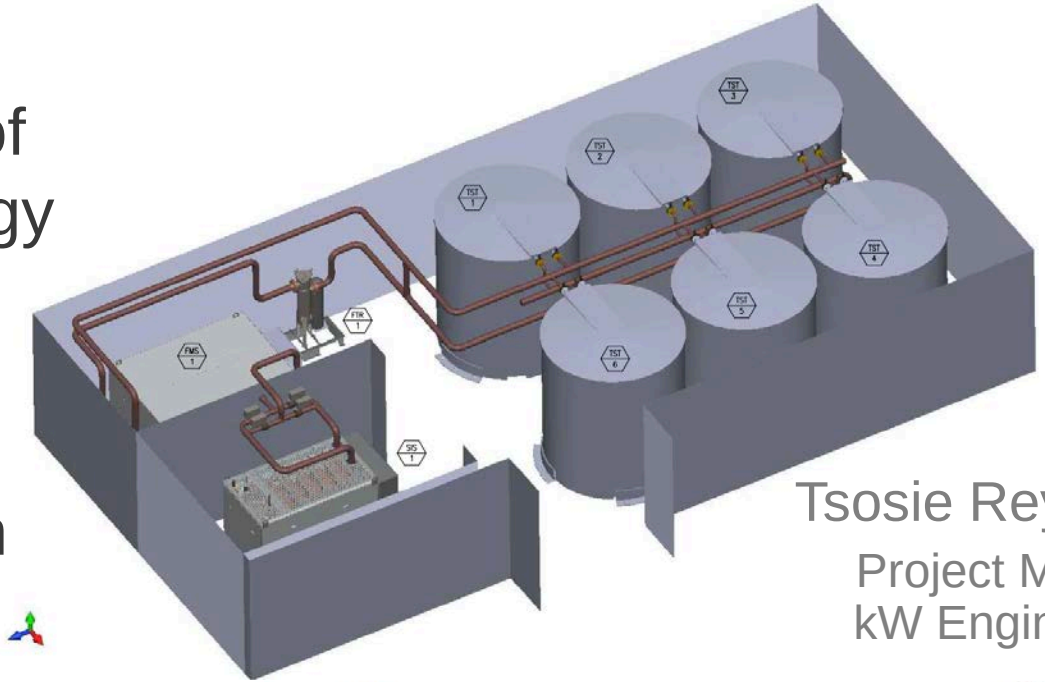

OCTOBER 8 & 9
DOWNEY, CA
ET Summit
Fall 2018
COMMERCIAL + RESIDENTIAL BUILDINGS

Refrigeration Peak Demand Shaving

A Field Test of Thermal Energy Storage in Grocery Refrigeration



Tsosie Reyhner, P.E.

