

Gas Emerging Technologies (GET) Program

Smart Pump, Multifamily Pilot Study

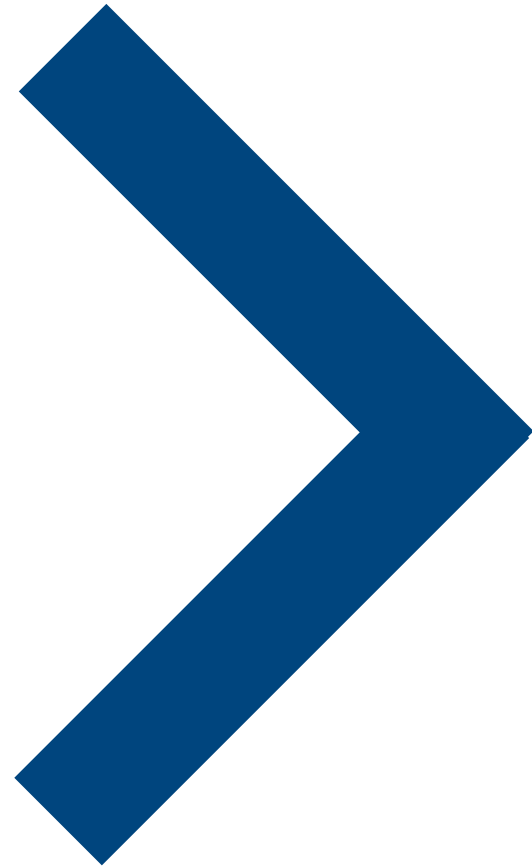
June 2026





Agenda

- Summary & Key Findings
- Objectives & Technology
- Site Descriptions
- Energy Results
- Discussion
- Costs: Materials vs Labor
- Recommendations
- Q&A (15 minutes)



Executive Summary + Key Findings

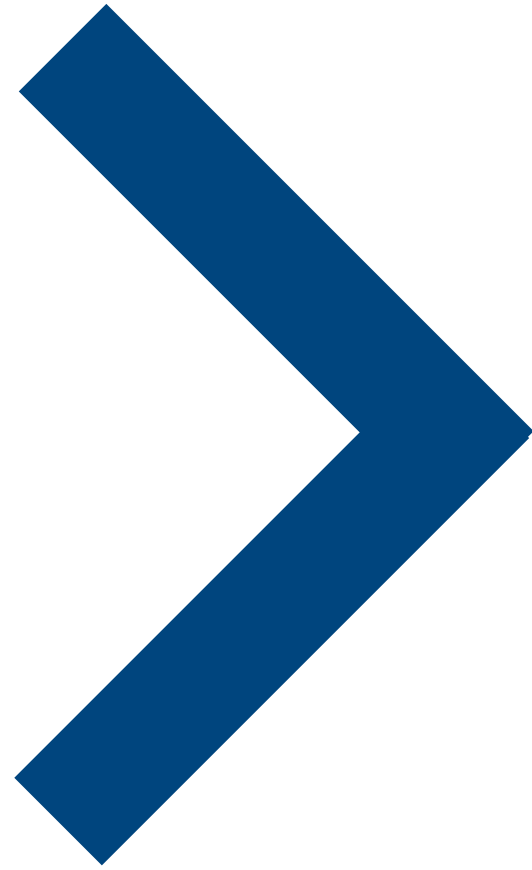
Executive Summary + Key Findings

Study Overview

- Evaluated Grundfos MAGNA3 (Site 1) vs. ALPHA HWR (Sites 2–3) (MFm, CZ03)
- Monitored **1+ months**: Baseline constant-speed → **3+ months**: Post Smart Pump
- **Objectives**: Quantify gas/electric savings; compare modes; document costs/barriers

Key Findings

- **Gas savings**: **0.9–19.4%** (Adaptive Learning); **7.9–14.3%** (Constant Temperature)
- **Electric savings**: **65.1–93.3%** (except Site 1 oversizing, -215.8%)
- **Average**: 16.4 therms/yr/unit vs. 13.22 therms/yr/unit (SWWH015-03) **(+19.4%)**
- **Adaptive Learning**: Tenant complaints (Sites 1 & 3) during initial learning period
- **Barrier**: Inadequate manufacturer guidance on specific DHW applications
- **Recommended Constant Temperature settings**:
 - 10°F ΔT ; max 10°F below (turn off) , min 20°F below (turn on), e.g., 100–110°F for 120°F supply.



