Energy Savings Report - International Shipper

To justify further investment in the efficient smart motor solution across other property sites, Motus Power conducted a pilot study on two rooftop units on a facility in Fort Worth, TX. The goal of this pilot was to prove the technology's energy saving and economic performance. As part of this process, motor nameplate data was collected and motor power was measured, prior to and following the installation of the Turntide motor solution. Collected motor data was reviewed and used to calculate energy savings and the resulting economics. The table below summarizes major project details.

Table 1. Project Details

Project Summary	
Project Location	Fort Worth, TX
Project Description	Two rooftop unit (RTU) supply fan motors, serving shipping space, had efficient the smart motor solution installed. Remote monitoring kits were installed to monitor motor power.
Current Equipment	Two rooftop unit supply fan motors: • RTU-C2: 5 hp, constant speed • RTU-C5: 2 hp, constant speed
Energy Calculation Parameters Used in the Energy/Economic Analysis	
Equipment Hours of Operation	• RTU-C2: Continuous operation (*power data confirms continuous operation*) • RTU-C5: Continuous operation (*power data confirms continuous operation*)
Utility Rate Used for Cost Savings	Electric rate: $0.0634/kWh (blended). A second analysis was also presented using an electric rate of $0.13/kWh.
Energy Savings Calculation Approach	An average power (kW) was calculated from (when the motor operated) during each the baseline and post installation period. Annual energy savings (kWh) is calculated as the difference between the baseline and post installation average power, multiplied by the equipment hours of operation.
Monitoring Period Statistics	
Monitoring Period Dates	Two weeks prior to install (baseline) and 1.5 weeks after install (post-install). • Both RTU-C2 and RTU-C5: November 15 to December 8 with an installation date of November 28, 2022

Energy Savings Summary

The table below summarizes the energy and economic analysis using the assumptions outlined in the table above.

Table 2. Energy and Economic Savings Summary – Using Rate $0.0634/kWh and $0.13/kWh

	RTU-C2	RTU-C5	Combined Project
Motor (hp)	5	2	7
Baseline Power (kW)	2.21	1.50	3.70
Post-install Power (kW)	0.55	0.29	0.84
Weekly On-Hours	168	168	168
Power Reduction (%)	75%	81%	77%
Annual Energy Saved (kWh)	14,495	10,538	25,033
Annual Cost Savings ($) - $0.0634/kWh	$919	$668	$3,254
Simple Payback (years) - $0.0634/kWh	4.4	4.5	4.4
Annual Cost Savings ($) - $0.13/kWh	$1,884	$1,369	$3,254
Simple Payback (years) - $0.13/kWh	2.1	2.2	2.2

**Cost of RMKs not included.*

Report Date: December 14, 2022

Motor Performance

Motor RTU-C2 During the two-week baseline period the power draw varied between 2.15 and 2.3 kW (average 2.21 kW) and runs continuously through the whole period. This 24-hour operation is used in both the baseline and post-install phase to calculate energy savings. The post-install phase for this motor consisted of a reduced power draw that varied between 0.3 and 1.7 kW (average of 0.55 kW) that followed the same schedule in the baseline phase. The minimum power draw in this phase is less than 20% of the motor's peak rated power, so it is assumed that this corresponds to ventilation mode, while the power spikes correspond to when the unit is in cooling or heating mode.

