

Great River Energy's Heat Pump Water Heater PILOT PROGRAM

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Current State

Heat Pump Water Heaters

- Market available
 - Menards, Sears, ACE Hardware, Home Depot...
- Price range \$1,500 to \$3,200
- Long list of manufacturers
 - American, A.O. Smith, Bosch, GE, Kenmore, Reliance, Rheem, Ruud, State, Stiebel Eltron, USCraftmaster...

Current State

Heat Pump Water Heaters

- ENERGY STAR[®] rated
 - 34 models as of January 1, 2012
 - Integrated models only (no add-ons)



Variety of “Green” Names

- GE Geo Spring
- AS Smith Voltex
- Rheem Hybrid
- Bosch Compress
- SE Accelera



Common Marketing Facts

- Reduce energy usage up to 62%*

* DOE test procedure and comparison of a 50-gallon standard electric tank water heater using 4881 kwh per year vs. the ***** Hybrid water heater using 1856 kwh per year)

- Save up to \$320 per year
- Offers easy replacement of standard electric water heater
- Fits in similar footprint as a standard 50-gallon water heater

So...

- State has given 1200 kWhs deemed savings per HPWH
- Upcoming ban on electric water heaters – is the HPWH a potential new option?
 - >55 gallons must have energy factor of 200%
- Do they have a fit with current utility programs?
- Will they work in our service territory?

GRE's Pilot Program

- One year pilot program
 - Will HPWH work to member's high expectations in our service territory?
- 15 cooperative employees
- 3 manufacturers

GRE's Pilot Program

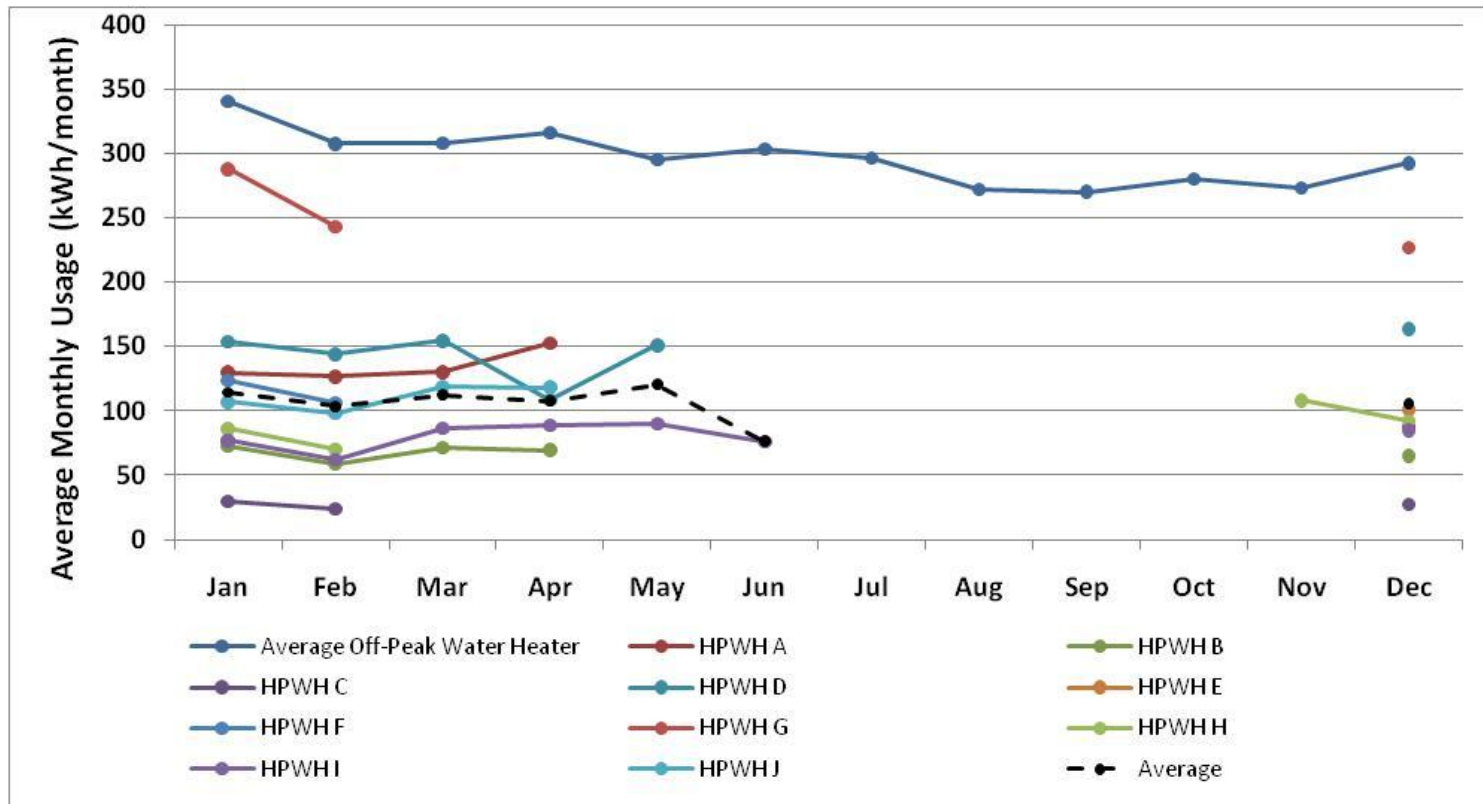
- Rheem, HP-50
 - 50 gallon
- GE, Geospring
 - 50 gallon
- AO Smith, Voltex
 - 50 gallon
 - 80 gallon

