

# Combined Heat & Power – Impact Evaluation

## *Final Report*

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# Executive Summary

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The objective of this impact evaluation is to conduct a final savings assessment of NYSERDA’s Combined Heat & Power (CHP) Program. CHP systems are fossil fuel-fired engines that generate electricity while, at the same time, waste heat from the combustion process is captured and used to offset thermal loads at the host site. NYSERDA’s Combined Heat & Power (CHP) intervention has worked to advance a modular CHP market with the intention of reducing soft costs and development time and increasing penetration of CHP. The major activity focuses on continuing to provide cost-shared incentives to support the installation of CHP equipment at eligible host site locations. The incentive program is a continuation/modification of NYSERDA’s previous Technology and Market Development (T&MD) CHP Acceleration and Aggregation and CHP Performance Programs<sup>1</sup>. These two programs were merged into a single offering, NYSERDA PON 2568<sup>2</sup>: CHP Program.

In 2016 NYSERDA conducted an evaluation of the CHP Program, the Combined Heat and Power Baseline Assessment<sup>3</sup>. This assessment is the final impact evaluation of the CHP Acceleration and Aggregation (A&A) and CHP Performance Programs.

Table 1 summarizes the saving from the projects completed in 2016-2018 for both the CHP A&A and CHP Performance sections of the overall CHP program.

Table 1: Total Program Reported Aggregation & Acceleration and Performance Savings

	<b>Count</b>	<b>Electricity Generation (MWh)</b>	<b>Utilized Heat (MMBtu)</b>	<b>Peak kW<sup>a</sup></b>
Aggregation & Acceleration	52	72,163	93,812	11,830
Performance	5	150,577	195,750	13,840
Total	57	222,740	299,562	25,670

<sup>a</sup> This peak kW is the rated capacity of the CHP system electrical generation with an adder for several systems that included absorption chillers.

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<sup>1</sup> NYSERDA Technology and Market Development Program, Semiannual Report through December 31, 2016, page 25. <https://www.nyserderda.ny.gov/-/media/Files/Publications/PPSER/NYSERDA/tmd-report-2016Dec.pdf>

<sup>2</sup> [https://portal.nyserderda.ny.gov/CORE\\_Solicitation\\_Detail\\_Page?SolicitationId=a0rt0000000QnqyAAC](https://portal.nyserderda.ny.gov/CORE_Solicitation_Detail_Page?SolicitationId=a0rt0000000QnqyAAC)

<sup>3</sup> <https://www.nyserderda.ny.gov/-/media/Files/Publications/PPSER/Program-Evaluation/2017ContractorReports/CHP-Baseline-assessment.pdf>

The evaluation was completed using data from NYSERDA's Distributed Energy Resources Integrated Data System (DERIDS) Website. This database included hourly data for all key analysis fields for the majority of projects in the evaluation period.

The realization rate was calculated to be 67% for kWh, 74% for kW, and 215% for MMBtu for the A&A portion of the program. Higher realization rates were found in the Performance program, with 84% for kWh, 120% for kW, and 448% for MMBtu. The low electric realization rates are a result of lower than expected capacity factor. The high thermal realization rate appears to be due to conservative estimates as the savings are calculated using a prescriptive equation. The primary reason for the higher realization rates in the Performance program is that the program only claimed savings based on a portion of the total capacity for those systems, so the total system produces more than the claimed capacity could indicate.