H.O.T.T.O.G.O!

HPWHs in foodservice + real-world performance

Presented at the 2026 Utility Energy Forum

AWHi
ADVANCED WATER HEATING INITIATIVE®

Current State of the Market

Many food-service applications, from quick-service to sit-down to grocery stores

Often served by inefficient electric resistance or gas-fired units

Significant savings available!

The (Forgotten) Middle-Child of HPWHs

Most HPWHs fall into two categories:

- Small Unitary Systems (50-80 gallons)
- Large Central Systems (Often 500+ gallons)

Intermediate solutions exist:

- Small Commercial HPWHs (~120 gallons or equivalent)

Field Study Goal

Validate the performance of Small Commercial HPWH technologies:

- Unitary 120-gallon tank system
- Split system heat pump + storage tank

Recruit and monitor 26+ sites and install M&V equipment on each

This is the first-ever large-scale demonstration study of these technologies

Performance Elements

Assess the following:

★★☆ System COP

Hot Water Flow

Performance Drivers

M&V Data

Site Breakdown

California (4)

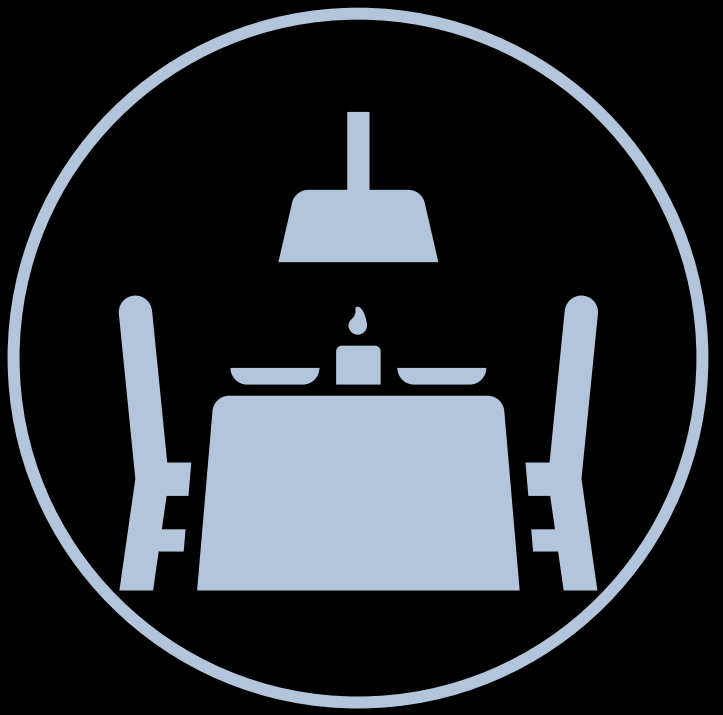
Grocery Store x 2 (Vista and Encinitas, CA)

Sit-Down Diner (Sacramento, CA)

Quick-Service Restaurant (Bellflower, CA)

Texas (2)

Quick-Service Restaurant x 2 (San Antonio and Brookshire, TX)



Grocery Store #1 (Vista, CA)

Site Conditions: Indoors on a mechanical mezzanine; plentiful outside air exchange and waste heat from cooler/freezer rack compressors

