

Utility HPWH Program

2009 ACEEE Hot Water Forum

Pacific Grove, CA



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Background

- CL&P delivers energy to 1.2 million customers in 149 towns (1.1 million residential customers)
- Service territory is approximately 4,400 square miles.
- Approximately 16% of residential customers have electric hot water
- ~4,000 kWh/home DHW
- Savings potential is unknown but significant; ~100,000 MWh/year?



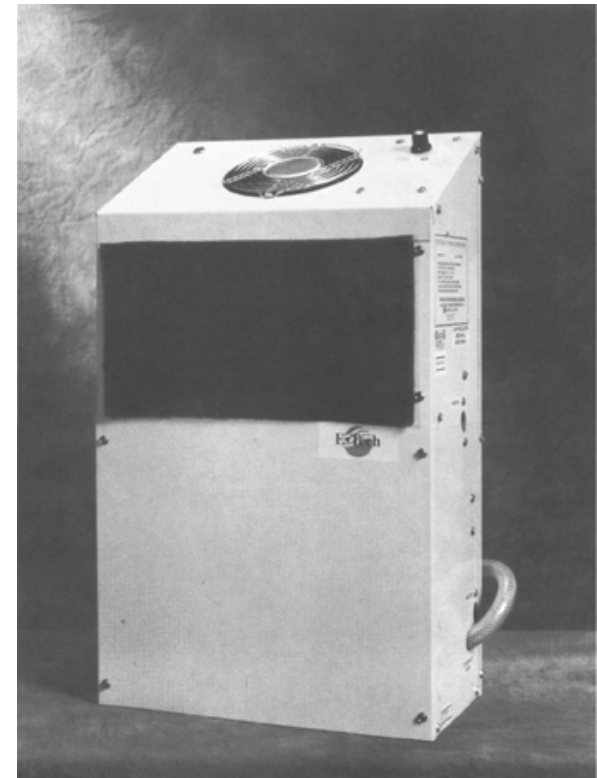
www.CTEnergyInfo.com



CL&P Program History

late 1990's

- Interest in HPWH began in the late 1990's
- CL&P ordered 4,500 Heat pumps (*Heat Pump #1*)
- Hired plumbers, and gave away units (\$150 shared installation cost)
- Approximately 2,200 Heat Pump #1 units were installed



Initial HP #1 Field Test Results

(April 2001)

- Savings was significant: ~1,628 kWh/year.
- Savings varied from 163 kWh to 3,667 kWh based on water usage, tank size and operating conditions
- Customers liked the dehumidification
- Customer expressed overall satisfaction with the performance
- Some minor reports of run-outs and cold basements reported.
- Reliability issues began to surface
- 1,619 units repaired as of January 2003*



*DPUC Docket No. 03-01-01, EL-006, January 24, 2003

Savings Results, Heat Pump #1

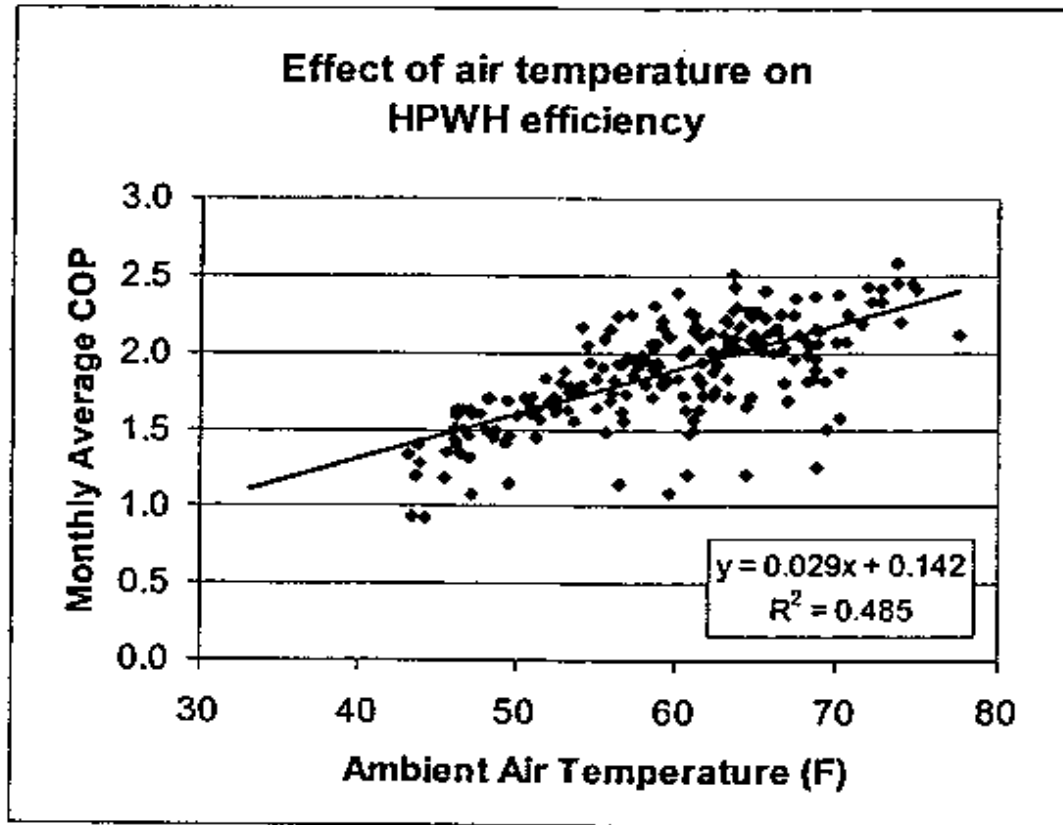


Figure 11: Influence on basement ambient temperature on HPWH efficiency

CL&P Program History (continued)

