**CHP BIENNIAL REPORT**

**2021**



**Technical Utility Services**

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# Executive Summary

This report has been prepared to provide a picture of the amount and types of combined heat and power (CHP) systems that exist or are in some stage of development in Pennsylvania and represents the deployment of CHP from July 2018 to June 2020. The information contained herein is given in a manner that does not compromise the confidentiality of CHP owners, while also providing a useful snapshot of the state of CHP deployment. This report does not speculate on the long-term prospects of CHP deployment, nor is it intended to praise or shame electric and natural gas distribution companies for the relative capacities or the amount of CHP systems in their respective service territories.

The deployment of CHP relies on many factors, principally driven by the customers’ valuation to invest in owning and operating such a system. Two of the primary considerations include the value of energy resiliency and a project’s rate of return, including aspects such as the cost of installation versus reducing overall electricity and heating costs, payback period of the cost of installation, and/or whether the capital expenditure could better be utilized elsewhere. Understanding this is particularly important in this cycle of reporting because of the impact of the COVID-19 pandemic. Nearly all types of industry that may benefit from the installation of a CHP system have been affected, to some degree, by the pandemic. This includes the ability of onsite engineering work, supply chain issues and the economic impacts. While in some cases of CHP development, the project would continue since capital expenditures have already been allocated, there is anecdotal evidence that projects, particularly in their early stages, have been postponed or cancelled because of the pandemic.

Overall, there are 18 more reported, interconnected CHP systems than were reported in the 2019 CHP Biennial report. Though 13 of these additions reflect projects that were reported as Potential in the 2019 CHP Biennial Report, there were a number of projects that that were not listed as Potential in that report. This is not to fault the electric distribution companies (EDCs) or natural gas distribution companies (NGDCs) for not reporting them previously – indeed, it demonstrates diligence by the EDCs and NGDCs for capturing these systems that were previously unreported. Also, four previously reported interconnected systems have since been disconnected.

## Introduction and Background

CHP is a well understood suite of technologies. The first power plant in the United States, the Pearl Street Station, began operation on Sept. 4, 1882. It also aws the first CHP plant because the thermal byproduct of the steam engines was used to provide steam to local manufacturers and warming nearby buildings on the same Manhattan block.[[1]](#footnote-1) While CHP has been around for over 100 years, it continues to evolve. This evolution includes the use of different fuels, like biogas or hydrogen, to advances in engine design, like combustion turbines and fuel cells. The key to any successful CHP project is whether it will meet the owner’s needs and budget.

In the spring and fall of 2014 the Commission held *En Banc* hearings on CHP at Drexel University and the University of Pittsburgh, respectively.[[2]](#footnote-2) Witnesses representing a cross section of the community interested in CHP testified at the hearings, including consultants, electric and natural gas distribution companies, universities, and CHP system owners and advocates. These hearings reinforced the Commission’s understanding that a coordinated approach to CHP can provide real benefits to the economy, the environment, and the security of residents and businesses within the Commonwealth.

 On Feb. 25, 2016, the Commission adopted a Proposed Policy Statement in support of CHP, to encourage companies to share progress they have made with CHP development, and to help the Commission determine how to best continue the advancement of CHP.[[3]](#footnote-3) Numerous stakeholders provided a variety of comments regarding policy issues and the proposed biennial reporting requirements.

 On April 5, 2018, the Commission issued its Final Policy Statement.[[4]](#footnote-4) In doing so, the Commission sought to catalog known, existing and proposed CHP systems.[[5]](#footnote-5) The Commission further sought to understand 1) if and how the EDCs and NGDCs encourage and/or extol the benefits of CHP, via marketing, to potential clients and, 2) if, via the establishment of a CHP Working Group process, the Commission may be able to better facilitate the deployment of CHP technology within the Commonwealth. Finally, the Final Policy Statement requires the Bureau of Technical Utility Services (TUS) to produce a report based on the findings of the biennial report filings and any timely outcomes from the CHP Working Group meetings.