Project Manager
kW Engineering

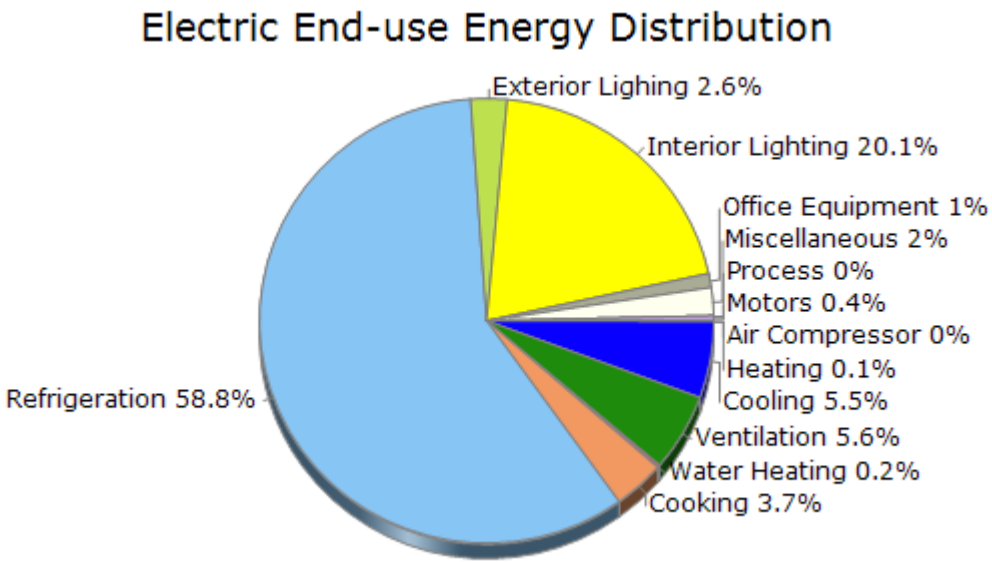
Market Relevance

SDG&E Commercial:

- Over 580 million SF
- Over 8,491 GWh
- 12% Refrigeration

SDG&E Grocery Sector:

- Over 19 million SF
- Over 737 GWh
- 59% Refrigeration



Source: California End-Use Survey

Field Study Scope

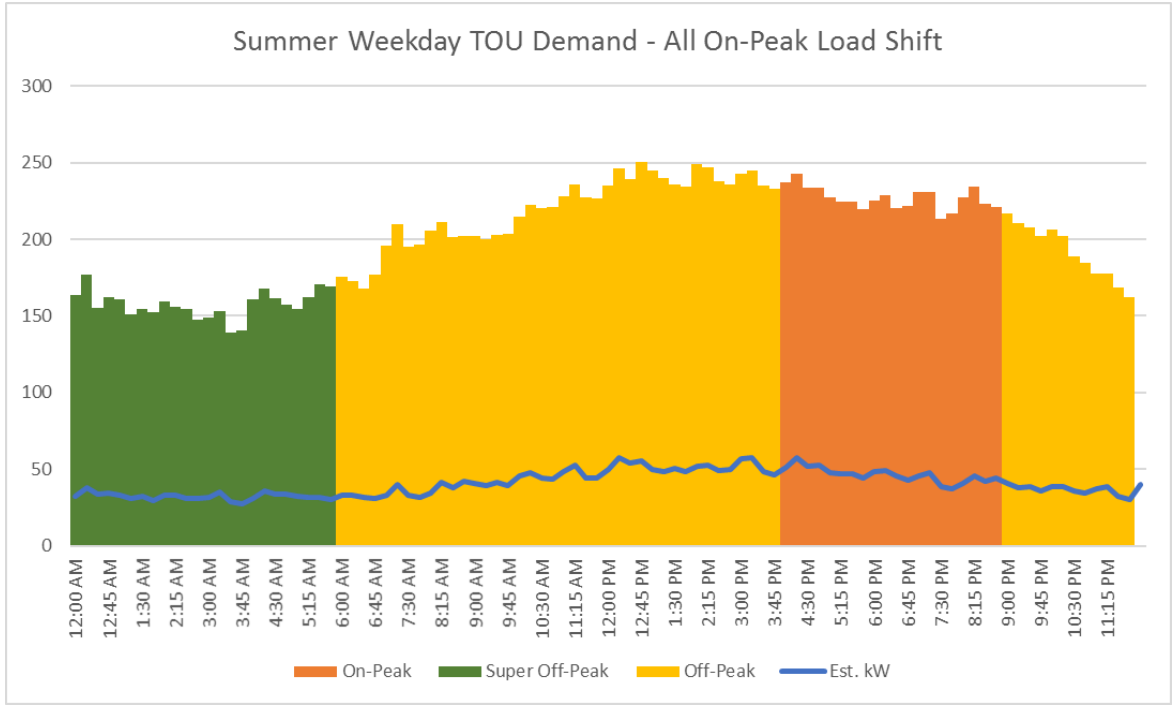
National Chain Grocery Store

- Approximately 46,000 Square Feet
- CEC Climate Zone 10
- Medium Temp. Refrigeration Rack:
  - 3 MT Refrigeration Circuits
  - Rooftop Air Cooled Condensers
  - Serves:
    - 3 Walk-in Coolers
    - 38 Reach-in Cases
    - 3 Coffin Cases
    - 1 Low Temperature Rack Sub-cooler

