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Presentation Title: Real-Time Data from Distributed Generation Sources Offers Many Benefits

Abstract: NYSERDA's CHP Program offers financial incentives for the installation of grid-connected combined heat and power (CHP) systems in the 35 kW to 3 MW range. This program has been active since 2012 and was designed to provide incentives to transition the marketplace for pre-packaged, modular CHP systems to scale in New York State.

One critical feature of the Program design is that any project installed with NYSERDA's assistance must publicly report 15-minute interval data to NYSERDA for a minimum of three years. This performance monitoring requirement is multifaceted. To start with, NYSERDA has collected a large portfolio of real-time "case studies" that engendered confidence in end users. In addition, CHP solution providers could mine data to enhance operational understanding of a wide variety of systems and buildings, and, at the same time, the data could be leveraged to help NYSERDA make real-time, data-driven program decisions and benefit the marketplace with operational information on such systems. This live CHP system performance data is available through a publicly accessible website.

The CHP Program has exceeded its goals and helped transition the market for pre-packaged, modular CHP systems to scale in New York State. Through March 2018, the Program issued contracts to 135 projects representing 35 MW of electrical capacity in New York State. ERS, as a subcontractor to Frontier Energy, is the primary inspection agent for NYSERDA in support of their CHP Program. Through a combination of boots-on-the-ground effort and comprehensive data analysis, ERS has evaluated each CHP installation for adherence to scope, quality of installation, and project outcomes vs. installer pro-forma claims. Through our inspections, we have identified early-stage issues with mechanical performance (heat recovery, electrical output) and dispatch mode (controls, interaction with dispatchable or intermittent building loads). We have also worked to confirm that the installed equipment matches the original scope and identified equipment/sensor calibration problems, among others. This paper will discuss real-life findings from several different types of CHP projects and discuss how they offer value to the CHP system owners and to the NYSERDA program team.

In this paper, the authors will leverage live case studies and discuss various types of issues flagged through the early-stage inspections and data review. Similarly, from the program design and evaluation perspective, we will provide our thoughts on best practices and lessons learned from working on this effort. We will highlight three to four instances that demonstrate the value of the inspection process and ongoing M&V to various stakeholders (end users, financiers, and incentive program staff). These will be cases where our inspection/analysis flagged major issues at a site that resulted in demonstrated action on the site's behalf. We'll follow up on these systems to show before and after results. Finally, we will share how NYSERDA is leveraging this portfolio of performance data to inform the next generation of incentive program design.