



Refrigeration System Baseline Review

Vanessa Meats & Deli

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2.1

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1. Executive Summary

Input power measurements to the six individual power supplies for the Vanessa Meats 'South' were measured pre-project utilizing three-phase Candura EnergyPro power data loggers at five second intervals. The Post-Project data was collected at one-minute intervals utilizing a 3-phase 220 V Emerson Power meter installed with the equipment which monitors the single electrical power feed to the new system.

The project has generated a significant 77.3% average hourly power reduction. Almost 80% of the original total input power has been saved with exactly the same cooling load being supplied. In addition, the freezer temperatures are now being maintained on target at 0-2 Degrees Fahrenheit whereas prior to the new installation, freezer temperatures were only capable of maintaining an average of 8-12 Degrees Fahrenheit.

Regards,



A. Smith, P.Eng., MAsC., CEM, CMVP

Principal, Joule Energy Solutions Inc.

2. Analysis and Methodology

The project entailed retrofitting an existing legacy refrigeration system at Vanessa Meats which is now known as the ‘South’ system and provides refrigeration to two Freezer loads and two Cooler loads.

The freezer circuit temperature is maintained with two legacy 3/3.5 hp self-contained custom refrigeration systems running compressors, condensers, and evaporator fans off two single-phase 208 Voltage electrical power feeds with one single 208 V single-phase electrical power feed supplying each system.

The cooler circuit temperatures are maintained with two 3 hp KeepRite outdoor condensing systems utilizing individual 208 V single-phase electrical supply. Each cooler has a separate evaporator system, each fed with a single-phase 110 V electrical supply.



Figure 1 – Base Case Freezer Systems



Figure 2 – Base Case Cooler Systems

The total input power to each of the six power feeds (2 x 208 VAC Single-Phase Freezer supplies, 2 x 208 VAC Single Phase KeepRite supplies, 2 x 110V Single Phase Cooler

