ComEd®
Energy Efficiency Program

ComEd WATER STUDY

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Prepared For
Commonwealth Edison Company

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Acknowledgements

This project was developed as part of the Emerging Technologies initiative within the ComEd Energy Efficiency Program. Axiom Marketing, Minneapolis, Minnesota, produced this report for the Emerging Technologies Team with overall guidance and management from James Fay. For more information on this project, contact EmergingTech@ComEd.com.

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This is a research and program design report for novel program design and outreach strategies piloted through the Emerging Technologies initiative. This report should provide an overview of the research question and existing program needs that the pilot is designed to address. The report should clearly outline the goals, methodology, key findings and lessons learned. The findings of this report will be used to inform current and future ComEd Energy Efficiency Program offerings.

1.0 EXECUTIVE SUMMARY

The project was designed to define and quantify the relationship between water and energy use in the Greater Chicago Area. Three stages of the project sought to identify opportunities for energy savings within the continuum of water supply, treatment and discharge; calculate the potential energy savings through system and technology improvements; and make recommendations for future actions. Three stages of the project sought to establish the current state through:

- Depth interviews with municipal leaders responsible for the system, sustainability experts and water consultants
- Data analysis using a customized Tableau tool designed to examine USGS data
- Data from municipal wastewater plants in the area; and a Delphi Study to identify technologies and the potential adoptions rates

The final report and recommendations were presented to the ComEd project team on Nov. 15, 2019, and an in-person presentation was made to a broader group within Emerging Technologies on Dec. 4, 2019.

2.0 INTRODUCTION/BACKGROUND

State of the Market

The project plan sought to:

1. Identify where ComEd can claim upstream energy savings relating to potable and wastewater for both residential and commercial water customers
2. Identify new technologies, products and systems related to water conservation being considered by manufacturers and specifiers
3. Identify high potential upstream intervention points where ComEd can structure rebates and incentives that accelerate adoption of these technologies, products and systems
4. Identify which entities/organizations are driving the innovation
5. Create a preliminary characterization of the water channel in Northern Illinois focusing on how it is organized upstream from the water meter
6. Identify successful water conservation programs and best practices in other markets

What is the program need/opportunity being addressed by this project?

To identify the optimal opportunities for energy savings within the water supply of the Greater Chicago Area, analyze the current state, forecast the technologies and actions necessary to realize these savings and make recommendations for future actions.

3.0 PILOT DESIGN

Pilot Design Overview

Phase 1

Task 1: Preliminary Project Research and Scoping
Task 2: Northern Illinois Water Channel Characterization
Methodology: Depth interviews, analysis and report
a) municipal and government
b) industry

Phase 2

Task 3: Technology and Product Prioritization
Methodology: Delphi study
Task 4: Data Modeling and Forecasting
Methodology: Tableau analysis, graphing and development of interactive tool

Phase 3

Task 5: Summary, Implications and Recommendations
Task 6: Presentation of Findings

Pilot Goals

The program goals were to:

Analyze, characterize and define the water channel for ComEd's service territory including all fresh water and wastewater that is coming in and going out of the system for pumping, transportation, consumption, reuse, conditioning, purification, etc.
Identify which technologies, processes and products are being considered by manufacturers, specifiers and customers and how quickly they are likely to be available and adopted
Understand how the water market, the channel, consumption of water and electricity will be impacted by new technologies, processes and products and possible regulatory requirements

Pilot Scale

The project focused on the 11 county Greater Chicago Area.

Energy Savings (if applicable)

It was identified that the target threshold for energy savings with any new implementation should be a minimum of 10 GWh per year for fresh water and wastewater.

4.0 CONCLUSION

Key Outcomes and Lessons Learned

Data identifies ample opportunity to save 10 GWh of energy and potentially over 24 GWh focusing on the production of drinking water and treatment of wastewater

Non-exempt municipalities and manufacturers offer the greatest opportunity for participation in incentives, audit programs and other enabling vehicles

Partnering with energy/water consultants provides the expertise and knowledge needed to help define and fully implement programs

Financing is a major barrier to change among manufacturers. First Cost funding and a quantifiable return on investment (ROI) dominate discussions around change

Pumping, aeration, filtration and software to manage and monitor systems (IoT and SRM) offer the best opportunities for incentives that will have the greatest impact on energy and water use

Residential has already seen significant decreases due to legislation, education and incentives

Recommendations

Next steps

Municipal and Manufacturing Incentives – Review and Update Based on Findings

Partnering with Consultant Experts

ComEd Financing(or partnering on) Major Energy/Water Savings Projects

Enhanced Audit Programs

Socialize Findings with Communication Plan and Roll-out Strategy