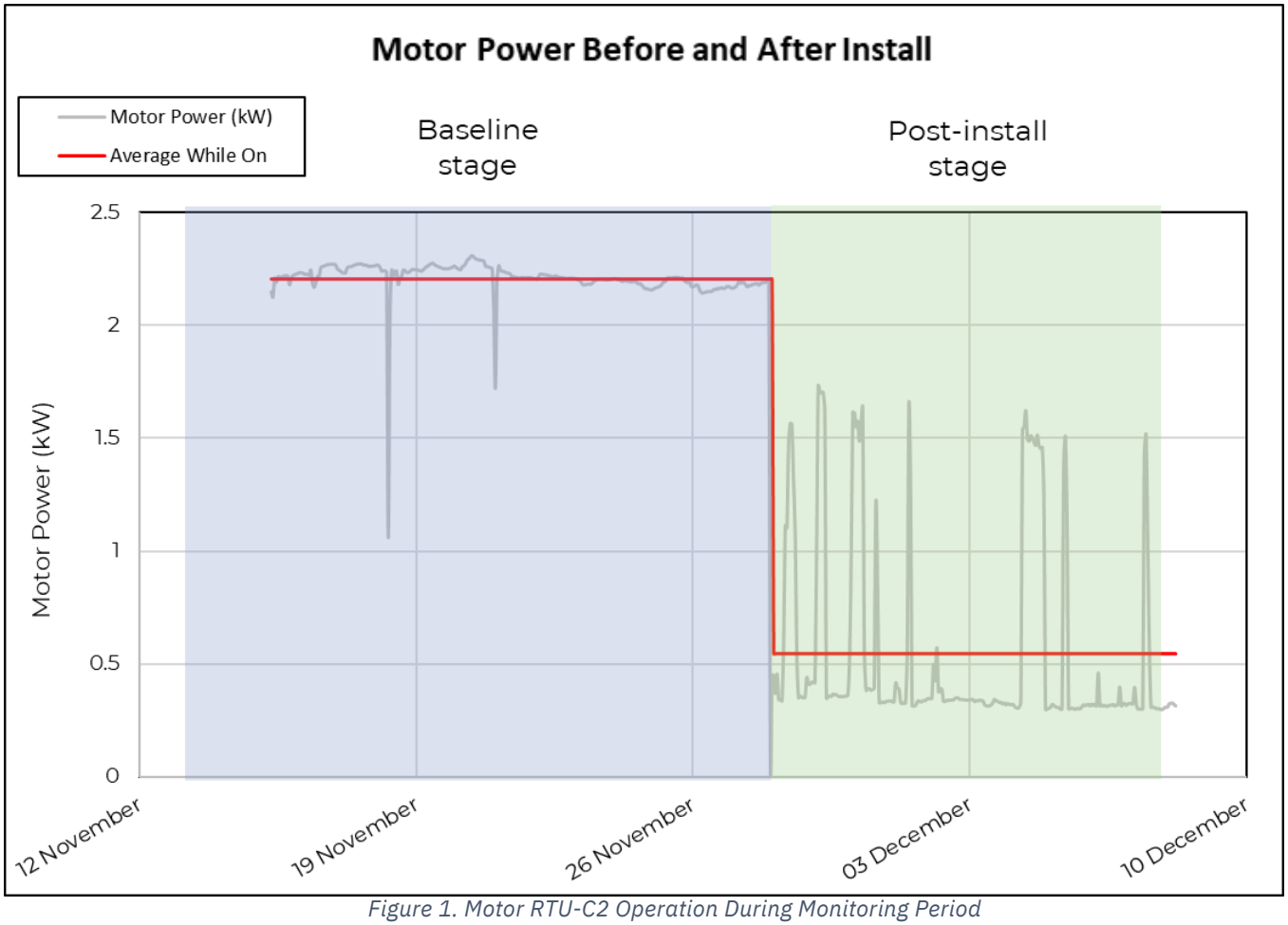

Figure 1. Motor RTU-C2 Operation During Monitoring Period

Motor RTU-C5

During the two-week baseline period the power draw shows a steady 1.5 kW with continuous operation observed. This 24-hour operation is used in both the baseline and post-install phase to calculate energy savings. The post-install phase for this motor consisted of a reduced power draw that varied between 0.2 to 0.6 kW (average of 0.29 kW). The average power draw is approximately 20% of the motor's peak rated power, so it is assumed that this corresponds to ventilation mode.