Project Objectives

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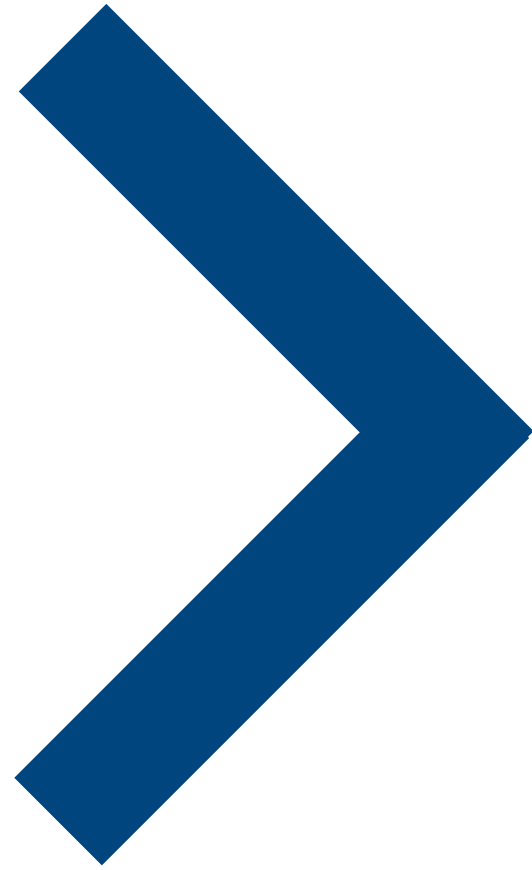
Objectives

- Quantify gas savings
- Compare:
 - Adaptive Learning (smart demand)
 - Constant Temperature (return water temp)
- Document:
 - Costs
 - Implementation
 - Tenant Feedback
- Identify barriers
 - Upfront costs
 - Mfg. guidance gaps