Energy Usage Profile

- ~1.6 MWh Annual Usage
- ~20% Medium Temp Refrigeration

Summer Weekday Energy Usage



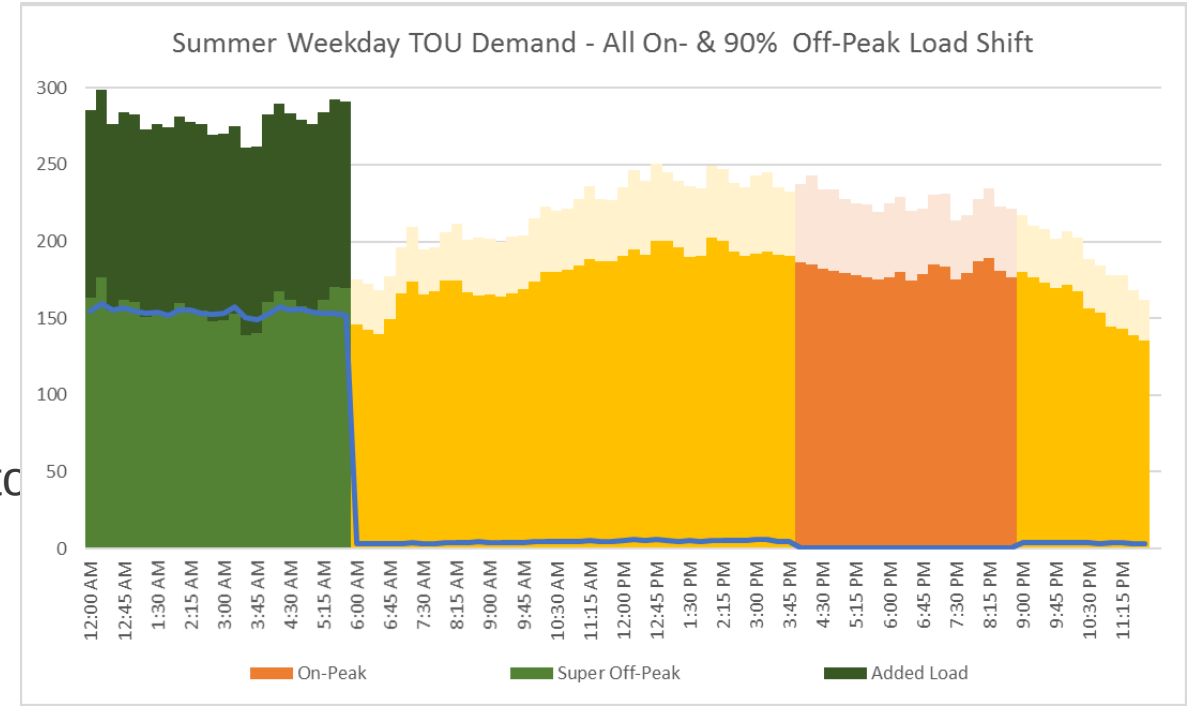
Ideal Load Shift TES System

Salt Water Thermal Energy Storage System Rated:

- 75 kW Max Peak
- 780 kWh Storage

Goal:

- Shift On- Peak Load
- Use excess capacity to offset Off-Peak
- Charge Super Off-Peak



