

Energy Efficiency:

Opportunities in Remote HVAC
Performance Monitoring



48%

290
million

Turning Big Data into Intelligent Automated Action

Automated Energy Savings

[EE]

Consumers save 10-15% off their energy bill (\$100/year)



Remote HVAC Diagnostics

[HPM]

Leverage thermostat data to monitor health of HVAC system, increase efficiency and avoid costly catastrophic failures



Capacity

[DR]

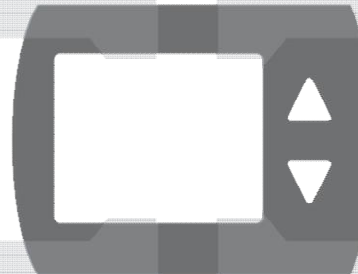
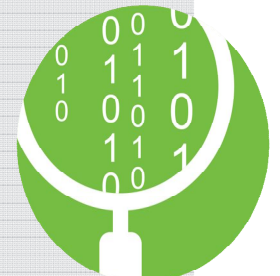
Generate demand savings for utilities in order to reduce peak load, by as much as 3kW/home



Big Data/Analytics

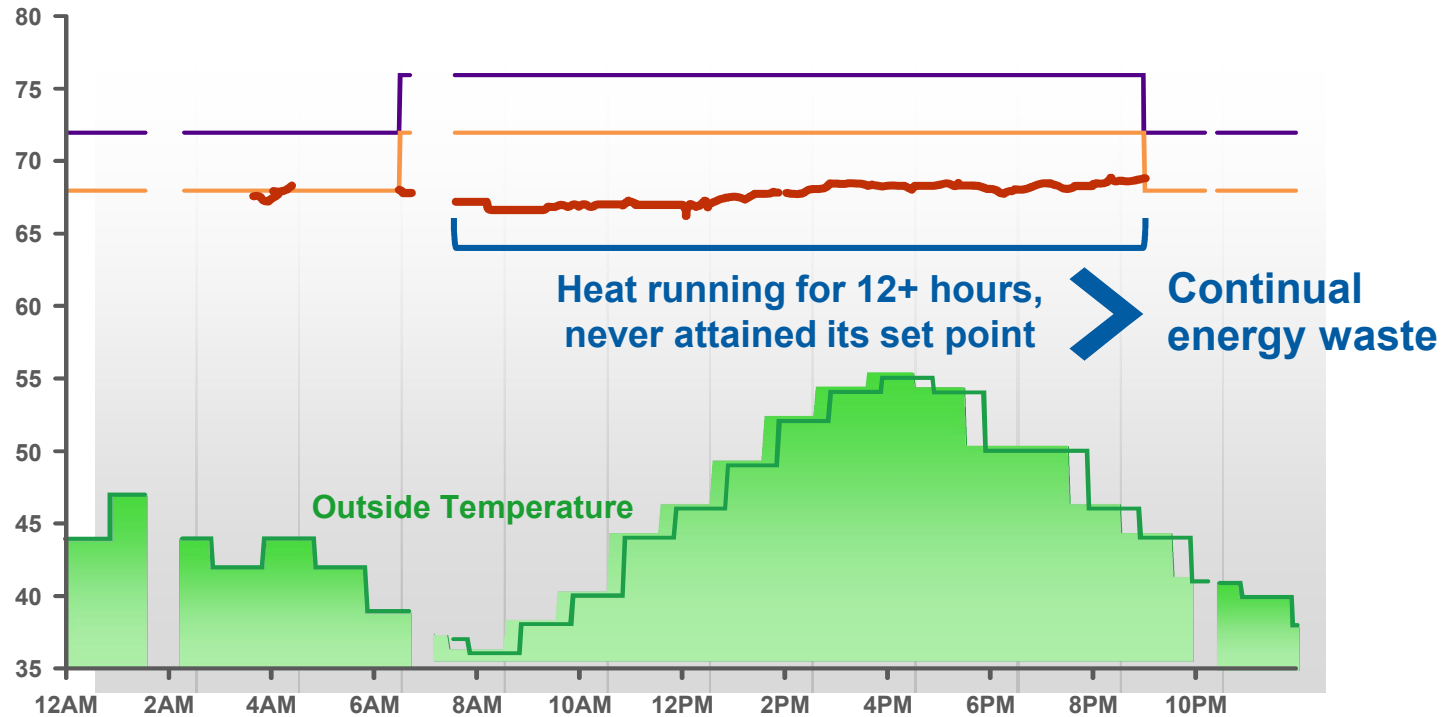
[Data]

Leverage energy data to provide insights and detailed reporting to utilities, partners and consumers about program performance, trends, etc.