The first CHP Working Group meeting was held on May 30, 2018, in Harrisburg in the Keystone Building. The main topics of discussion were clarifications to the biennial reporting requirements, clarifications of interconnection jurisdiction and costs, information on CHP financing and project support, issues and questions regarding standby rates, and an overview of alternative ratemaking. The second Working Group meeting was held on July 16, 2018, in the Keystone Building in Harrisburg. The sole focus of this subsequent meeting was standby rates, because of the significant interest and discussion on the topic during the prior meeting. Additionally, presentations were provided by the U.S. Department of Energy’s (DOE) Combined Heat and Power Technical Assistance Partnership regarding a relevant, DOE-commissioned study on standby rates, and by PECO regarding a new standby rate rider. The last Working Group meeting was held on April 16, 2019, in the Keystone Building in Harrisburg. The purpose of this meeting was to present and discuss the findings of the first CHP Biennial Report, discuss the upcoming CHP Market Potential Assessment,[[6]](#footnote-6) and the Standby/Capacity Reservation charges best practices.[[7]](#footnote-7)

### Biennial Report Information

It is fair to assume that the initial CHP Biennial Report involved greater effort on the part of the EDCs and NGDCs to gather the required information as to the amount, sizes, and types of CHP systems within their respective service territories. Since the installation of a CHP system involves a great deal of planning and financial considerations, and by its very nature, is a capital expenditure with a long service life, many of the CHP systems identified in this reporting cycle were also identified in the first biennial report. This is not to say that no new information was provided – several EDCs and NGDCs provided information on potential and disconnected systems and some provided information on CHP units that were previously unreported. In addition, one NGDC, Philadelphia Gas Works (PGW), provided better clarity into estimated costs associated with the increase of natural gas use in CHP units in their service territory.

While much of the information provided in this second biennial report was reported in the first biennial report, some information required research and verification by TUS staff, mainly through web-scraping exercises. Aside from this, information submitted was accepted as received.

As with the previous CHP Biennial Report, it is important to note that the reporting effort does not constitute a complete list of all CHP systems for a variety of reasons, including systems existing within the jurisdiction of municipal authorities and rural electric cooperatives, and poorly understood systems, such as systems operating on biogas or municipal waste. This is the primary reason why there is a difference in the number of CHP systems reported here compared to the U.S. DOE’s CHP Installation Database. Some information may have required different levels of data collection and outreach by the utilities and was dependent upon the CHP system owner to provide the requested information. Because of that, some information was not obtainable, available, or known. Furthermore, the reporting of potential[[8]](#footnote-8) CHP systems should not be viewed as an assessment of CHP potential within the Commonwealth.

Figures 1 and 2 show the number of interconnected and potential CHP systems and the nameplate capacity of those systems, respectively.

Figure 1. Number of Interconnected and Potential CHP systems,

as Reported by EDCs and NGDCs

Figure 2. Nameplate Capacity of Interconnected and Potential CHP Systems,

as Reported by EDCs and NGDCs

Figures 3 and 4 show the number of CHP systems based on nameplate capacity for interconnected and potential systems, respectively.

Figure 3. Number of Interconnected CHP Systems Based on Nameplate Capacity

*Figure 2. Number of Potential CHP Systems Based on Nameplate Capacity*

Figures 5 and 6 give a breakdown of the interconnected CHP systems, by EDC. Figure 5 shows the number of interconnected CHP systems by EDC. Figure 6 shows each EDC’s percent of the total nameplate capacity (MW) reported.

 Figure 5. Number of Interconnected CHP Systems by EDC

Figure 6. Percent Share of MW of Interconnected CHP Systems by EDC

Figures 7 and 8 show both the interconnected and potential CHP systems by technology type. It is noteworthy that one of the potential CHP systems was listed as a Smartwatt Boiler[[9]](#footnote-9), a type of CHP that has not been reported before.

Figure 7. Interconnected CHP Technologies

*Figure 8. Potential CHP technologies*

 In the following appendices information about proposed and operational CHP systems that were reported by the EDCs and NGDCs is provided. Data identifies the county, primary technology (prime mover type), nameplate capacity, fuel type and more. System owner information is not identified for proposed systems due to possible confidentiality concerns. System owner information is provided for operational systems when that information is already known to be in the public domain. In many instances, this data can be found in the U.S. DOE’s CHP Installation Database or in press releases such as projects that have received any number of various government subsidies, such as loans, grants or rebates. Names for operating systems for which data does not appear to be in the public domain are identified as “Confidential”.