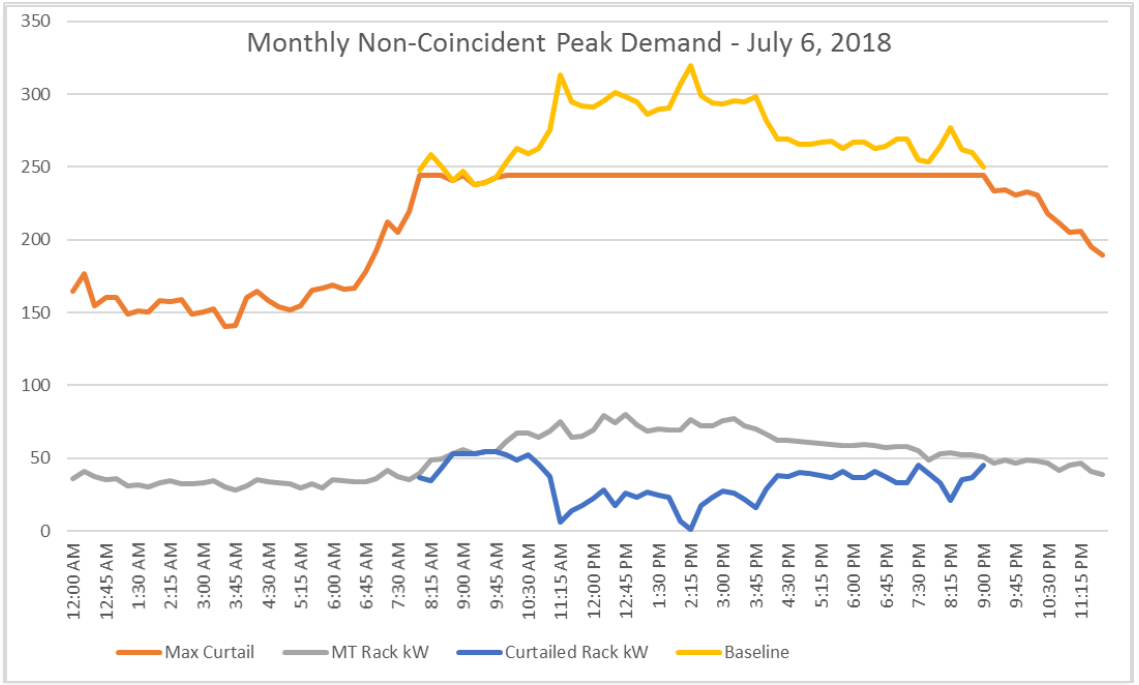
Ideal Peak Shaving TES System

- Focus on reducing Peak Demands
- Lower Demand Charges

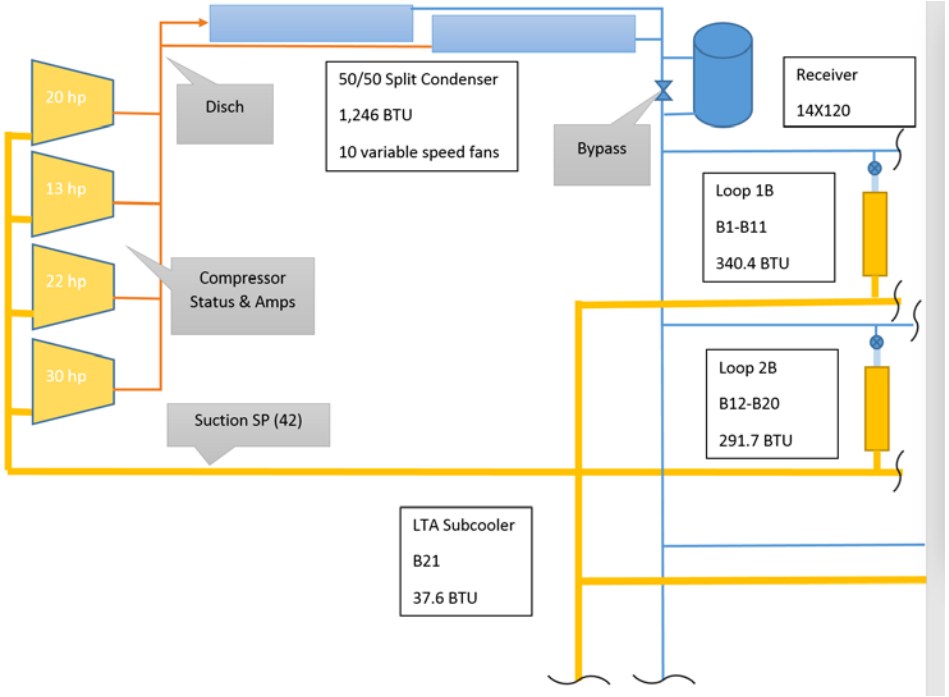
Example: July 6, 2018

- Curtail Max 75 kW
- Minimum 390 kWh

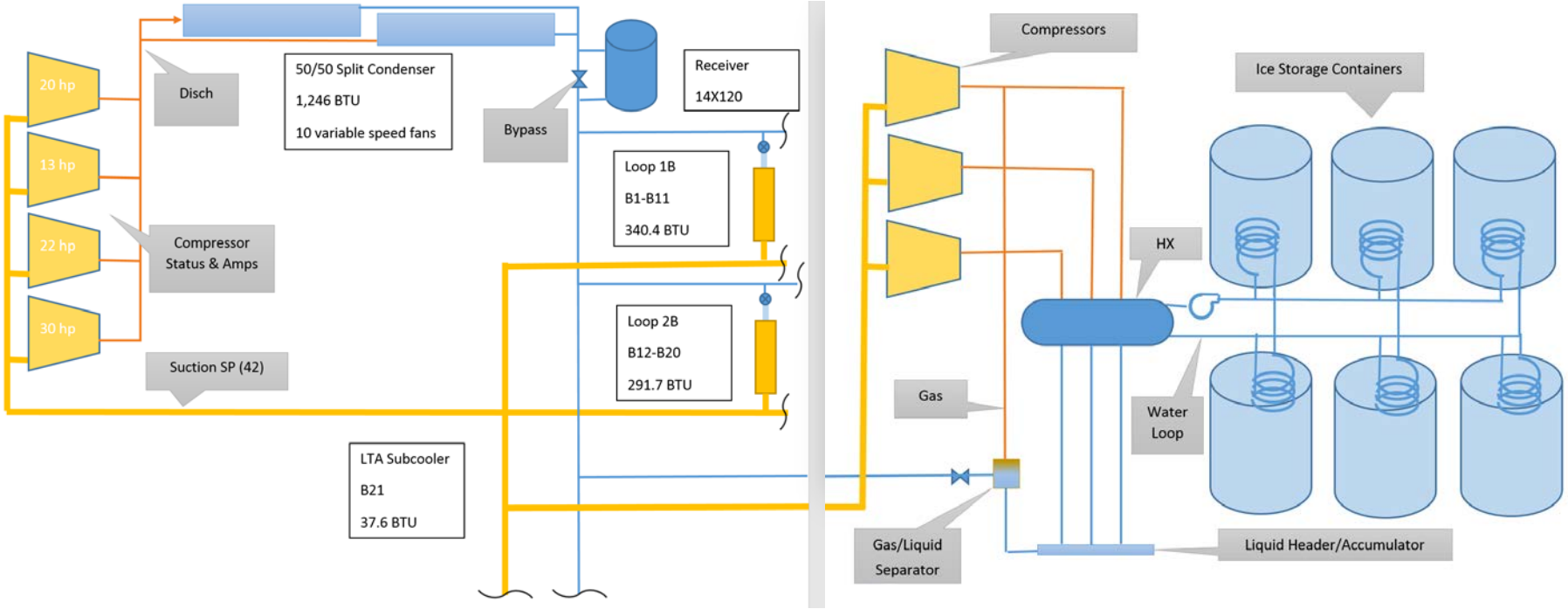
