

SWITCHED-RELUCTANCE MOTOR FIELD EVALUATION

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Commonwealth Edison Company

Prepared by
Slipstream

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Slipstream produced this report for the ComEd Emerging Technologies team with overall guidance and management from Steven LaBarge at ComEd and Tim Cycyota at CLEAResult. The team acknowledges the considerable assistance of the following individuals and organizations during the implementation of this project:

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I.0 EXECUTIVE SUMMARY

Slipstream conducted a field investigation of the software controlled, switched-reluctance motors (hereafter called the SRM System) installed at three commercial sites: one office building in Schaumburg, Illinois and two retail stores in Countryside and Norridge, Illinois. This study evaluated the SRM System manufactured by Turntide. The primary objective of the project was to assess the impact of applying the SRM System in retrofitting constant-speed induction rooftop units (RTUs) supply fan motors in terms of energy performance and installation procedures, and then extrapolate any savings to ComEd service territory. This report is based on the data collected from system monitoring that started in July 2020, ended in February 2022, and covers cooling, heating and shoulder season operations.

We found 61 (± 9) percent annual energy savings for the RTU supply fans under study. This represents 39 percent annual savings at the RTU level. This report also includes a market extrapolation to demonstrate the technical potential for energy savings, wherein we found that retrofitting of all RTUs with single-speed fan motors and motor sizes ≥ 1 and < 20 hp in ComEd territory with an SRM System would save 661 million kWh and 73 million dollars annually. Finally, we include observations from interviews with SRM System manufacturers, third-party installers and our own observations regarding the installation process.