# Appendix A - Proposed CHP Systems\*

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **CHP System** | **Status\*** | **County** | **Identified by** | **Prime Mover Type** | **Nameplate Capacity (MW)** | **Fuel Type** | **Thermal Energy Type** |
| **EDC** | **NGDC** |
| Confidential | Unknown | Allegheny |  | **X** | Reciprocating Engine | 21.25 | Natural Gas | Hot Water |
| Confidential | Unknown | Allegheny |  | **X** | Reciprocating Engine | 3.334 | Natural Gas | Hot Water |
| Confidential | Unknown | Allegheny |  | **X** | Reciprocating Engine | 4.3 | Natural Gas | Hot Water |
| Confidential | Unknown | Allegheny | **X** | **X** | Reciprocating Engine | 1.99 | Natural Gas | Hot Water |
| Confidential | Unknown | Allegheny | **X** |  | Reciprocating Engine | 10.5 | Natural Gas | Unknown |
| Confidential | Unknown | Allegheny | **X** |  | Reciprocating Engine | 1.732 | Natural Gas | Unknown |
| Confidential | Unknown | Beaver |  | **X** | Reciprocating Engine | 0.408 | Natural Gas | Hot Water |
| Confidential | Unknown | Beaver | **X** |  | Reciprocating Engine | 0.07 | Natural Gas | Unknown |
| Confidential | Unknown | Bucks | **X** |  | Reciprocating Engine | 1 | Natural Gas | Steam |
| Confidential | Unknown | Cambria |  | **X** | Smartwatt Boiler | 0.175 | Natural Gas | Hot Water |
| Confidential | Unknown | Clearfield |  | **X** | Reciprocating Engine | 1 | Natural Gas | Hot Water |
| Confidential | Planning | Clinton | **X** | **X** | Microturbine | 1.1 | Natural Gas | Steam & Hot Water |
| Confidential | Unknown | Delaware | **X** | **X** | Combustion Turbine | 30 | Natural Gas | Steam |
| Confidential | Start-up | Luzerne | **X** | **X** | Combustion Turbine | 1.125 | Natural Gas | Steam, Hot & Chilled Water |
| Confidential | Planning | Philadelphia | **X** | **X** | Combustion Turbine | 8.8 | Natural Gas | Hot Water |
| Confidential | Unknown | Philadelphia | **X** | **X** | Reciprocating Engine | 0.035 | Natural Gas | Hot Water |
| Confidential | Construction | Union | **X** | **X** | Reciprocating Engine | 0.668 | Natural Gas | Hot Water |
| Confidential | Construction | Union | **X** | **X** | Reciprocating Engine | 0.334 | Natural Gas | Hot Water |
| Confidential | Unknown | Westmoreland |  | **X** | Reciprocating Engine | 1.5 | Natural Gas | Hot Water |

\*Status:

Start-up – initial operation has begun but system not operating steady-state

Construction – under construction at the time reports were being filed; may now be operational

Planning – system is in some stage of development but not yet in construction

Unknown – prospective system has been identified but no further information is available