HVAC Remote Diagnostics Service

Identify **underperforming** and **degrading** HVAC systems



Reveals unrecognized issues in **6%** of HVACs/month

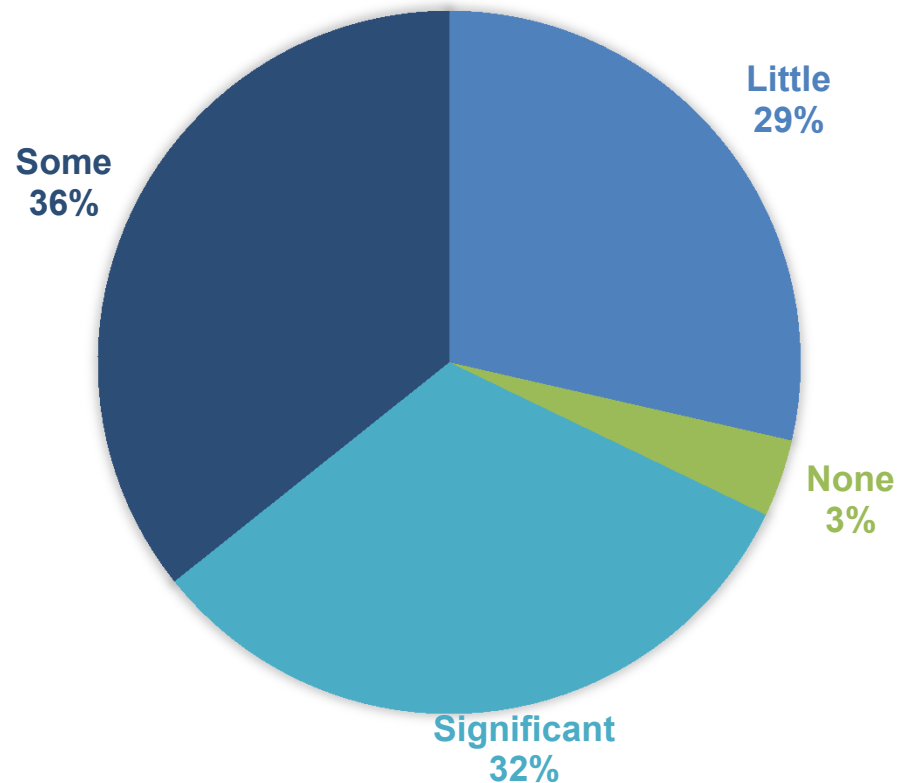
HVAC Performance Monitoring Study

- Leveraged mPowered program install base
- Identified homes for the study: 100
- Selected homes serviced: 40
- Total number homes with confirmed issues: 38
- Number of issues homeowner could have resolved: 5
- Reported repair per home (average): \$366

