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Presentation Title: Evaluating DR Evaluation

Abstract: Utilities across the United States are increasingly focusing their efforts on mitigating constraints on the transmission and distribution grid through strategic deployment of demand response (DR) technologies. Evaluating these DR resources requires a different skill set and mindset than evaluating traditional energy efficiency programs. This paper will examine the effectiveness of three rapidly maturing technologies being piloted in the Northeast as potential alternatives to demand reduction achieved in traditional program curtailment designs. These new technologies include thermal storage, batteries, and building management system (BMS) controls.

Although there is a substantial body of DR evaluation work in the industry, this paper has a unique opportunity to maintain a continuity of evaluation perspective to ensure an apples-to-apples assessment of impacts across the various technology/pilot designs. The evaluation methodology includes determining the appropriate baseline; type, resolution, and quality of data required; and analysis rigor for each technology. The authors will review how to choose the best evaluation method for several types of DR projects/technologies. The paper will also examine what the integrated impact and process evaluation revealed about the types of facilities that are best suited for different technologies, the optimal deployment strategies for them, and the customer and utility value streams they create. The paper will present case studies involving a range of DR technologies and commercial and industrial facility types. This evaluation effort includes pre- and post-installation facility visits by the evaluation team, statistical and field-based impact analyses, and process evaluation activities. The paper will also include initial results on an analysis of cost-effectiveness and a review of value streams that each technology offers to electric customers and utilities. The evaluation commenced in the summer of 2018 and will conclude in the winter of 2020. The first evaluation data set and report will be available at the end of 2018, providing ample time for data and results to be well established for this paper. Through this paper, the authors aim to provide insights into appropriate evaluation methodologies, process and impact evaluation results, and characteristics of value streams associated with different DR technologies. Since grid reliability and mitigation of grid constraints is an increasingly important topic across the United States, this paper will help utilities and grid operators throughout the country learn the best practices and limitations of different DR technologies currently available. The lessons learned from these demonstration projects and research studies have far reaching impacts on program design, implementation, and evaluation, thereby adding value to the energy efficiency industry.