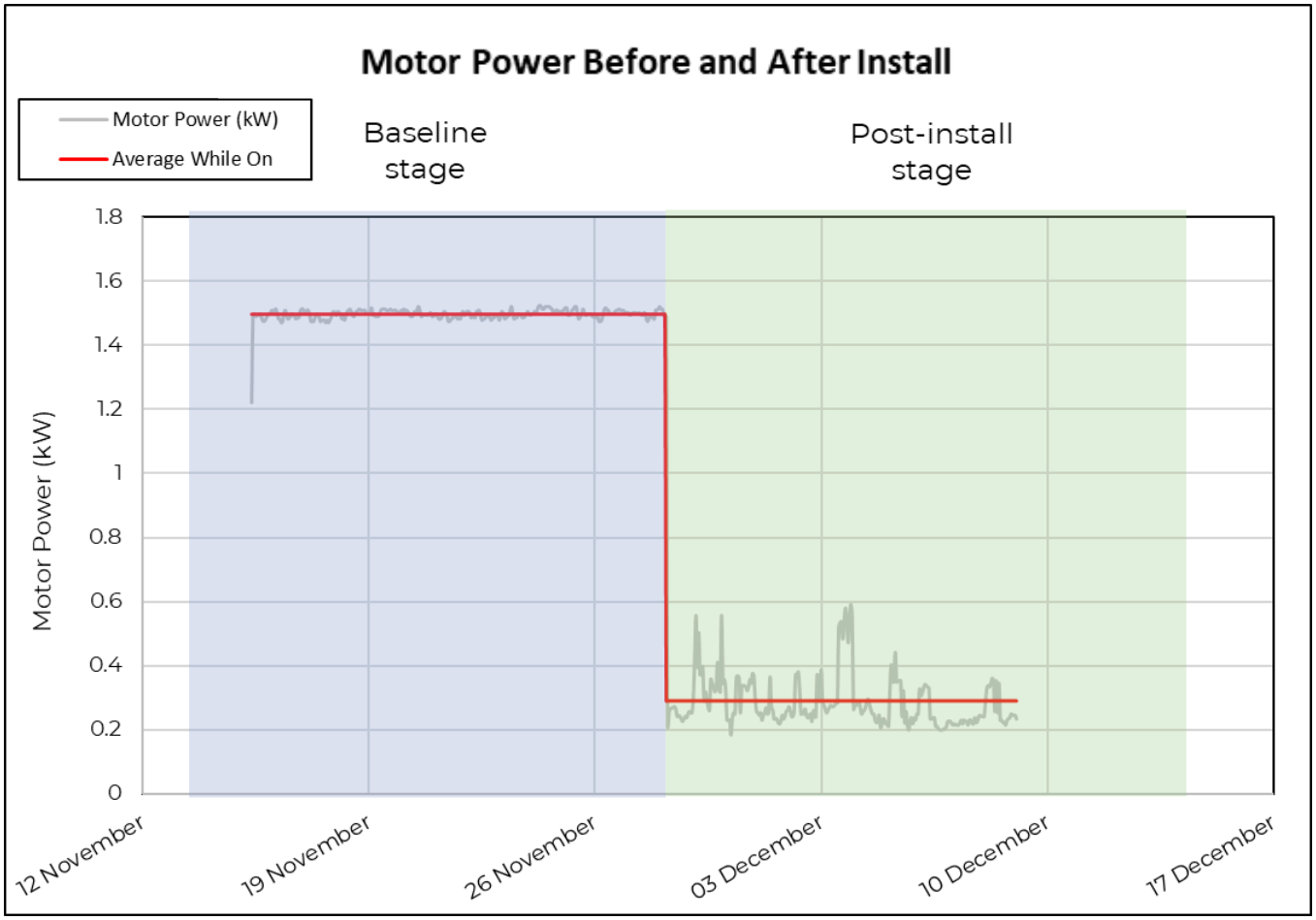

Figure 2. Motor RTU-C5 Operation During Monitoring Period

Bolder Energy Engineers Qualifications

Bolder Energy Engineers was hired to review the pilot study operational data, calculate energy savings, and develop a short report summarizing the findings. Bolder Energy Engineers (Bolder Energy or BEEs) is a full-service energy consulting firm that combines deep industry expertise and integrated solutions to help building owners and operators enhance building performance, improve operations, and address the challenges of maintaining energy savings over time. We offer a comprehensive suite of building energy efficiency services focused on reducing energy use and energy costs, improving the performance of existing buildings, improving occupant comfort, reducing maintenance issues and costs, reducing the building's environmental impact, and increase eligibility for green building certifications. Bolder Energy has experience successfully performing all of these services for a variety of clients types and in a variety of building types. We focus on assessing envelope, lighting, mechanical HVAC, building controls, and water-related saving opportunities, as well as renewable energy applications. Bolder Energy also evaluates energy saving technologies for building HVAC applications. Bolder Energy has several national and local credentials and affiliations including the Investor Confidence Project's Credentialed Project Developers and Quality Assurance Assessors and Energy Star Partner. Many of Bolder Energy's team also hold industry licenses and certifications like Professional Engineer (PE), Certified Energy Manager (CEM), Building Commissioning Professional (BCxP) and LEED certified.