Ambient Temperature: 65F to 82F

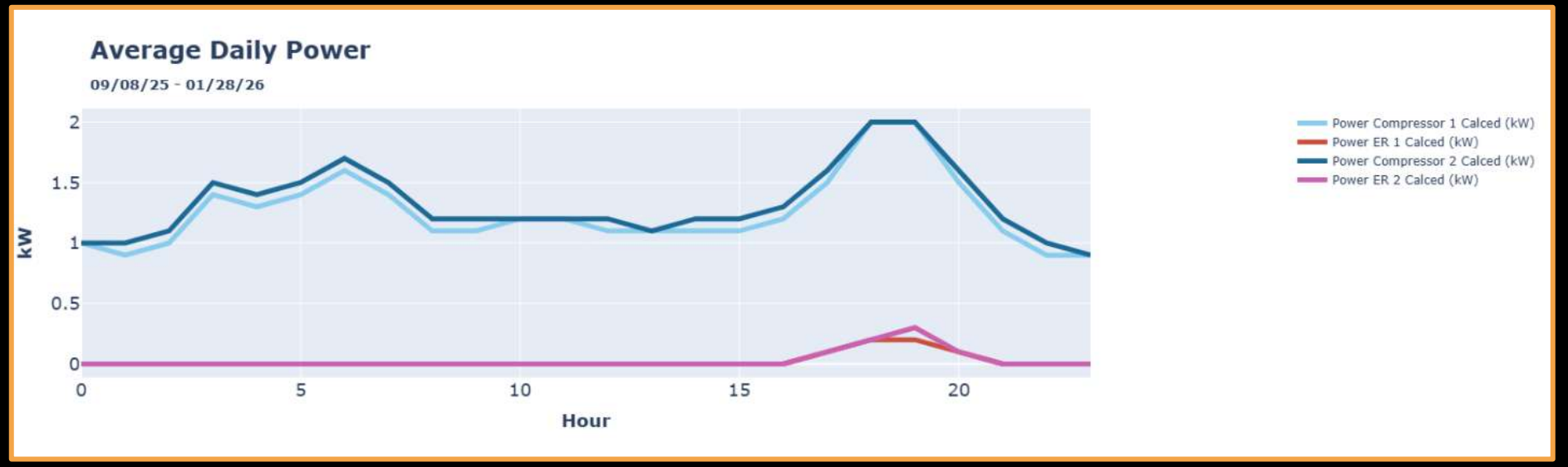
COP: 2.0 to 2.1

ER Use: <2%

Average Daily Draw: 309 gallons.

Daily Draw Range: 26-711 gal

Grocery Store #1 (Vista, CA)



Grocery Store #2 (Encinitas, CA)

Site Conditions: Indoors on a mechanical mezzanine; plentiful outside air exchange and waste heat from cooler/freezer rack compressors