HVAC Performance Monitoring Study

High Level Results

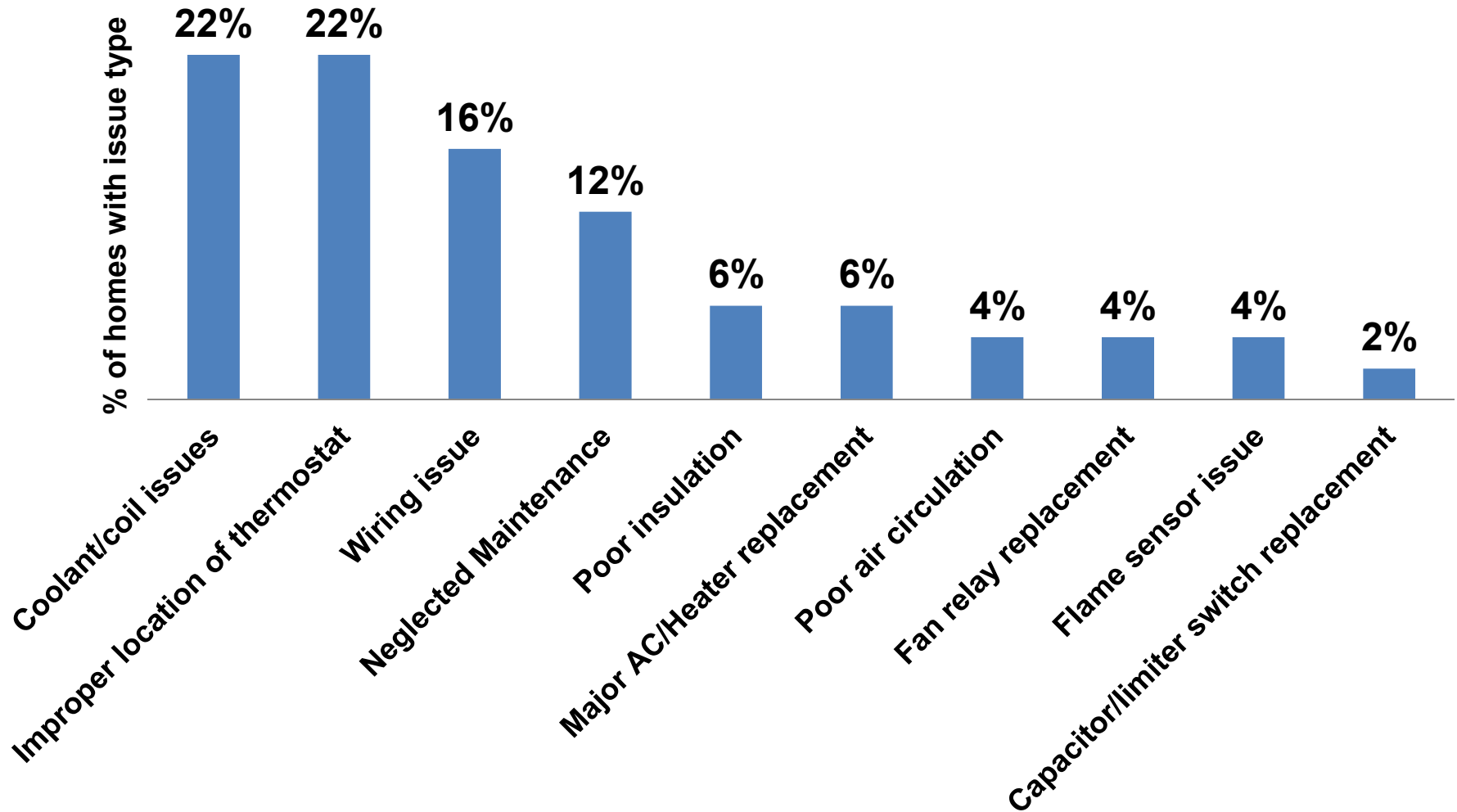
IMPACT OF DETECTED HVAC ISSUE ON CUSTOMER COMFORT



68% Of home occupants did not feel significant enough impact on comfort to recognize there was a problem

HVAC Performance Monitoring Study

Distribution of HVAC issues found across the 40 homes



Utility & Consumer Benefits

Energy Savings: Projected potential annual energy savings of 2.1% from resolving HPM detected HVAC faults across utility's connected thermostat base

Money Savings: Ability to diagnose and fix HVAC problems early on could potentially save consumers thousands on repairs and energy costs. For the utility, the HPM service requires no additional hardware.

Customer Satisfaction: Help consumers resolve HVAC issues that are undermining utility program performance. HPM Strengthens utility customer relationships through informing customer when they are losing money on wasted energy.

HVAC rebate program participation: HVAC maintenance and rebate programs typically rely on customers to realize that their HVAC system is dysfunctional. HPM notifications allow utilities to proactively offer HVAC rebate program participation to customers who offer the greatest energy savings potential for the program.

Early warning leads to **energy savings and efficiency**
Attractive for consumers and service providers alike

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