+ Storage Losses



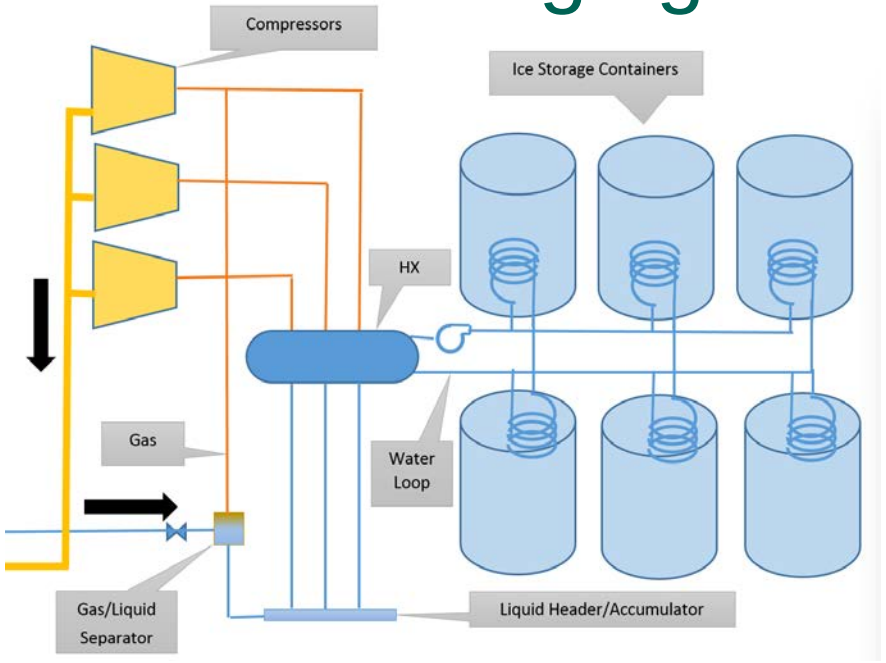
Installation Details – Store System



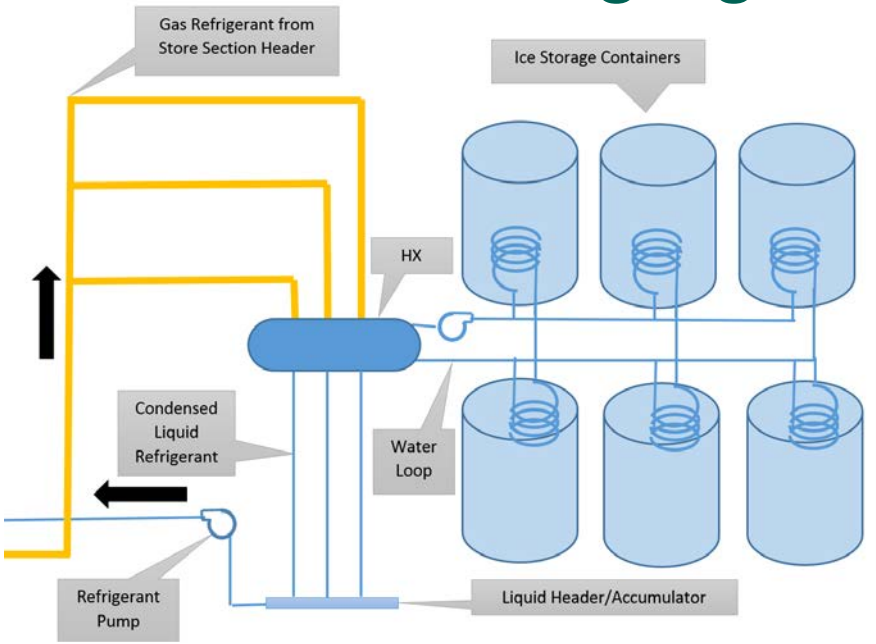
Installation Details – TES Equipment



TES Charging



TES Discharging



- This project is currently undergoing the Commissioning Phase.
- We anticipate the Go Live date to occur in the coming weeks.
- The M&V Approach is currently being modified to focus on Peak kW
- Once complete, the project report will be available from the ETCC

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