Ambient Temperature: 61F to 78F

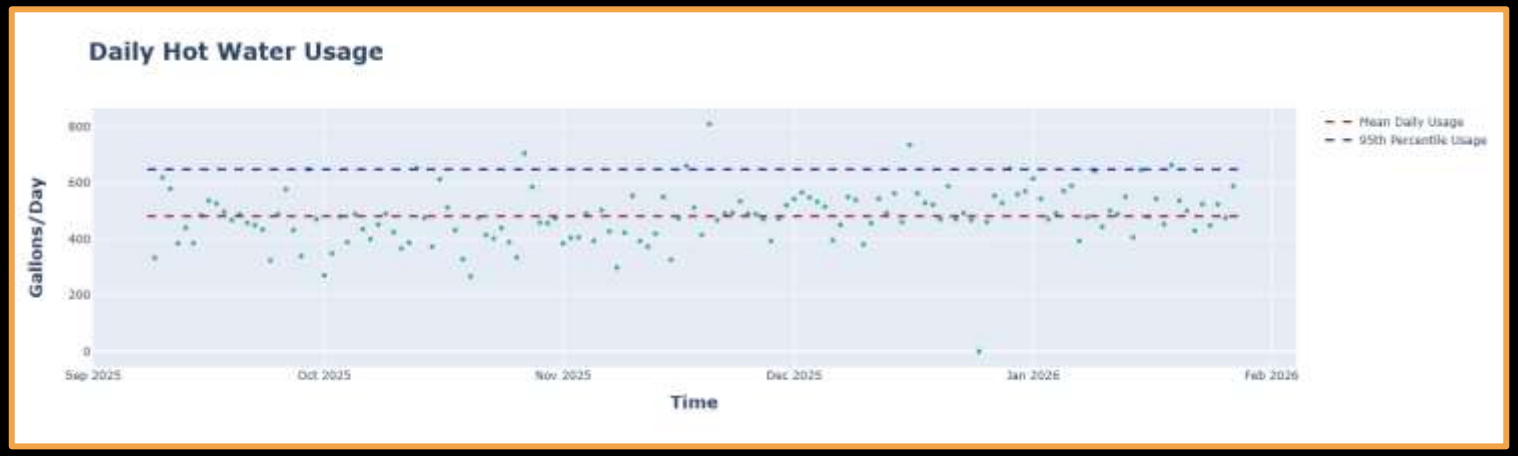
COP: 1.7 to 1.9

ER Use: <1%

Average Draw: 481 gallons

Draw Range: 271-811 gal

Grocery Store #2 (Encinitas, CA)



Diner (Sacramento, CA)

Site Conditions: Two 80-gal tanks located inside; four rooftop compressors

Ambient Temperature: 43F to 77F

COP: 3.5 to 4.1

ER Use: NA

Average Draw: 347 gal

Draw Range: 161-641 gal

Diner (Sacramento, CA)

Quick-Service Restaurant (Bellflower, CA)

Site Conditions: Back-of-house location; plenty of air volume; continuous recirc

Ambient Temperature: 68F to 77F

COP: 1.3 to 1.5 (due to uncontrolled recirc)

ER Use: 31%

Average Draw: 255 gal

Draw Range: 156-516 gal

Quick-Service Restaurant (Bellflower, CA)

Quick-Service Restaurant (San Antonio, TX)

Site Conditions: Back-of-house location; plenty of air volume; Aquastat recirc

Ambient Temperature: 68F to 77F

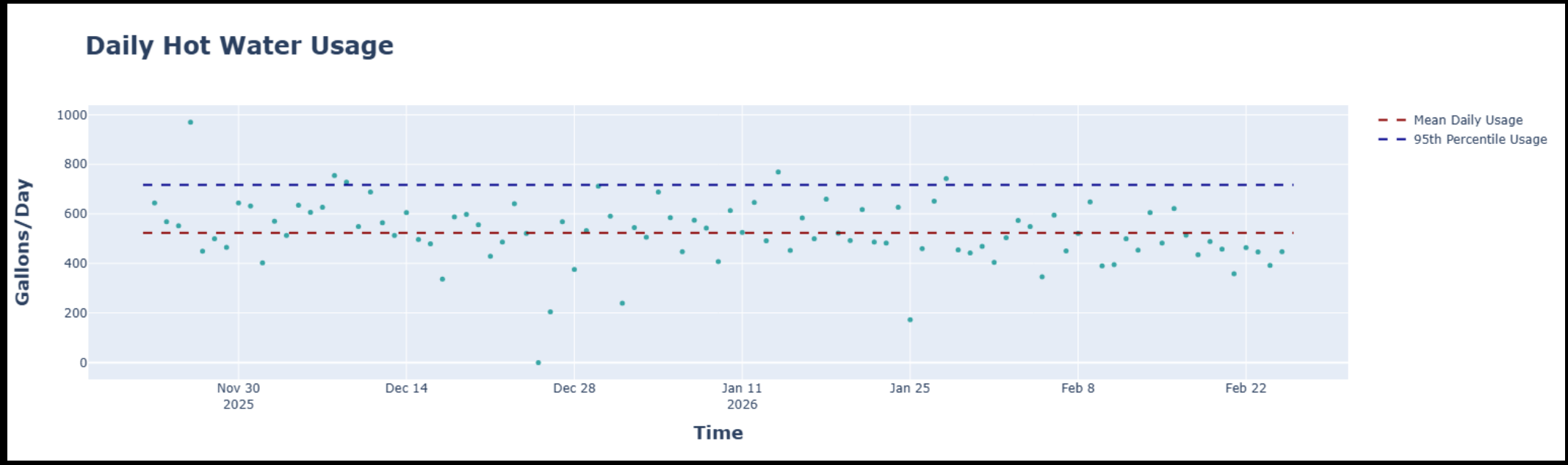
COP: 2.0 to 2.3

ER Use: 49%

Average Draw: 523 gal

Draw Range: 173-971 gal

Quick-Service Restaurant (San Antonio, TX)



