | KPMG Data Center | KPMG Data Center | Business services | 2010 | 840 | Natural gas |

Source: U.S. Department of Energy

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CHP improves energy security

Reducing strain on the electrical grid with energy-efficient technologies increases power reliability during electrical outages resulting from extreme weather and other causes. CHP is the cornerstone of a resilient energy infrastructure. It enables critical infrastructure such as hospitals, fire stations, police stations, and similar facilities to continue operations when the electrical grid goes down during a disaster.

Source: U.S. Department of Energy

New Jersey ranked in the top 10 of states with the highest number of reported power outages between 2010 and 2014. New Jersey had almost 48 hours without power in 2014, affecting 236,819 residents.

Source: Blackout Tracker

Just in New Jersey after the Superstorm Sandy-nor'easter storm, the combined total peak customer electricity outages were 8,661,527: 8,511,251 from Sandy and 150,276 from the nor'easter, respectively.

Source: U.S. Department of Energy

New Jersey is attempting to improve its energy resilience through the New Jersey Energy Master Plan. As a part of this plan, the New Jersey Economic Development Authority and Board of Public Utilities, under Governor Chris Christie, issued funding to assist in improving grid reliability in the state through CHP.

Source: U.S. Department of Energy

Industrial energy efficiency benefits business

The Linden Cogeneration Plant is a 900-MW combined cycle/cogeneration plant that opened in 1992. The plant supplies electrical power to utilities and uses the excess steam to process additional energy. Sixty people operate and maintain the plant's operations and machinery, which includes three variable-frequency transformers and a new smart-grid technology that enables operators to control power flows among grids, allowing the plant to supply power to New York City and New Jersey.

Source: GE Energy and Financial Services

For further information, please visit:

pewtrusts.org/industrialefficiency

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