- Pump sizing

Technology

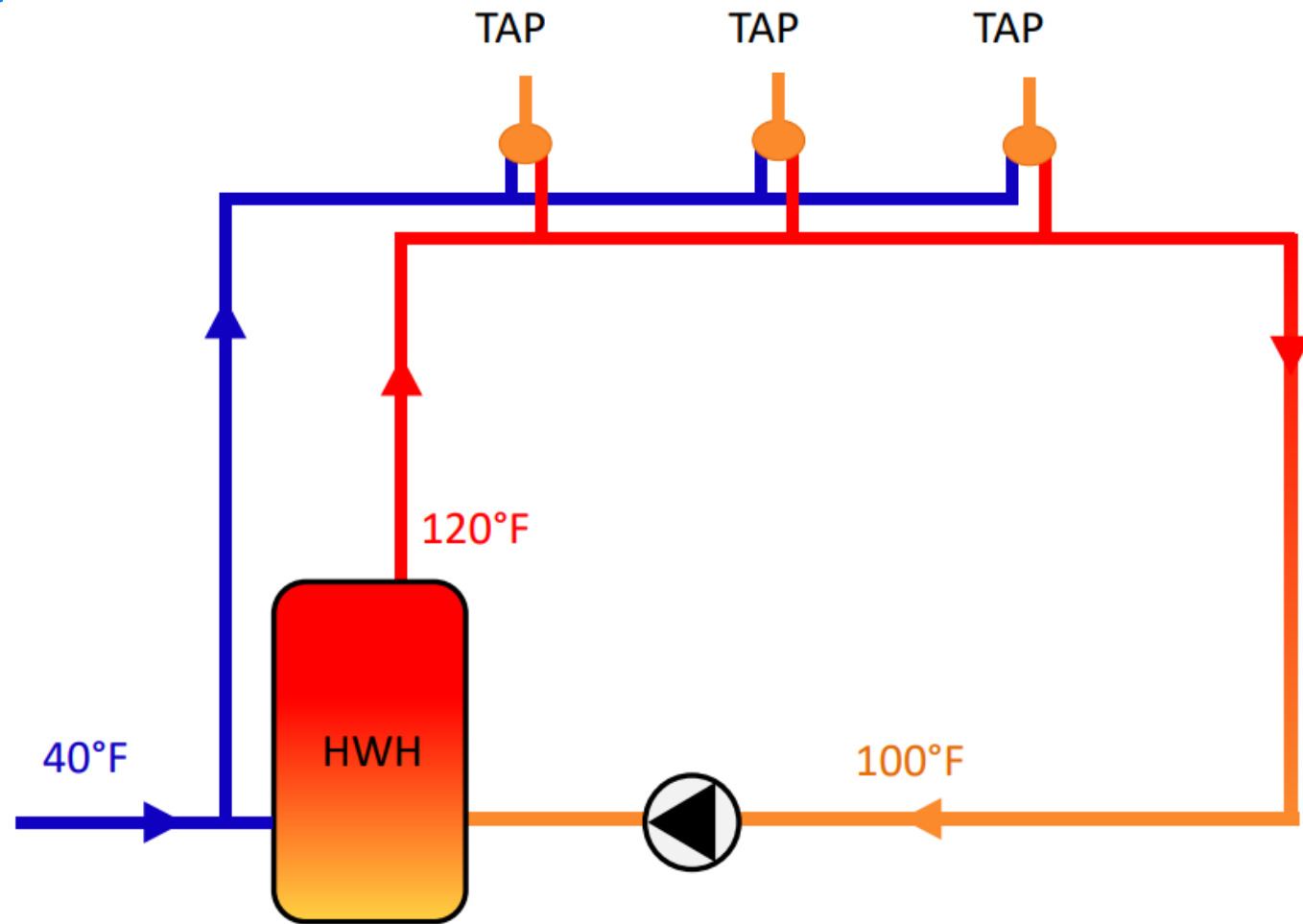
- ECM variable-speed + smart controls
- **Advantages:**
 - 60–80% electric reduction
 - 7–28% gas (reduced losses)
 - Diagnostics + IoT capabilities
- **Modes (Table 2):**
 - Adaptive Learning (default)
 - Constant Temperature (SWWH015-aligned)



