

Electric Upgrade Cost Avoidance (EUCA) Project



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Commonwealth Edison Company

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ILLUME Advising

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This report summarizes the findings from a literature review and in-depth interviews performed as part of the Electric Upgrade Cost Avoidance study (EUCA) conducted by ILLUME Advising in Fall 2024. The goal of this research was to help Commonwealth Edison Company (ComEd) better understand options for avoiding electric panel upgrading that often accompanies electrification of residential properties. ILLUME interviewed both internal and external partners of ComEd who have knowledge of electrification issues, familiarity with cost avoidance strategies, and understanding of the needs of ComEd program teams.

EXECUTIVE SUMMARY

As ComEd continues to make strides toward meeting its electrification and decarbonization goals, there is growing interest in exploring what alternative strategies can be used to avoid the costly panel upgrades often seemingly necessitated by residential electrification efforts.¹ ILLUME combined in-depth interviews with a literature review to identify strategies that can help avoid panel upgrades, as well as outline where challenges exist with these alternative approaches.

This research identified several strategies that can be used independently or simultaneously, depending on the current and predicted future demand needs at a given site. Some of these strategies include installing (a) low-power equipment (LPE), (b) hard-wired devices, such as tandem breakers or circuit splitters that expand the number of available circuits, and (c) smart circuits, breakers, or panels that manage load. LPE helps to avoid panel upgrades because it reduces the demand put on the panel when the device is in use. Tandem breakers, circuit splitters, and smart circuits/panels can help to avoid panel upgrades by providing additional circuits and/or by managing the load on the panel to turn off one or more circuits while another is in use, thereby avoiding exceeding the panel's capacity. Other strategies involve different approaches to panel wiring and loading or take multiple approaches described in this report for whole panel management. Finally, one option is to use an alternative method for estimating the needed panel capacity based on actual historic energy demand rather than name plate ratings for on-site equipment.

¹ Discussion of electric panel upgrades in the context of this research often encompasses two components: panel upsizing and home service upgrades. Panel upsizing refers to replacing an electrical panel with one of higher ampacity (such as increasing from 100A to 200A) and is work completed by an electrician on the 'customer side of the meter'. Service upgrades refer to increasing the level of electrical service provided to the home and takes place on the 'utility side of the meter.' Unless otherwise specified, for the purposes of this report, we use 'electric panel upgrades' to refer to the combination of panel upsizing and service upgrading to a home.

Some barriers identified by this research are the lack of key market actors' familiarity with these strategies and the lack of data availability for implementing them at scale. At the conclusion of this study report, ILLUME provides recommendations on how ComEd can further understand and test these strategies in the context of existing program offerings and help inform the development of new offerings.