# Appendix B - Interconnected CHP Systems

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **CHP System** | **County** | **Identified by** | **Prime Mover Type** | **Nameplate Capacity (MW)** | **Fuel Type** | **Thermal Energy Type** |
| **EDC** | **NGDC** |
| Confidential | Philadelphia |  | **X** | Unknown | 0.065 | Natural Gas | Thermal Energy Recovery |
| Confidential | Philadelphia |  | **X** | Unknown | 0.13 | Natural Gas | Thermal Energy Recovery |
| 1500 Locust LTD | Philadelphia | **X** | **X** | Microturbine | 0.130 | Natural Gas | Hot Water |
| Abington Hospital | Montgomery | **X** | **X** | Combustion Turbine | 4.600 | Natural Gas | Steam |
| Confidential | Bucks | **X** | **X** | Microturbine | 2.600 | Natural Gas | Unknown |
| AIMCO - Sterling Apt. Homes | Philadelphia |  | **X** | Unknown | 0.21 | Natural Gas | Heat & Hot Water |
| AIMCO - Univ. Sq. | Philadelphia |  | **X** | Unknown | 0.14 | Natural Gas | Heat & Hot Water |
| AIMCO - 39 | Philadelphia |  | **X** | Unknown | 0.14 | Natural Gas | Heat & Hot Water |
| Albright College | Berks |  | **X** | Combustion Turbine | 1.100 | Natural Gas | Hot & Chilled Water |
| American Refining Group | Bradford | **X** |  | Steam Turbine | 2.000 | Natural Gas | Steam |
| Aria Health | Philadelphia | **X** | **X[[10]](#footnote-10)** | Reciprocating Engine | 1.100 | Natural Gas | Hot Water |
| Confidential | Allegheny | **X** |  | Microturbine | 6 | Natural Gas/Coal | Unknown |
| Confidential | Philadelphia |  | **X** | Unknown | 0.13 | Natural Gas | Hot Water |
| Brubaker Farms | Lancaster | **X** |  | Reciprocating Engine | 0.335 | Biogas | Process Heating |
| Bucknell University | Union | **X** | **X** | Combustion Turbine | 5.500 | Natural Gas/Oil | Steam |
| Cancer Treatment Center of America (Eastern Regional Medical Center) | Philadelphia | **X** | **X** | Reciprocating Engine | 1.100 | Natural Gas | Heat, Hot Water & Air Conditioning |
| Cathedral Village | Philadelphia | **X** | **X** | Unknown | 0.225 | Natural Gas | Heat & Hot Water, Air Conditioning |
| Chatham University | Allegheny |  | **X** | Reciprocating Engine | 0.02 | Natural Gas | Hot Water |
| Confidential | Clarion | **X** | **X** | Steam Turbine | 20 | Natural Gas | Steam |
| Dart Container | Lancaster | **X** |  | Reciprocating Engine | 11.4 | Biomass/Landfill Gas | Unknown |
| Dept. of L&I GH Andrews Center | Cambria | **X** |  | Steam Turbine | 0.450 | Natural Gas | Steam |
| Derry Township Municipal Authority | Dauphin |  | **X** | Reciprocating Engine | 0.270 | Biogas | Hot Water |
| Confidential | Cambria | **X** |  | Steam Turbine | 2.000 | Natural Gas | Steam |
| Domtar Paper Company | Elk | **X** |  | Steam Turbine | 60.000 | Natural Gas | Steam |
| Downs Racing | Luzerne | **X** | **X** | Reciprocating Engine | 0.828 | Natural Gas | Hot Water |
| Doylestown Hospital | Bucks | **X** | **X** | Reciprocating Engine | 1.600 | Natural Gas | Unknown |
| Duquesne University | Allegheny | **X** | **X** | Combustion Turbine | 5.3 | Natural Gas | Steam, Hot & Chilled Water |
| Eden Resort | Lancaster | **X** | **X** | Reciprocating Engine | 0.400 | Natural Gas | Hot Water |
| Energy Innovation Center | Allegheny | **X** | **X** | Microturbine | 0.13 | Natural Gas | Hot & Chilled Water |
| Confidential | Allegheny | **X** |  | Microturbine | 0.005 | Natural Gas | Hot Water |
| F&M College | Lancaster | **X** | **X** | Reciprocating Engine | 1.000 | Natural Gas | Steam & Hot Water |
| Confidential | Westmoreland |  | **X** | Microturbine | 0.065 | Natural Gas | Hot Water |
| FMC Tower | Philadelphia | **X** |  | Microturbine | 0.130 | Natural Gas | Hot Water |
| Confidential | Philadelphia |  | **X** | Unknown | 1.1 | Natural Gas | Heat & Hot Water, Air Conditioning |
| FreshPet | Northampton | **X** | **X** | Reciprocating Engine | 1.429 | Natural Gas | Steam & Hot Water |
| Geisinger Hospital | Montour | **X** | **X** | Combustion Turbine | 5.000 | Natural Gas | Steam, Hot & Chilled Water |
| Grays Ferry Cogen | Philadelphia | **X** |  | Combustion Turbine | 118.000 | Natural Gas | Steam |
| Hershey Medical Center | Dauphin | **X** | **X** | Combustion Turbine | 6.700 | Natural Gas | Steam |
| Hillandale Gettysburg | Adams | **X** |  | Steam Turbine | 3.240 | Natural Gas | Steam |
| Holy Redeemer Hospital | Montgomery | **X** | **X** | Reciprocating Engine | 2.000 | Natural Gas | Hot Water |
| Imperial Tower Apts. | Philadelphia |  | **X** | Unknown | 0.065 | Natural Gas | Heat & Hot Water |
| Independence Visitor Center | Philadelphia | **X** | **X** | Reciprocating Engine | 0.075 | Natural Gas | Heat & Hot Water, Air Conditioning |
| Indiana University of PA | Indiana |  | **X** | Reciprocating Engine | 24 | Natural Gas/Diesel | Steam & Hot Water |
| Janssen (Johnson & Johnson) | Montgomery | **X** | **X** | Reciprocating Engine | 3.800 | Natural Gas | Steam & Hot Water |