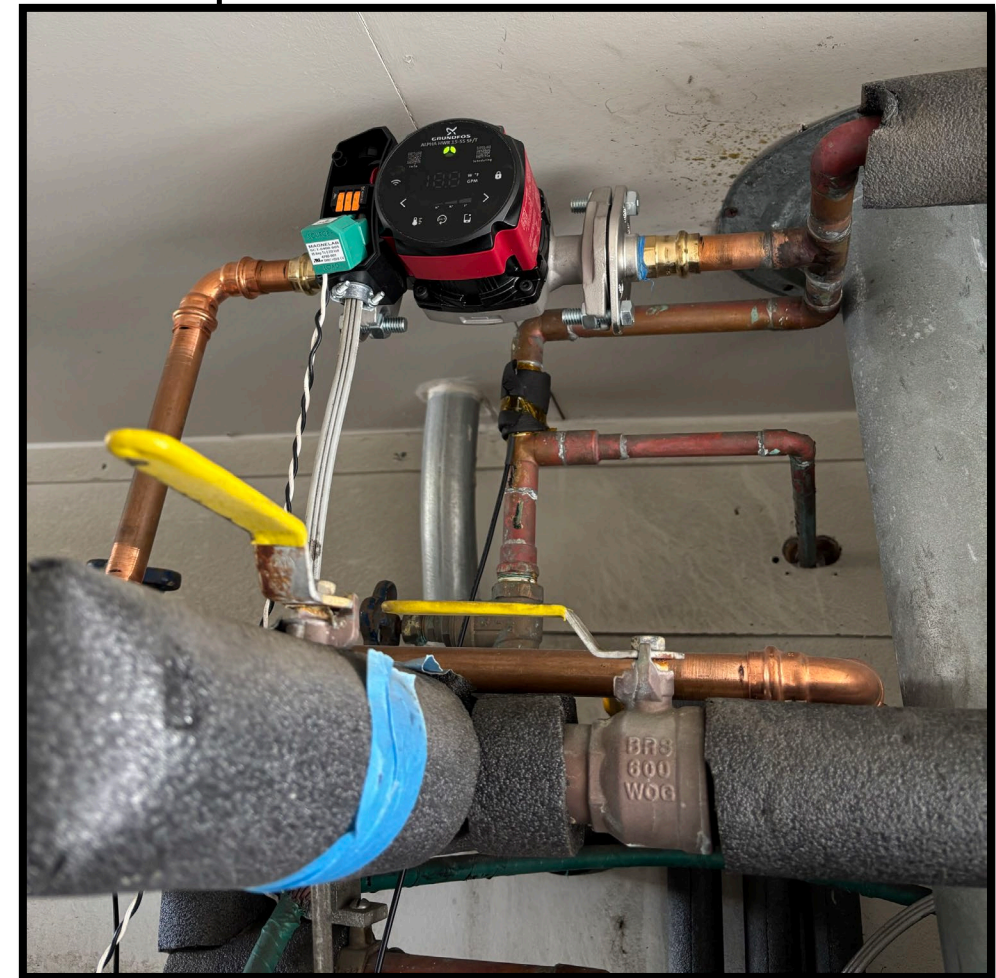
Technology Description

Smart Pump: How It Works

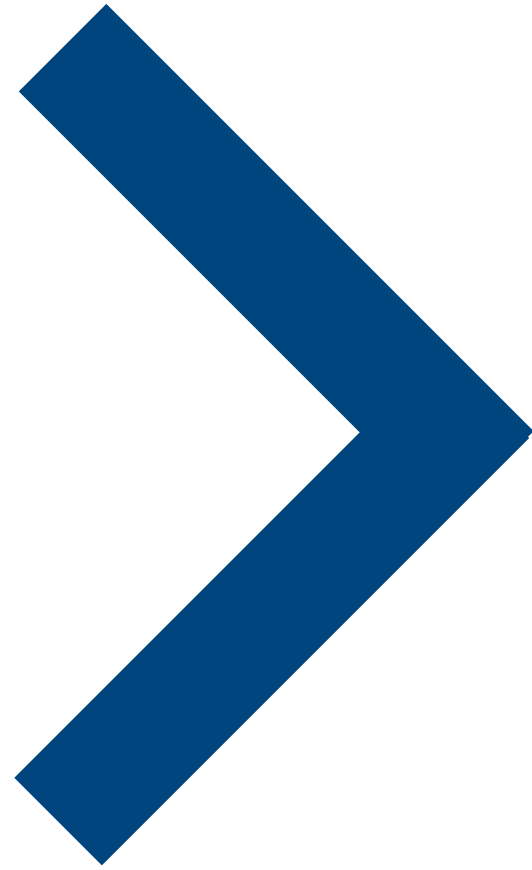
- variable-speed ECMs and advanced control algorithms ([Contant Temp Vs Adaptive Learning](#))
- [adjust speed and flow rates](#) in response to demand or set temperatures



- Focus: [Multifamily Systems](#) (diagram above)



- Photo: [Installed Smart Pump](#)

