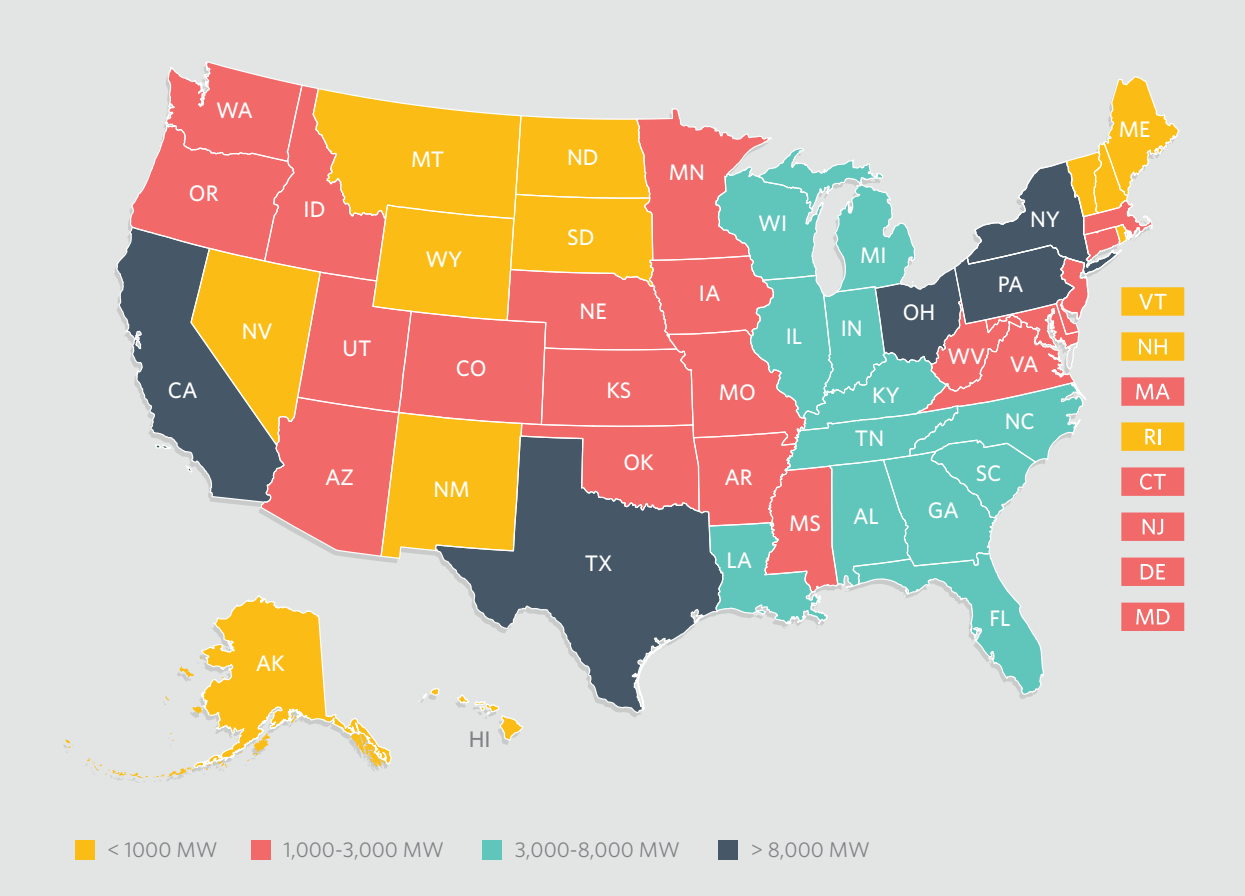
# Industrial Energy Efficiency in **Pennsylvania**

## 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.

### CHP Technical Potential




Source: U.S. Department of Energy

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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 Pennsylvania's industrial sector, saving manufacturers money and creating energy businesses and jobs.

## State and regional statistics

Pennsylvania is a leader in manufacturing. The state's strong and growing manufacturing sector accounts for 12 percent of its total gross state product, $77 million in 2013, and employs nearly 10 percent of the workforce.

Source: National Association of Manufacturers

Pennsylvania's industrial energy use ranks seventh nationwide and accounts for 33.6 percent of the state's total energy consumption.

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

Pennsylvania has the potential to increase its CHP capacity. From 2005 to 2010, the state ranked fifth in new additions of CHP sites and ninth in the total capacity of the new installations. It added 25 CHP sites over those five years, totaling 80.9 megawatts in capacity.

Source: American Council for an Energy-Efficient Economy

## State policies support industrial energy efficiency

Pennsylvania adopted an alternative energy portfolio standard in 2004 and amended it in 2007. The standard requires all electricity distribution companies and retail generation suppliers to ensure that 18 percent of their electricity is derived from alternative energy resources by 2020. The standard divides these requirements into three tiers, and CHP is part of Tier II, which must provide 10 percent of the total electricity supply by 2020. The other 8 percent is to be composed of renewable resources.

In 2008, Pennsylvania adopted an energy efficiency resource standard, or EERS. Pennsylvania Act 129 required each of the seven major electric distribution companies to achieve cost-effective energy efficiency and to develop energy efficiency and conservation plans to reduce electricity consumption by a minimum of 1 percent by 2011, increasing to a total of 3 percent by 2012, and to reduce peak demand by 4.5 percent by 2013. The energy efficiency and conservation plans required by Act 129 are critical to increasing the deployment of CHP in Pennsylvania. As a result of the legislation, utilities have significantly expanded energy efficiency program offerings.

Source: Database of State Incentives for Renewable & Efficiency

## 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, the cornerstone of a resilient energy infrastructure, enables critical infrastructure such as hospitals, fire stations, police stations, and similar facilities to continue operations when the electric grid goes down during a disaster.

Source: U.S. Department of Energy

From 2011 to 2014, Pennsylvania was one of the top 10 states for reported power outages. In 2014, it had 148 blackouts, affecting over 1.6 million residents and lasting nearly 4 days.

Source: Blackout Tracker

More than 1.3 million Pennsylvanians were left in the dark after Superstorm Sandy in 2012. Although the state was spared the brunt of the storm, Sandy's impacts created one of the largest power outages in the state's history.

Source: National Public Radio

CHP can play a role in keeping Pennsylvania's critical infrastructure running during a storm and its aftermath.

### 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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## Examples of CHP Facilities in Pennsylvania

| City | Organization | Application | Year operational | Capacity (kW) | Fuel type |
|---|---|---|---|---|---|
| **Lancaster** | Mount Joy Wire Co. | Other/unknown | 2012 | 1,000 | Natural gas |
| **Philadelphia** | Philadelphia Gas Works | District energy | 2011 | 200 | Natural gas |
| **Delaware Water Gap** | RockTenn Co. | Pulp/paper | 2008 | 626 | Waste |
| **Middletown** | UGI Utilities | Utilities | 2008 | 130 | Natural gas |

Source: U.S. Department of Energy

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**For further information, please visit:**
pewtrusts.org/industrialefficiency

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