- CL&P worked with a second manufacturer to produce new line of heat pump water heaters (*Heat Pump #2*)
- CL&P installed over 3,500 Heat Pump #2 units
- 822 negative customer reports between July 2003 and December 31, 2005**
 - ✓ Controls
 - ✓ Condensate
 - ✓ Reconnection problems
 - ✓ Internal piping
 - ✓ Winter Operation

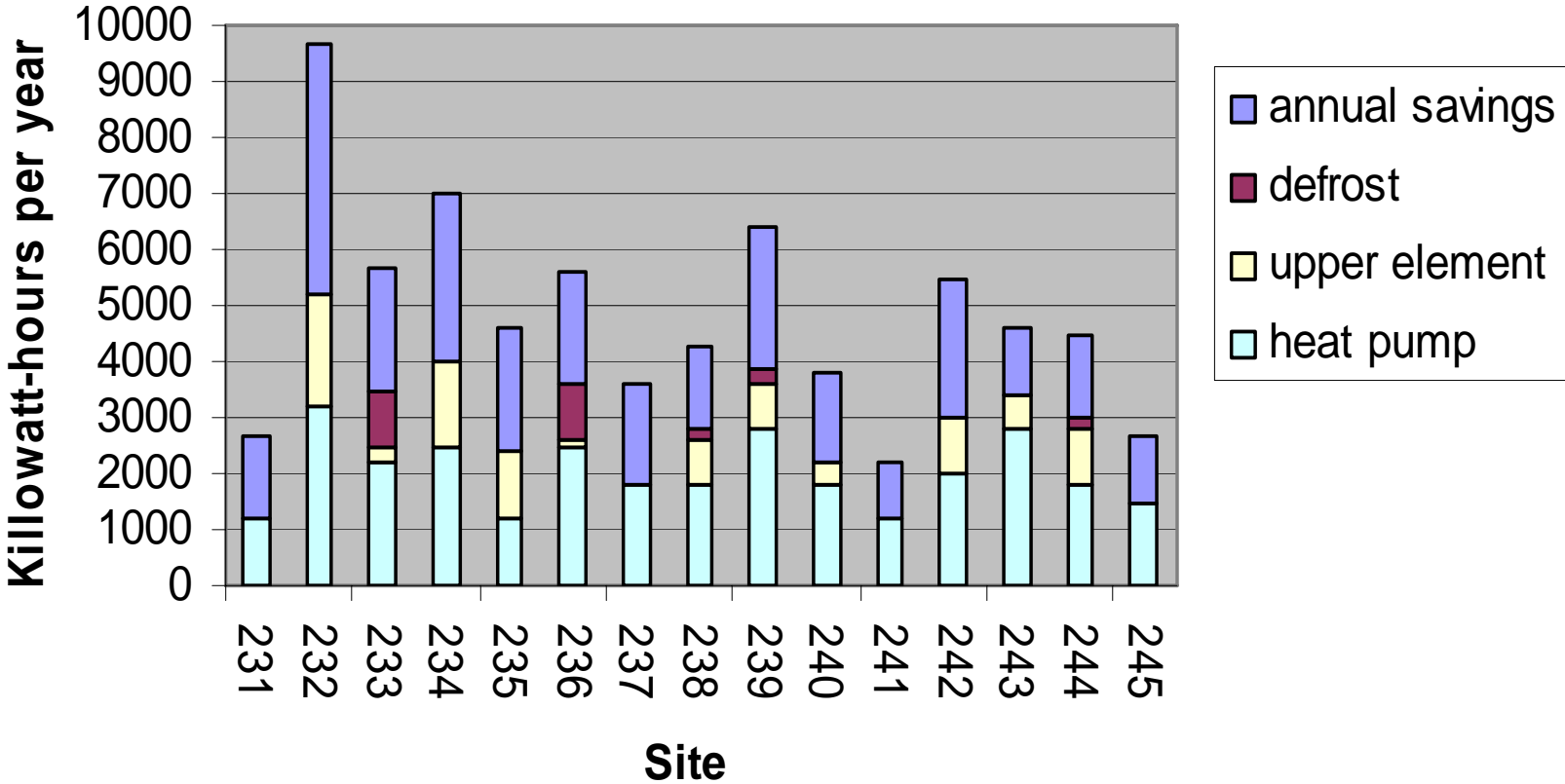
** (Docket No. 03-01-01RE01, Final Decision)



Field Results

January 2002

Figure 1- Energy Use and Energy Savings for Each Test Site



Lessons Learned



- Savings is significant: \$300 - \$400 per year for a typical three person household
- HPWH not suited for everyone. Population in Connecticut of suitable sites is likely to be much less than 16%
- Wide variation in customer usage and savings
- Targeted installations can increase savings
- Operation dependent upon ambient conditions
- Reliability is critical
- Need to develop qualified service infrastructure



Moving Ahead

CL&P is...

- Not planning to get into the water heating business i.e. purchase and stock units, hire plumbers, etc.
- Cognizant of the significant savings potential and is poised to provide support to this industry.
- Cautiously optimistic that the new generation of HPWH will demonstrate high levels of reliability
- Considering a pilot to “test the waters”
- In favor of Energy Star’s 6 year warranty on “the sealed system”

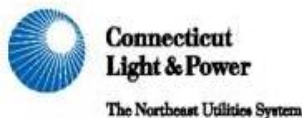


Questions

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