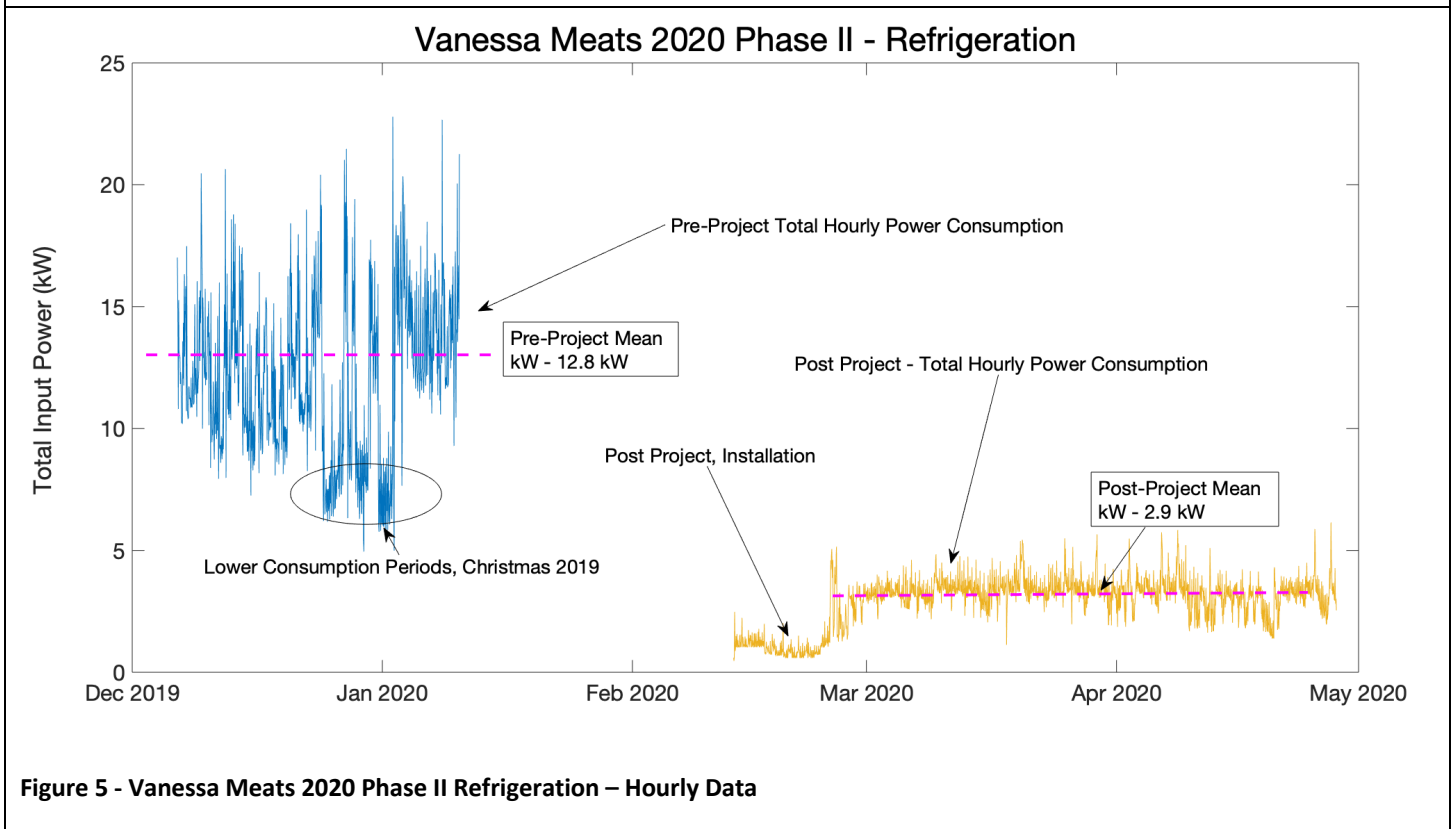
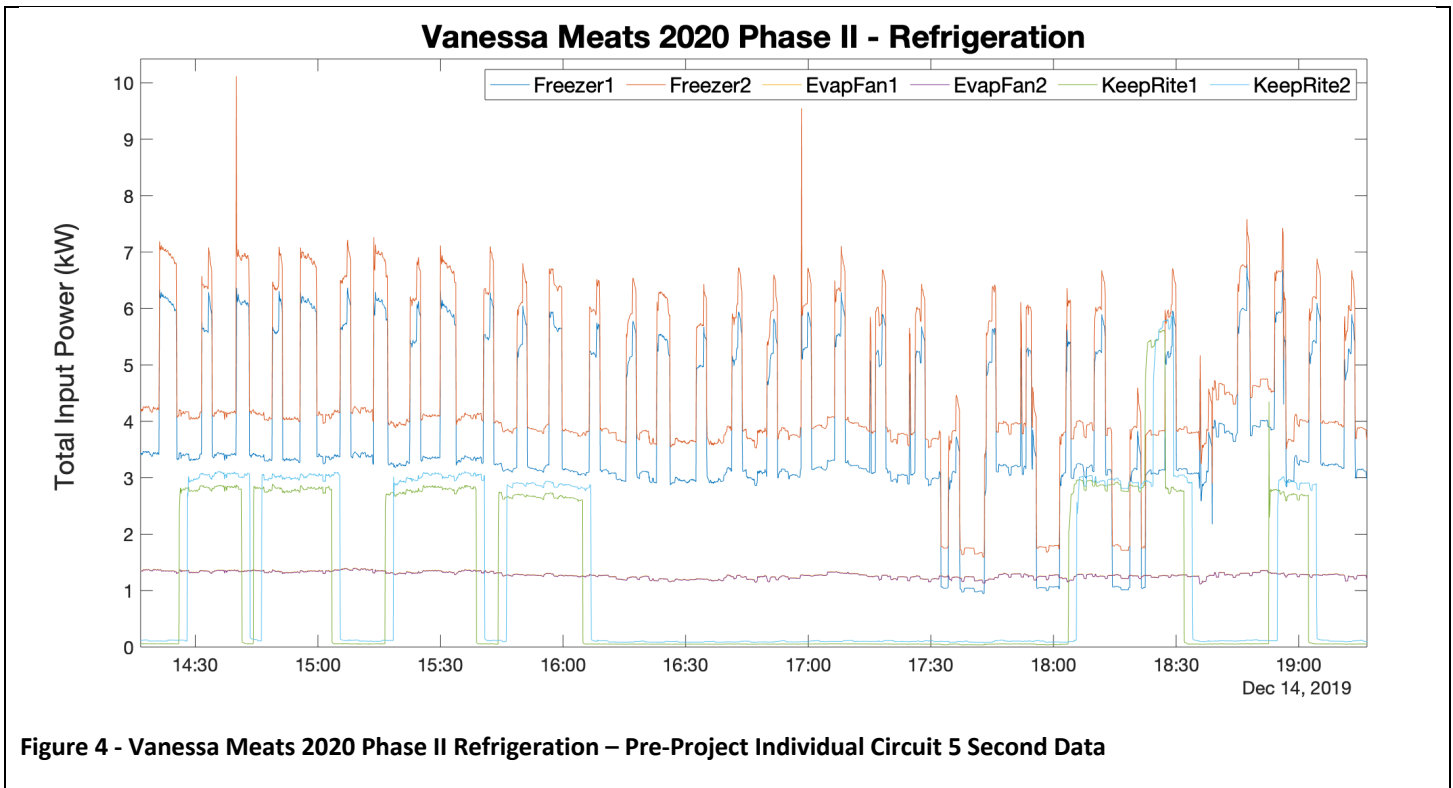
Evaporator Fans) were individually monitored on a five second basis in December 2019 before the retrofit as shown in Figure 3 below.