Basic Criteria

- Family size 3-4
- No garage or attic installations
- Follow manufacturers' installation instructions
- No mixing valves
- Heat pump and elements controlled on 8-hour peak shave water heating strategy or 16-hour ETS strategy
- 60-minute interval meter, monthly data submittal to GRE

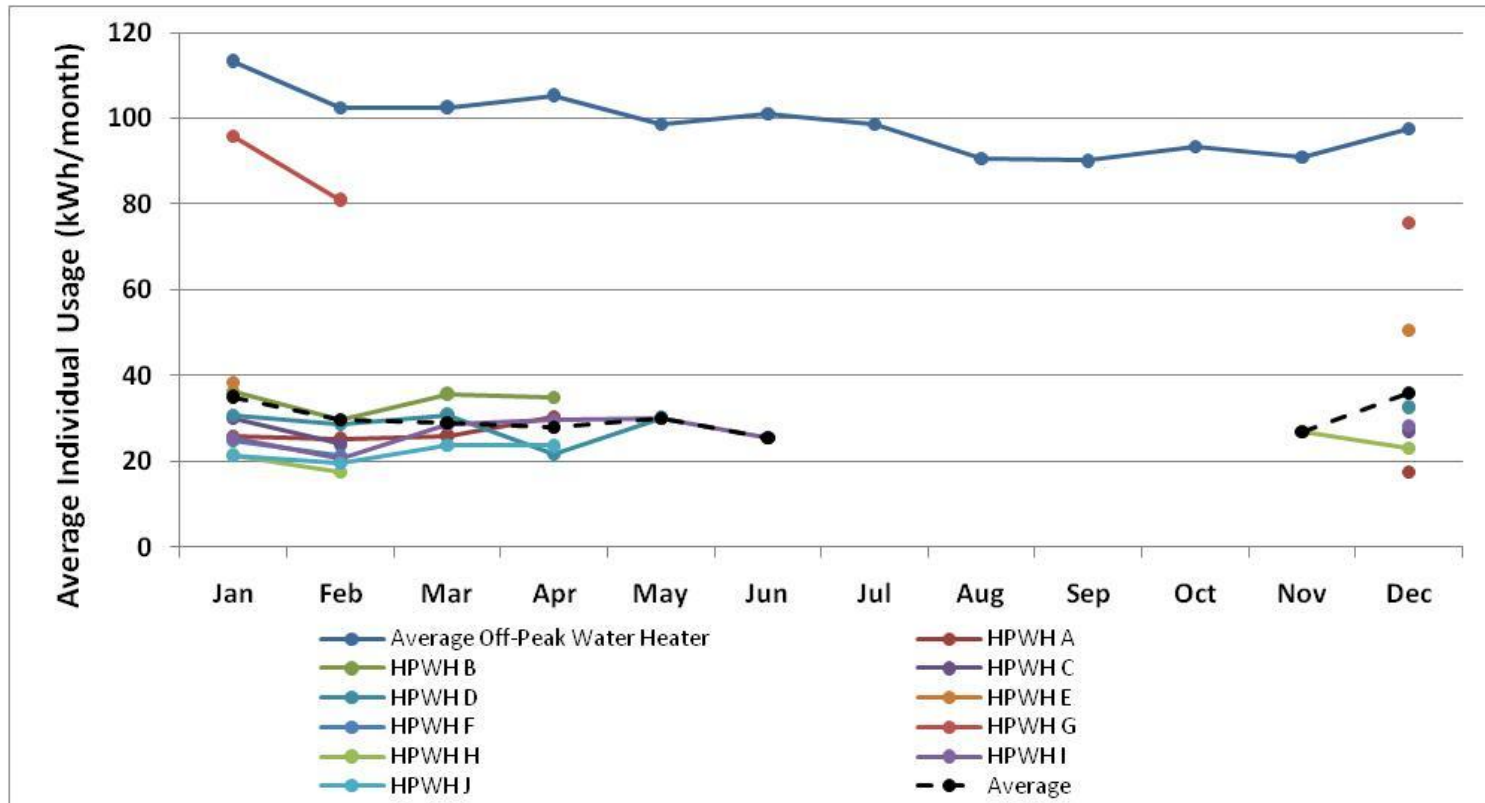
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Monthly Heat Pump Water Heater (HPWH) Usage verse Monthly Average Electric Off-Peak Water heater Usage