Quick-Service Restaurant (Brookshire, TX)

Site Conditions: Back-of-house location; plenty of air volume; Aquastat recirc

Ambient Temperature: 66F to 71F

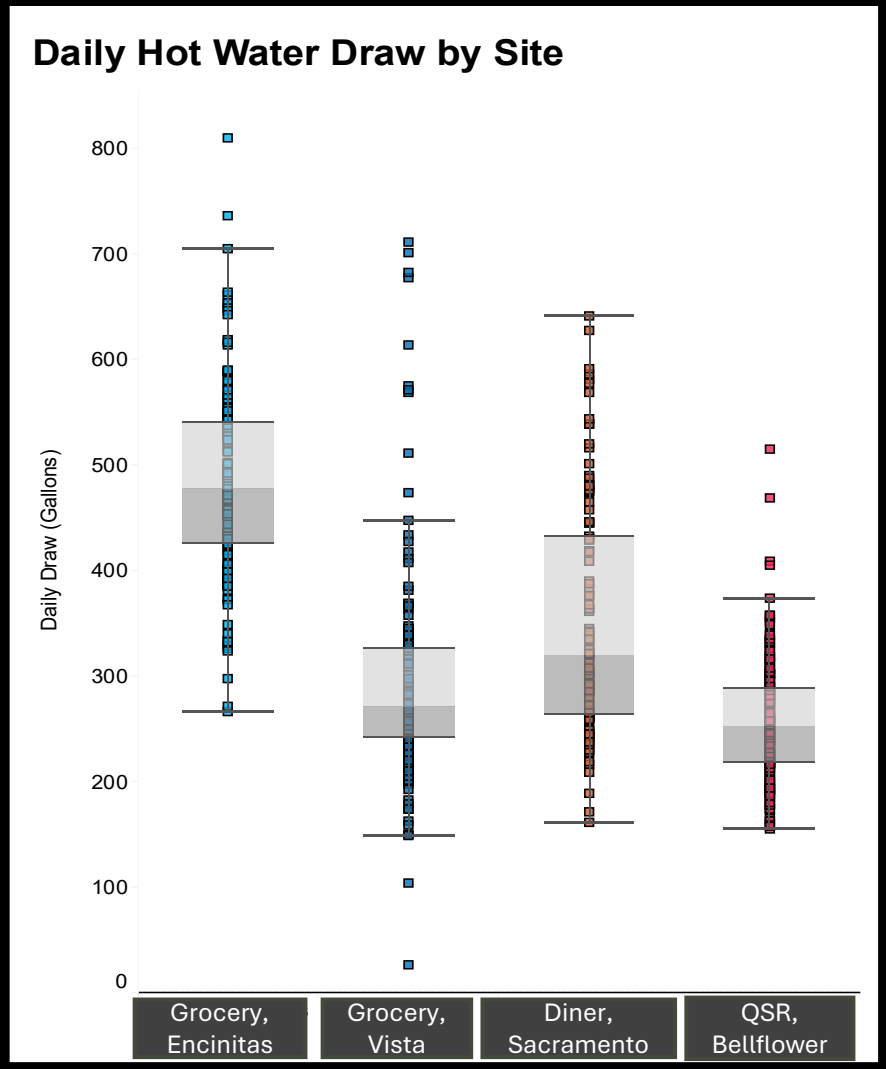
COP: 1.8 to 2.5

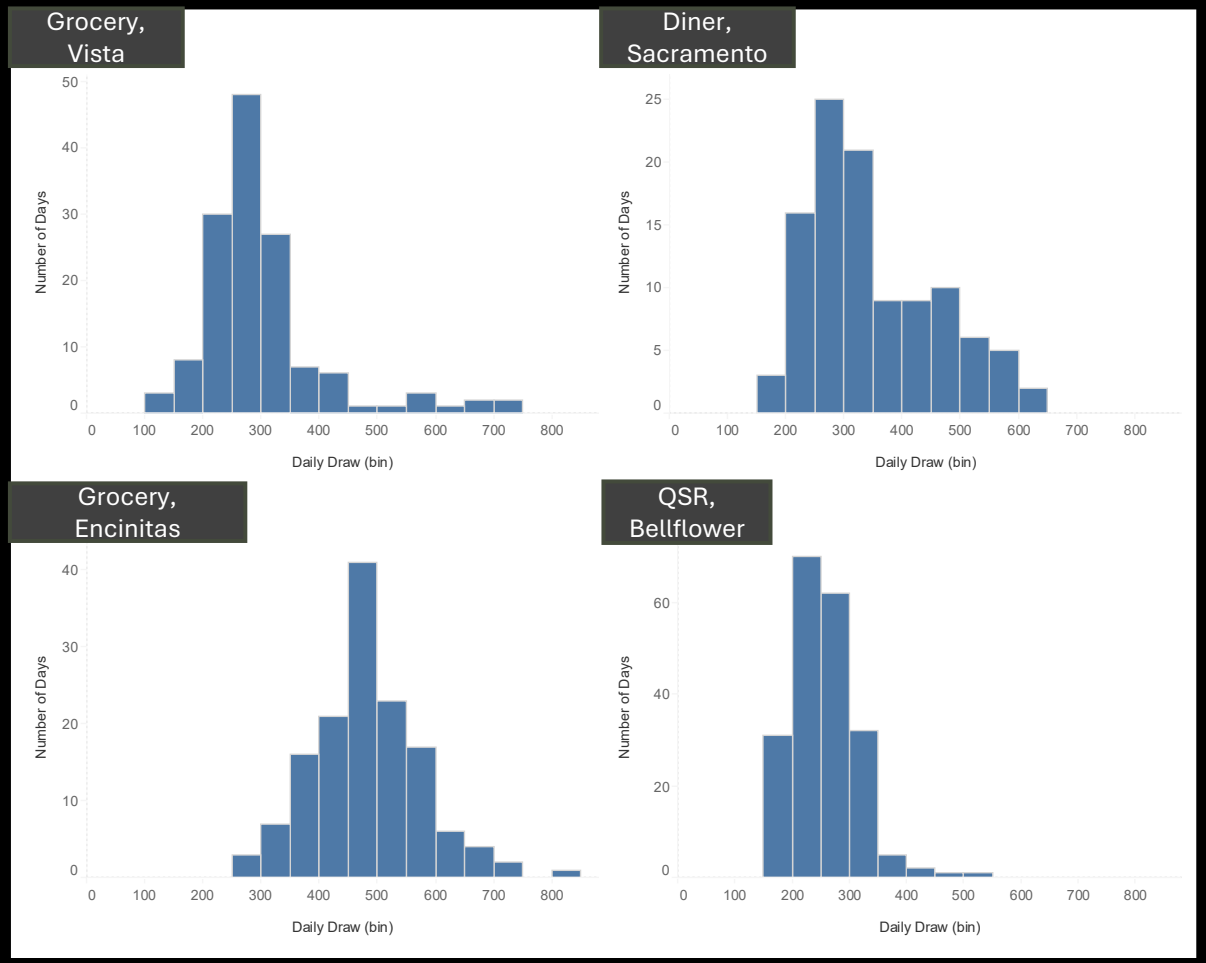
ER Use (% of total energy): 60%

Quick-Service Restaurant (Brookshire, TX)