The post-project data was taken from the single 220 VAC 3-Phase feed to the new 'South' Oxford Energy system utilizing the on-board 3-Phase Emerson Power meter.

The total hourly data for both pre and post project is shown in Figure 4 illustrating an average hourly power reduction of 9.9 kW, representing a 77.3% average hourly power reduction.



Figure 3 - Post-Project Installation



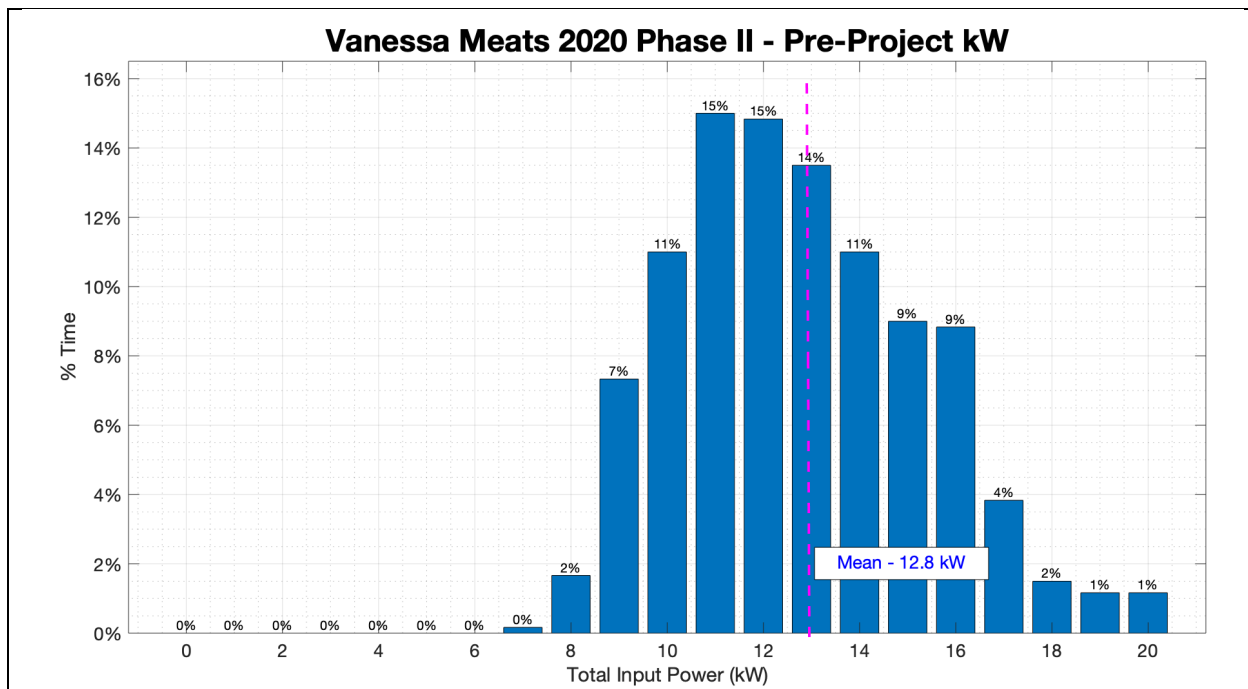


Figure 6 - Pre-Project Total Input Power

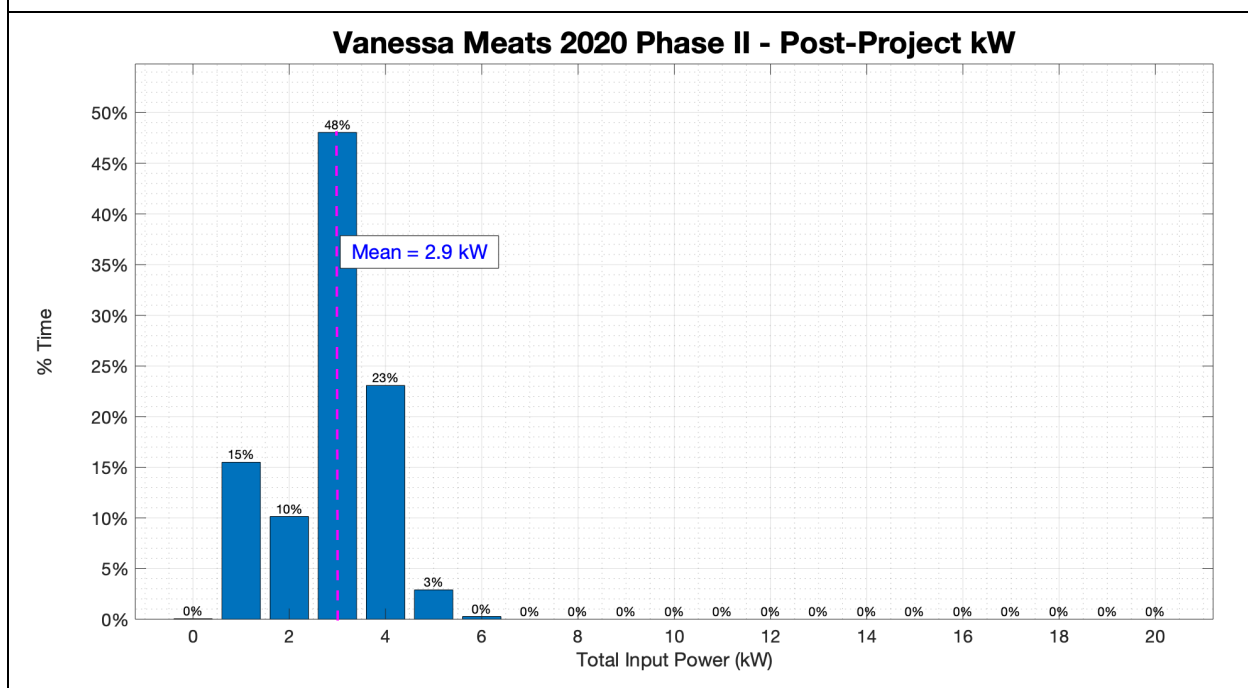


Figure 7 - Post-Project Total Input Power