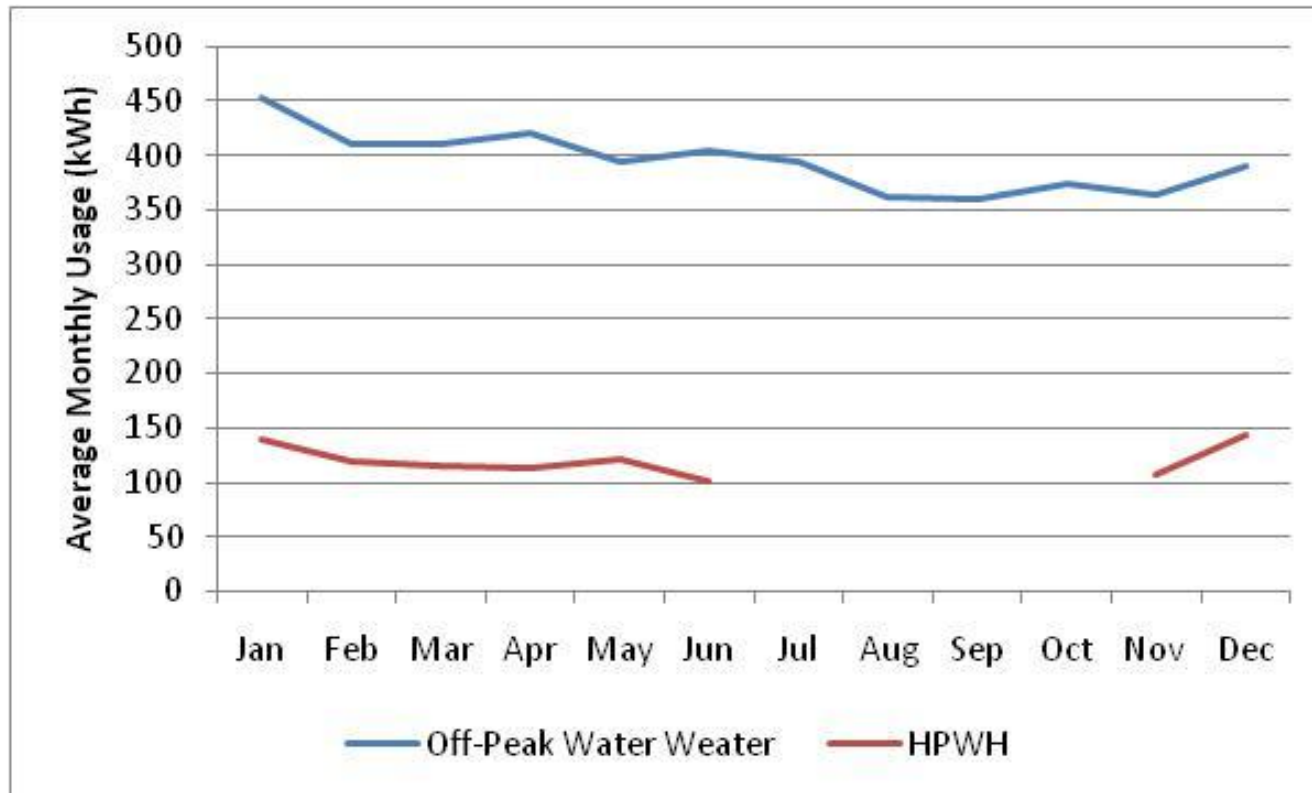
Heat Pump Water Heater PILOT PROGRAM

Individual Heat Pump Water Heater Usage versus Individual Average Electric Off-Peak Water Heater Usage



Heat Pump Water Heater PILOT PROGRAM

Generalized Expected Usage Comparison – Assumes average family size of 4



Conclusions & Homeowner Acceptance

- Do work in our climate/environment
- Homeowners very happy with them
- Use less energy
- Not perceived as noisy
- Work on peak shave and storage control programs
- ? Dehumidification – mixed comments
- ? Rob heat from conditioned space

Questions?