| Confidential | Bradford | **X** |  | Steam Turbine | 1 | Natural Gas | Steam |
| Knouse Foods | Adams | **X** | **X** | Combustion Turbine | 1.200 | Natural Gas/Biogas | Steam & Hot Water |
| Lackawanna County Prison | Lackawanna | **X** | **X** | Reciprocating Engine | 0.225 | Natural Gas | Hot Water |
| Lancaster General Hospital | Lancaster | **X** | **X** | Combustion Turbine | 3.200 | Natural Gas | Steam & Hot Water |
| Confidential | Philadelphia | **X** | **X** | Microturbine | 0.180 | Natural Gas | Heat & Hot Water, Air Conditioning |
| Masonic Homes | Lancaster | **X** | **X** | Microturbine | 0.390 | Natural Gas | Hot Water |
| Merck & Co. 1 | Montgomery | **X** | **X** | Combustion Turbine | 38.000 | Natural Gas | Steam |
| Merck & Co. 2 | Montgomery | **X** | **X** | Combustion Turbine | 27.000 | Natural Gas | Steam |
| Messiah College | Cumberland | **X** | **X** | Microturbine | 1.000 | Natural Gas | Hot Water |
| Mt. Joy Wire | Dauphin | **X** | **X** | Reciprocating Engine | 1.059 | Natural Gas | Steam & Hot Water |
| Newman & Company | Philadelphia | **X** |  | Steam Turbine | 1.800 | Natural Gas/Fuel Oil | Steam |
| Confidential | Blair | **X** | **X** | Steam Turbine | 2 | Natural Gas | Steam & Hot Water |
| Omnova | Schuylkill | **X** | **X** | Reciprocating Engine | 1.426 | Natural Gas | Steam |
| Park Towne Place Associates 1 | Philadelphia | **X** | **X** | Unknown | 0.210 | Natural Gas | Heat & Hot Water, Air Conditioning |
| Park Towne Place Associates 2 | Philadelphia | **X** | **X** | Unknown | 0.210 | Natural Gas | Heat & Hot Water, Air Conditioning |
| Penn State University | Centre | **X** | **X** | Steam Turbine | 7.000 | Natural Gas | Steam |
| Peoples Etna Office | Allegheny | **X** | **X** | Reciprocating Engine | 0.035 | Natural Gas | Hot Water |
| Pepsico/Gatorade | Luzerne | **X** | **X** | Steam Turbine | 2.000 | Natural Gas | Hot Water |
| PGW | Philadelphia |  | **X** | Unknown | 0.2 | Natural Gas | Heat, Hot Water, Air Conditioning |
| PH Glatfelter | York | **X** |  | Steam Turbine | 35.000 | Black Liquor | Steam |
| Confidential | Indiana |  | **X** | Fuel Cell | 0.005 | Natural Gas | Hot Water |
| Phil. College Osteo Medicine | Philadelphia |  | **X** | Unknown | 0.13 | Natural Gas | Heat |
| Confidential | Philadelphia |  | **X** | Unknown | 8 | Natural Gas | Peak Shaving |
| Phoenix Contact | Dauphin | **X** | **X** | Microturbine | 1.000 | Natural Gas | Hot & Chilled Water |
| Procter & Gamble 3 | Wyoming | **X** |  | Steam Turbine | 2.645 | Natural Gas | Steam |
| Proctor & Gamble 1 | Wyoming | **X** | **X** | Steam Turbine | 57.800 | Natural Gas | Steam |
| Proctor & Gamble 2 | Wyoming | **X** |  | Steam Turbine | 53.000 | Natural Gas | Steam |
| PSECU | Lancaster | **X** | **X** | Microturbine | 0.800 | Natural Gas | Hot Water |
| Reading Hospital | Berks | **X** | **X** | Steam Turbine | 10.000 | Natural Gas | Steam |
| Rittenhouse Claridge | Philadelphia | **X** | **X** | Reciprocating Engine | 0.225 | Natural Gas | Heat & Hot Water |
| Robert Packer Hospital | Bradford | **X** | **X** | Steam Turbine | 2.000 | Natural Gas | Steam |
| SCI Laurel Highlands | Somerset | **X** | **X** | Steam Turbine | 6.800 | Methane/Natural Gas | Steam |
| Seneca Landfill | Butler |  | **X** | Reciprocating Engine | 0.3 | Biogas | Hot Water |
| Sewage Plant (City of Philly) | Philadelphia | **X** | **X** | Reciprocating Engine | 5.670 | Natural Gas/Biogas | Heat |
| Simpson House | Philadelphia | **X** | **X** | Reciprocating Engine | 0.265 | Natural Gas | Heat & Hot Water |
| South Hills Retirement | Allegheny | **X** | **X** | Microturbine | 0.065 | Natural Gas | Hot Water |
| Confidential | Dauphin |  | **X** | Reciprocating Engine | 0.800 | Renewable Gas/Natural Gas | Unknown |
| Thomas Jefferson Gibbon | Philadelphia | **X** |  | Steam Turbine | 0.275 | Natural Gas | Steam |
| UGI Headquarters | Dauphin | **X** | **X** | Microturbine | 0.130 | Natural Gas | Hot & Chilled Water |
| UGI Utilities, Middletown | Dauphin |  | **X** | Microturbine | 0.130 | Natural Gas | Hot Water |
| Confidential | Warren | **X** |  | Steam Turbine | 29.000 | Natural Gas | Steam |
| Urban Outfitters | Philadelphia |  | **X** | Unknown | 0.8 | Natural Gas | Unknown |
| Valley Forge Casino & Resort | Montgomery | **X** | **X** | Microturbine | 0.065 | Natural Gas | Hot Water |
| Villanova University | Montgomery | **X** | **X** | Reciprocating Engine | 2.000 | Natural Gas | Steam |
| Williamsport Hospital | Lycoming | **X** | **X** | Reciprocating Engine | 1.900 | Natural Gas | Unknown |
| York Solid Waste Authority | York |  | **X** | Steam Turbine | 40 | Solid Waste/Natural Gas | Steam |
| Yuengling Brewery | Schuylkill | **X** | **X** | Reciprocating Engine | 0.860 | Methane/Natural Gas | Hot Water |
| Yuengling Creamery | Schuylkill | **X** |  | Reciprocating Engine | 0.180 | Biogas/Natural Gas | Anaerobic Digester Heating & Space Heating |

