

## Purpose

These are guidelines for an Energy Efficiency Feasibility Study on a refrigeration system and are in addition to BCH-QMS-9462-C-001 Guidelines for an Industrial Energy Efficiency Feasibility Study for an existing system or a new plant design. The intent is to provide items to consider when analyzing the energy consumption of a refrigeration system. Consultant should exercise judgement in using these guidelines as items may or may not be appropriate for systems considered. If needed, contact Power Smart Engineering for additional assistance or explanation.

## Scope

This document outlines guidelines for a Refrigeration Energy Efficiency Feasibility Study.

## Requirements

1. The Consultant's system description and baseline analysis shall include the following when applicable:
  - 1.1. General
    - 1.1.1. Examine all components within the project scopes limits.
    - 1.1.2. Describe the effect of the following on refrigeration load.
      - 1.1.2.1. Peak loading.
      - 1.1.2.2. Business cycle loading.
      - 1.1.2.3. Other load peculiarities.
    - 1.1.3. Describe load types.
      - 1.1.3.1. Evaporator coil; spiral, individually quick frozen tunnel or blast.
      - 1.1.3.2. Secondary fluid; glycol, water or brine.
      - 1.1.3.3. Direct contact; plate or ice makers.
    - 1.1.4. Assess how the system is affected by the following.
      - 1.1.4.1. Environmental and seasonal conditions.
      - 1.1.4.2. Maintenance condition, procedures and training.
2. Describe the following equipment and indicate potential for improvement. Then evaluate and recommend upgrades or repairs that improve the electrical efficiency.
  - 2.1. System
    - 2.1.1. Attempt to achieve alignment of supply and demand.
    - 2.1.2. Reduce or change load or room applications.
    - 2.1.3. Alter equipment selection and configuration.
    - 2.1.4. Compare system pressures, temperatures and flow velocity to design conditions.

## Guidelines For An Energy Efficiency Feasibility Study - Refrigeration

---

### 2.2. Equipment

- 2.2.1. Describe number, age, type, and model of compressors, condensers, evaporators, and other systems. Comment on capacity, loading control and turndown range. A simplified system schematic with process loads and chief instrumentation is preferable mode of description.
- 2.2.2. Briefly describe the enclosure condition, heat recovery systems, and floor heating systems.

### Document Hierarchy

- BCH-QMS-9462-C-001 Minimum Requirements for an Industrial Energy Efficiency Feasibility Study
- If applicable:
  - BCH-QMS-9462-C-005 Guidelines for an Industrial Energy Efficiency Feasibility Study – Process Control