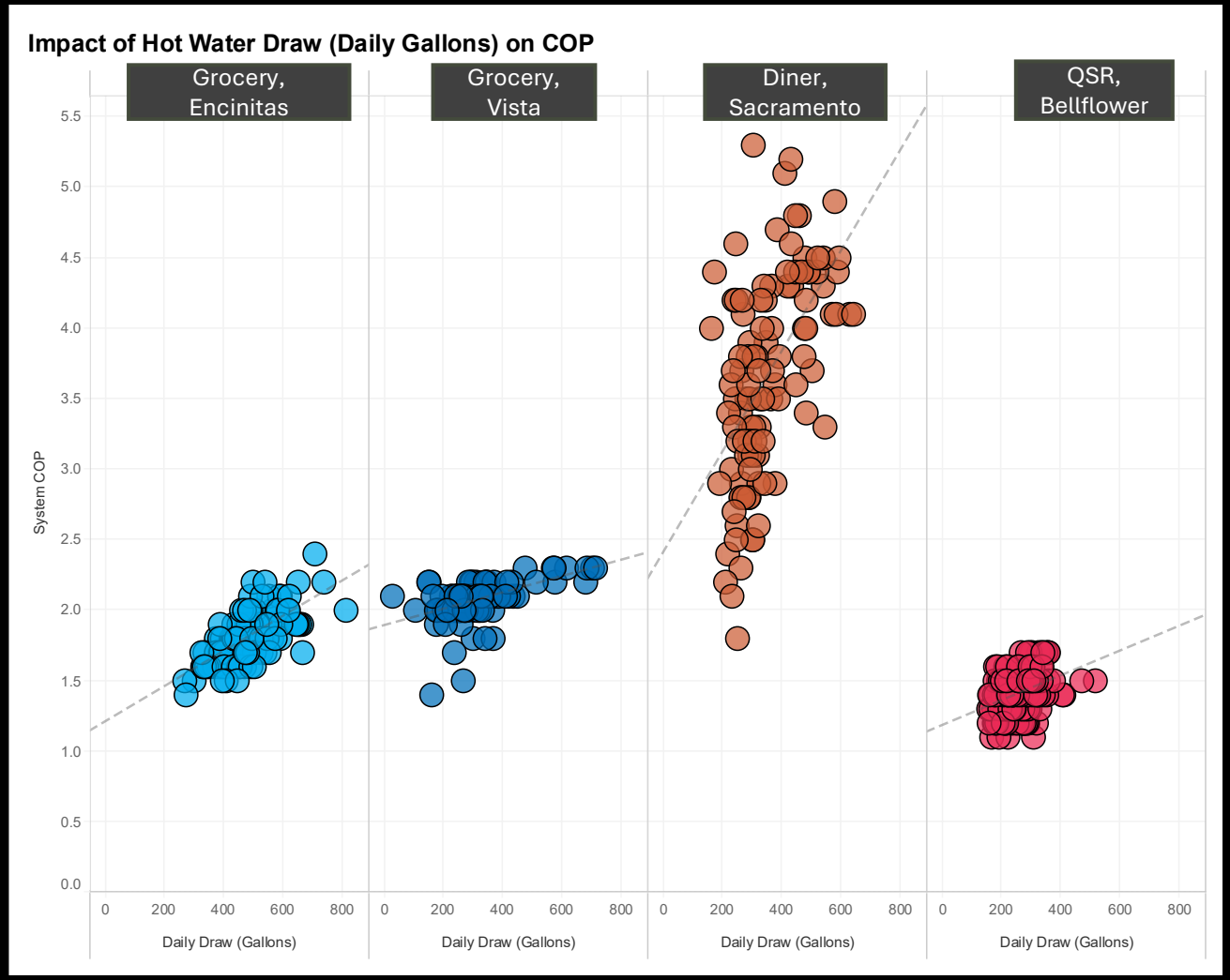
Cross-Site Analysis

Hot Water Draw Distributions

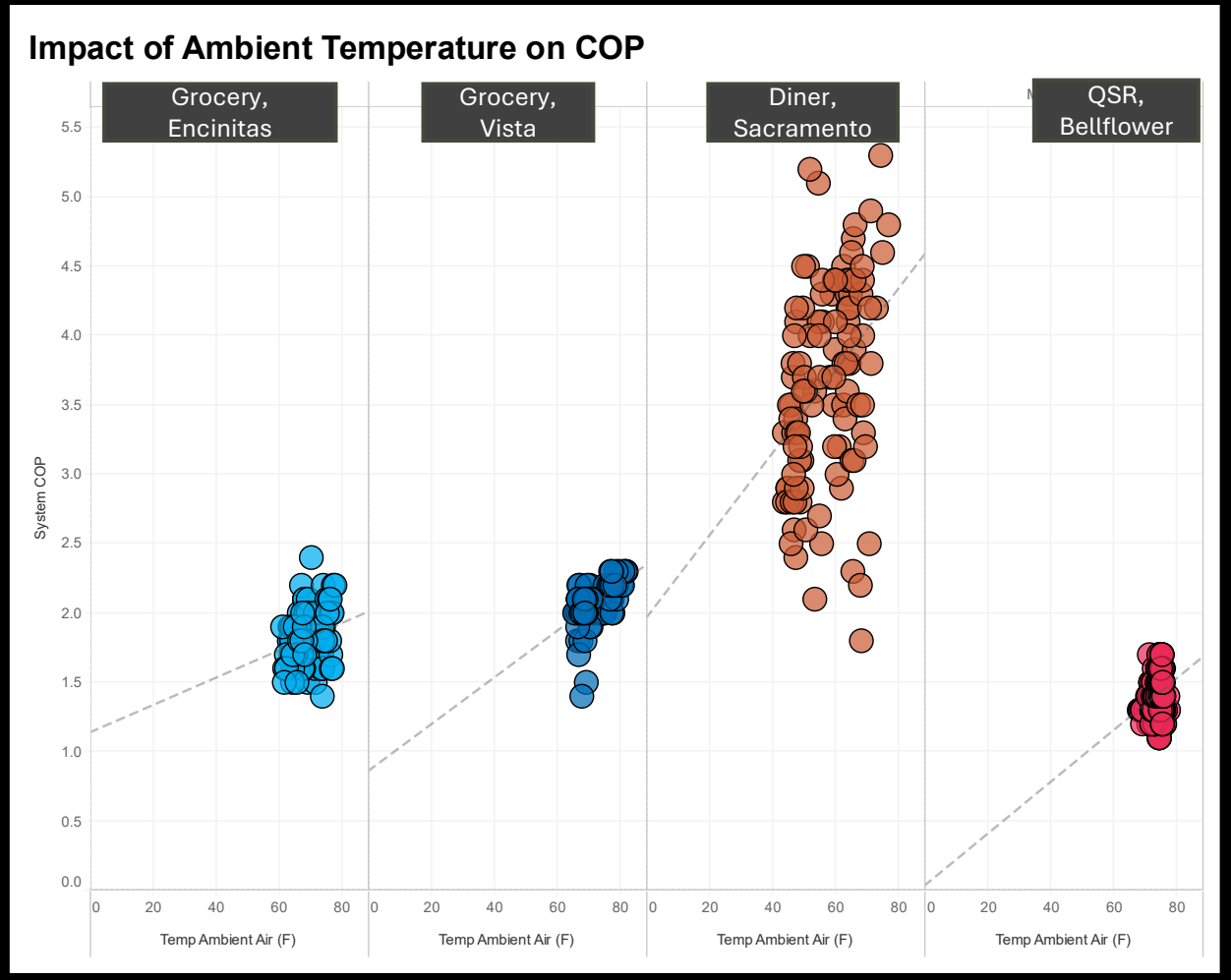




Hot Water Draw Impact on COP



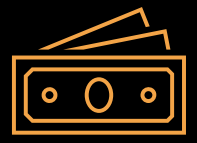
Ambient Temperature Impact on COP



Big Picture Takeaways

Continuous recirculation (uncontrolled) greatly reduces COP

Integrated units in restaurants may be undersized (for efficiency)



Payback period vs electric resistance only 1-2 years

Higher draw correlated with higher COP

Less clear ambient temperature effect