1. *See* [Northwest CHP Technical Assistance Partnership > About Clean Energy > Combined Heat and Power (CHP) > History of CHP (northwestchptap.org)](http://northwestchptap.org/AboutCleanEnergy/CombinedHeatandPowerCHP/HistoryofCHP.aspx). [↑](#footnote-ref-1)
2. See <http://www.puc.state.pa.us/utility_industry/natural_gas/chp_cogeneration.aspx> under “Combined Heat and Power (CHP) En Banc Hearing – May 5, 2014” and “Combined Heat and Power (CHP) En Banc Hearing – October 7, 2014”. [↑](#footnote-ref-2)
3. *See* [Proposed Policy Statement](http://www.puc.pa.gov/pcdocs/1422142.doc) at <http://www.puc.pa.gov/pcdocs/1422142.doc> [↑](#footnote-ref-3)
4. *See* [Final Policy Statement](http://www.puc.pa.gov/pcdocs/1560599.doc) at <http://www.puc.pa.gov/pcdocs/1560599.doc> [↑](#footnote-ref-4)
5. *See* <http://www.puc.state.pa.us/Electric/xls/CHPWG/CHP_Report_Form.xlsx> for the form used by the utilities to report their CHP information. [↑](#footnote-ref-5)
6. The CHP Market Potential Assessment was conducted by the SWE as a part of the larger [Pennsylvania Act 129 Phase IV Energy Efficiency and Peak Demand Reduction Market Potential Study](https://www.puc.pa.gov/pcdocs/1656474.pdf). The purpose of the study is to determine the potential for energy efficiency and peak demand reductions available in Pennsylvania. *See* <https://www.puc.pa.gov/pcdocs/1656474.pdf>. [↑](#footnote-ref-6)
7. *See* <https://www.puc.pa.gov/Electric/pdf/CHPWG/CHP_Standby_Capacity_Reservation_Charge041619.pdf> for the information presented on Standby/Reservation charges. [↑](#footnote-ref-7)
8. In the context of this report, “potential” means any CHP system that is not yet fully operational. These could be CHP systems that are in various phases of construction or could mean that the EDC or NGDC has had some level of conversation with a customer about the possibility of installing a CHP system. The EDCs and NGDCs had discretion as to what they deemed a potential system. [↑](#footnote-ref-8)
9. For more information on a Smartwatt Boiler, see [Enviro Power Activates First Field-Based SmartWatt Boiler - Enviropower Technologies](https://www.enviropowertec.com/enviro-power-activates-first-field-based-smartwatt-boiler-bringing-combined-heat-and-electricity-to-hartford-ct-office-complex/). [↑](#footnote-ref-9)
10. PGW had not reported this system in their biennial report submission, however, TUS staff discovered it on page 17 of PGW’s 2016 Corporate Social Responsibility Report. [↑](#footnote-ref-10)