SIDE-BY-SIDE LAB HOMES PROVE TECHNOLOGY EFFECTIVENESS FOR MARKET DEPLOYMENT

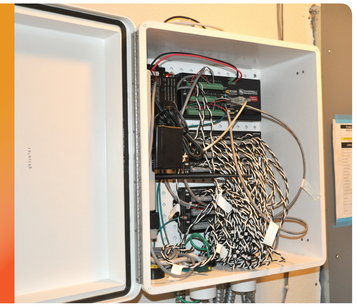
Pacific Northwest NATIONAL LABORATORY

Proudly Operated by **Battelle** *Since 1965*

"The energy savings demonstrated by the PNNL Lab Homes low-e storm window experiments really inspired us and gave us the confidence to pursue a technology Proving Project [pilot program] in our district. The validation from national lab testing has helped give this project credibility."

— TODD BLACKMAN, FRANKLIN PUBLIC UTILITY DISTRICT

Remotely accessibly data acquisition systems make troubleshooting experiments even easier.



RESIDENTIAL RESEARCH, DEVELOPMENT & DEMONSTRATION

A matched pair of unoccupied homes provide a platform for testing residential technologies and practices.

Side-by-side labs provide a "control" and "experiment" environment that helps eliminate uncertainty due to the following:

- weather variations experienced in long term "before" and "after" retrofit field tests
- variable and unknown occupant behavior experienced in occupied residential data collection efforts
- unknown equipment installation and operation practices.

Lab Home results from exterior low-e storm window testing showed up to 10% energy savings on heating and cooling loads.

Recent projects* funded by **DOE**, **Puget Sound Energy**, and **BPA** show heat pump water heaters have the potential to **SAVE OVER 60%** compared to electric resistance water heaters.

*Widder SH, JM Petersen, GB Parker, and MC Baechler. 2013. Demand Response Performance of GE Hybrid Heat Pump Water Heater . PNNL-22642, Pacific Northwest National Laboratory, Richland, WA. http://www.pnnl.gov/main/publications/external/technical_reports/PNNL-22642.pdf

FLEXIBLE SENSOR CONFIGURATION

The Lab Homes use advanced monitoring equipment that can be configured to answer many different research questions. Both lab homes include the following:

- fully automated occupant simulation
- individually monitored circuits and controllable electrical breakers
- dozens of environmental sensors
- remotely accessible data through internet-connected data acquisition systems.

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