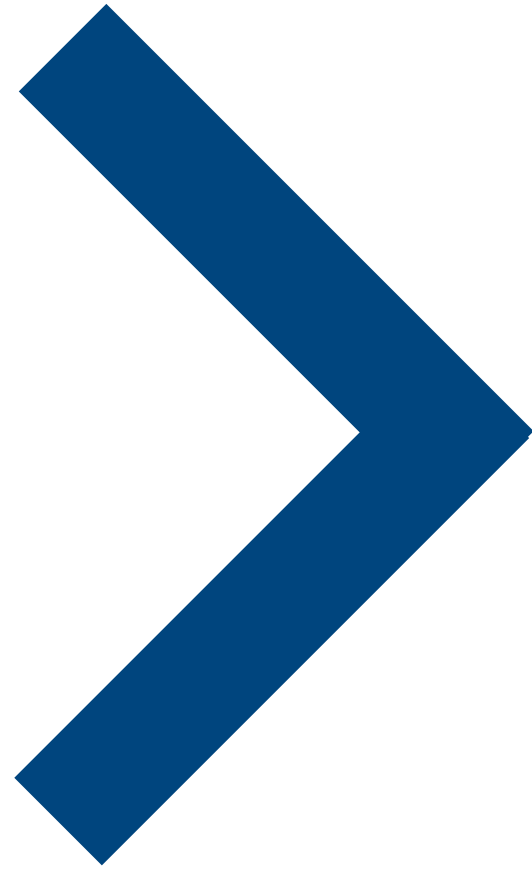


Site Descriptions

Sample Slide with Charts and Table

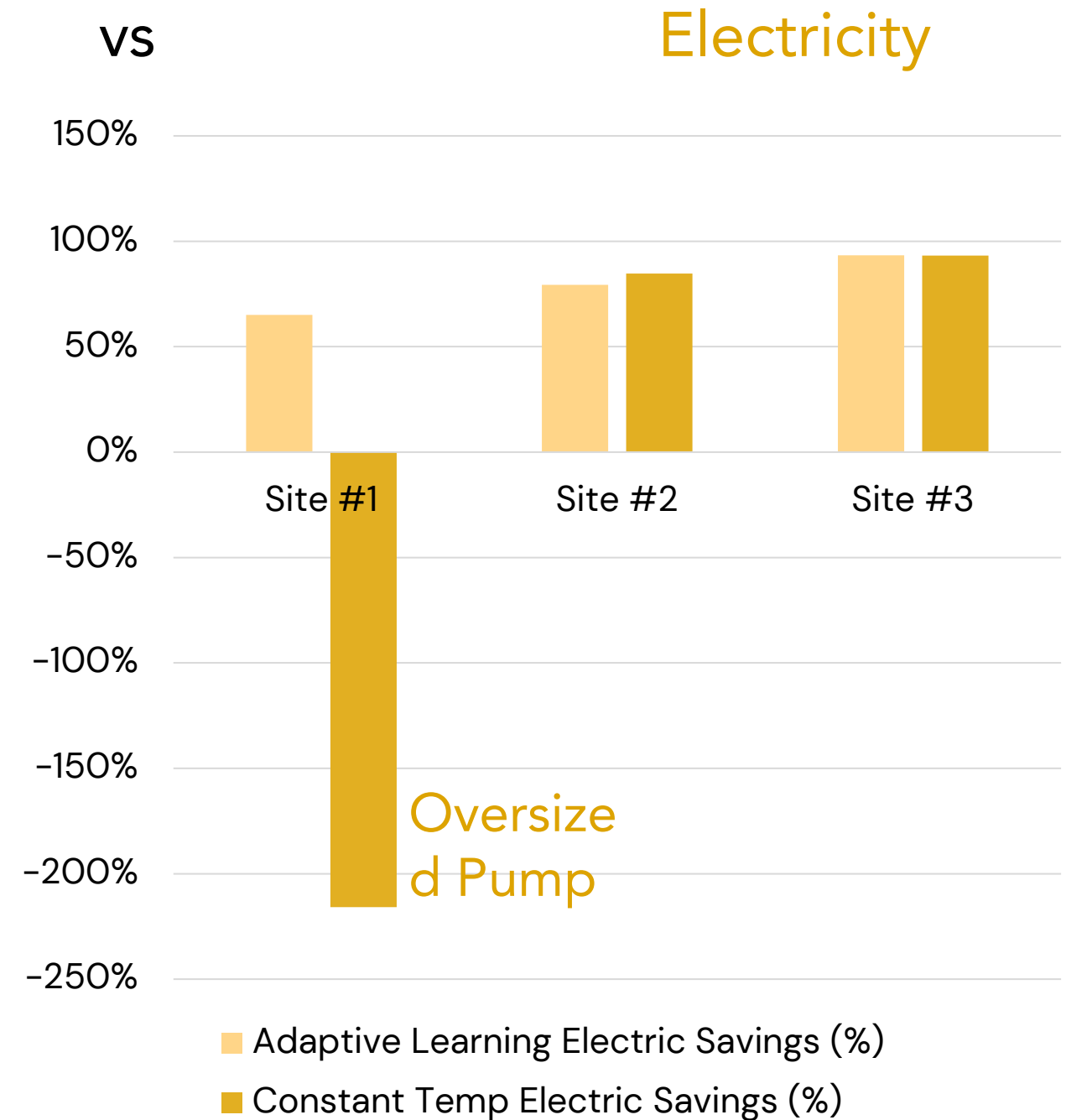
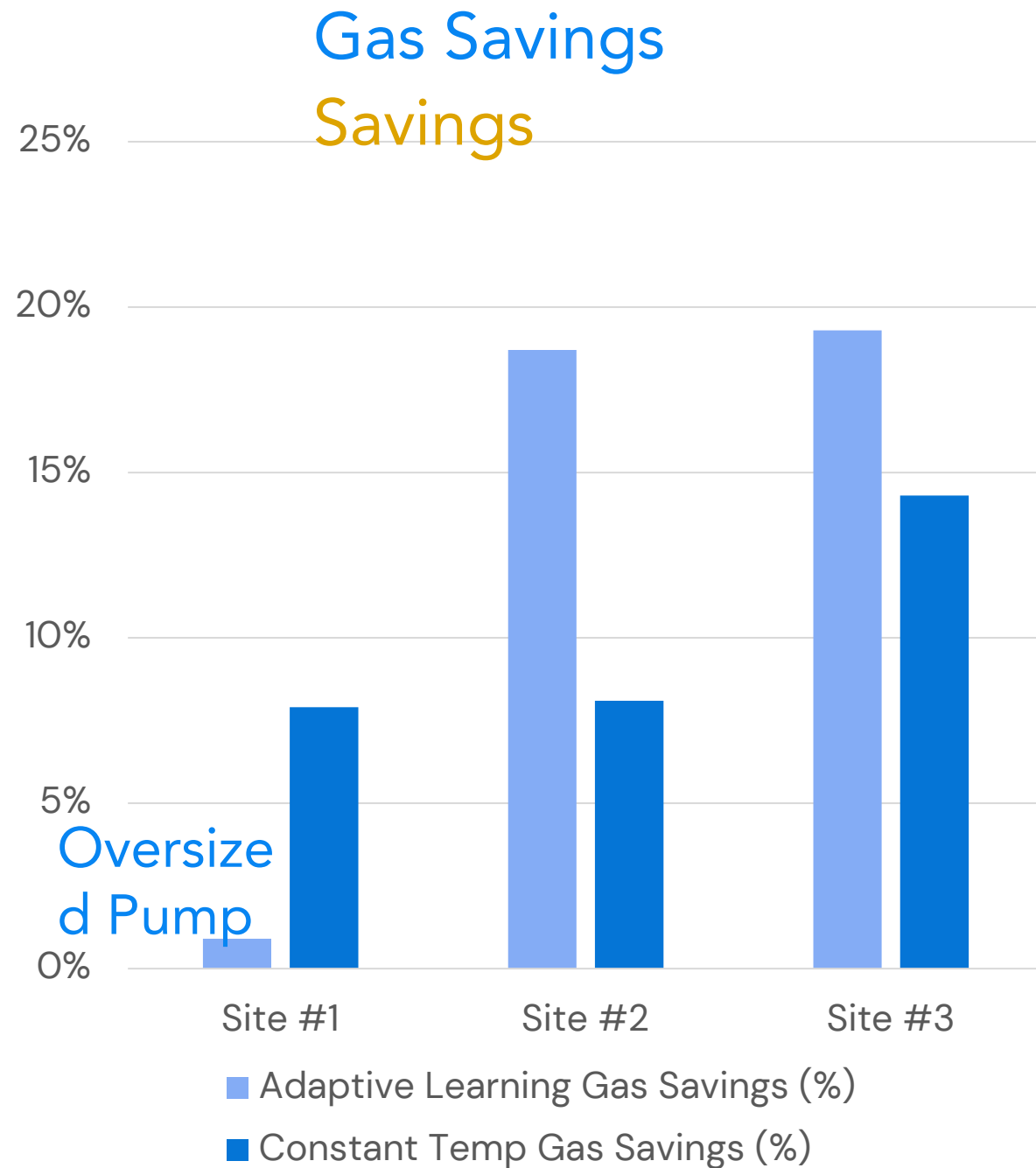
- 4-weeks baseline vs 12-weeks post (2 control modes per site)
- Return Water Temp Drop Requirement: $\Delta T < 5 \text{ }^\circ\text{F}$

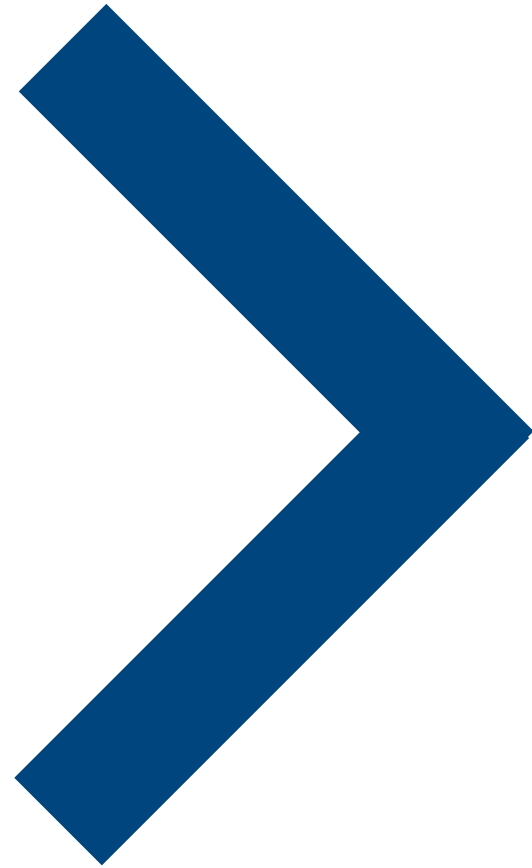
Site	Location	Units	Year Built	Capacity kBtu/h	Storage Gallons
Site #1	San Francisco, CZ03	18	1907	263	119
Site #2	San Francisco, CZ03	12	2016	150	196
Site #3	Berkley, CZ03	10	1950	68	80



Energy Savings

Energy Savings per Control Mode





Discussion

Discussion

Adaptive Learning Mode:

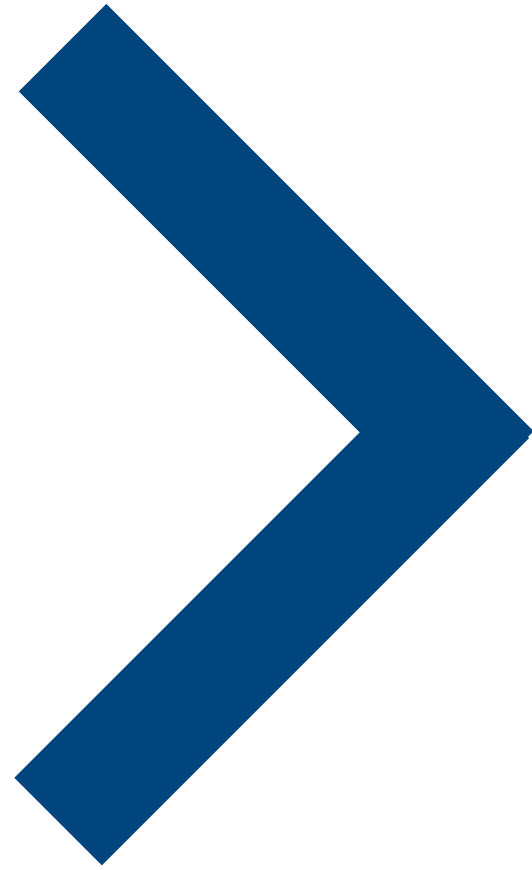
- Gas Savings: **1%** (Site 1) vs **18-19%** (Site 2-3)
- Higher gas savings (Sites 2–3) but complaints (learning period)
- Likely unsuitable for undersized systems (<8 gal/unit) or infrequent draws

Constant Temperature Mode:

- Gas Savings: **8%** (Site 1-2) vs **14%** (Site 2-3)
- Consistent HW service
- Recommended settings (**10°F ΔT , 100–110°F for 120°F supply**)

Key Barriers:

- Pump oversizing (Site 1)
- Manufacturer guidance gaps
- Learning-period impacts

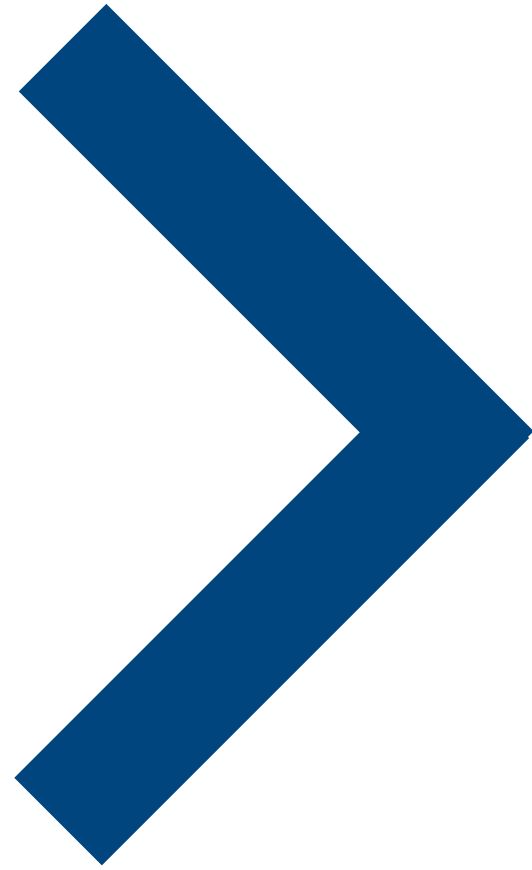


Costs

Costs

- **Cost Breakdown: Materials vs Labor**

Cost Component	Site #1	Site #2	Site #3
Equipment (pump + accessories)	\$3,910.23	\$738.64	\$738.64
Labor (installation)	\$1,399.77	\$1,921.36	\$1,921.36
Total Installed Cost	\$5,310	\$2,660	\$2,660
Building Size (units)	18	12	10
Cost per Unit	\$295	\$222	\$266



Future Recommendations

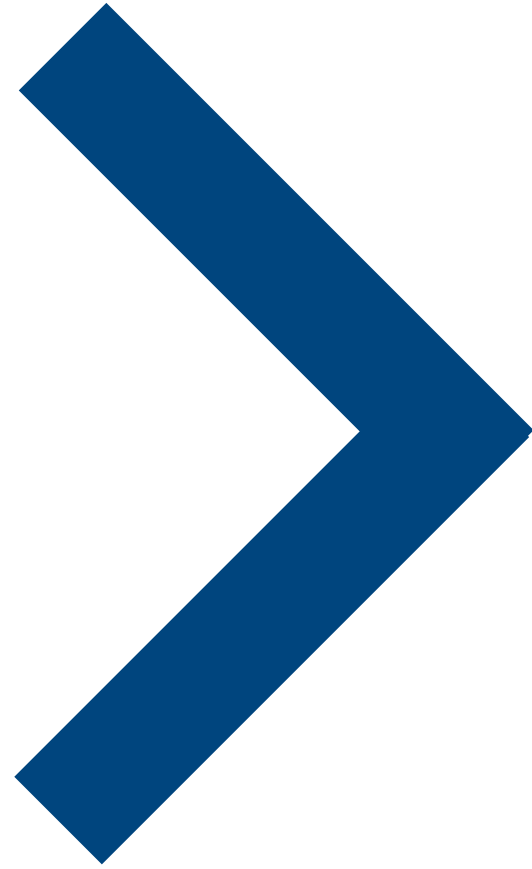
Future Recommendations

Core Recommendations

- Adopt into [EE programs](#) (Constant Temperature default)
- Update [SWWH022 Measure Packages](#) (gas claims, mode guidance, baselines)
- Engage manufacturers (DHW-specific literature, temperature settings)
- Future studies + Contractor training

M&V Recommendations

- Required: Advanced Instrumentation
 1. Water Flow Meters ([critical](#))
 2. Gas Flow Meters
 3. Temp Sensors
- Follow [NREL studies](#) to quantify savings



Thank You / Q&A



For More Information

Visit CAGasTech.com or contact the GET Program for support and questions.
E: GET@CAEnergyPrograms.com



ICF is a SoCalGas authorized contractor responsible for implementing this program through 12/31/2027.

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