

Beyond Direct Load Control:

HAN and Customer-Centric Behavioral DR

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December 2014





Home and Business Area Network²

If you know:

How much energy you're using

How much it costs

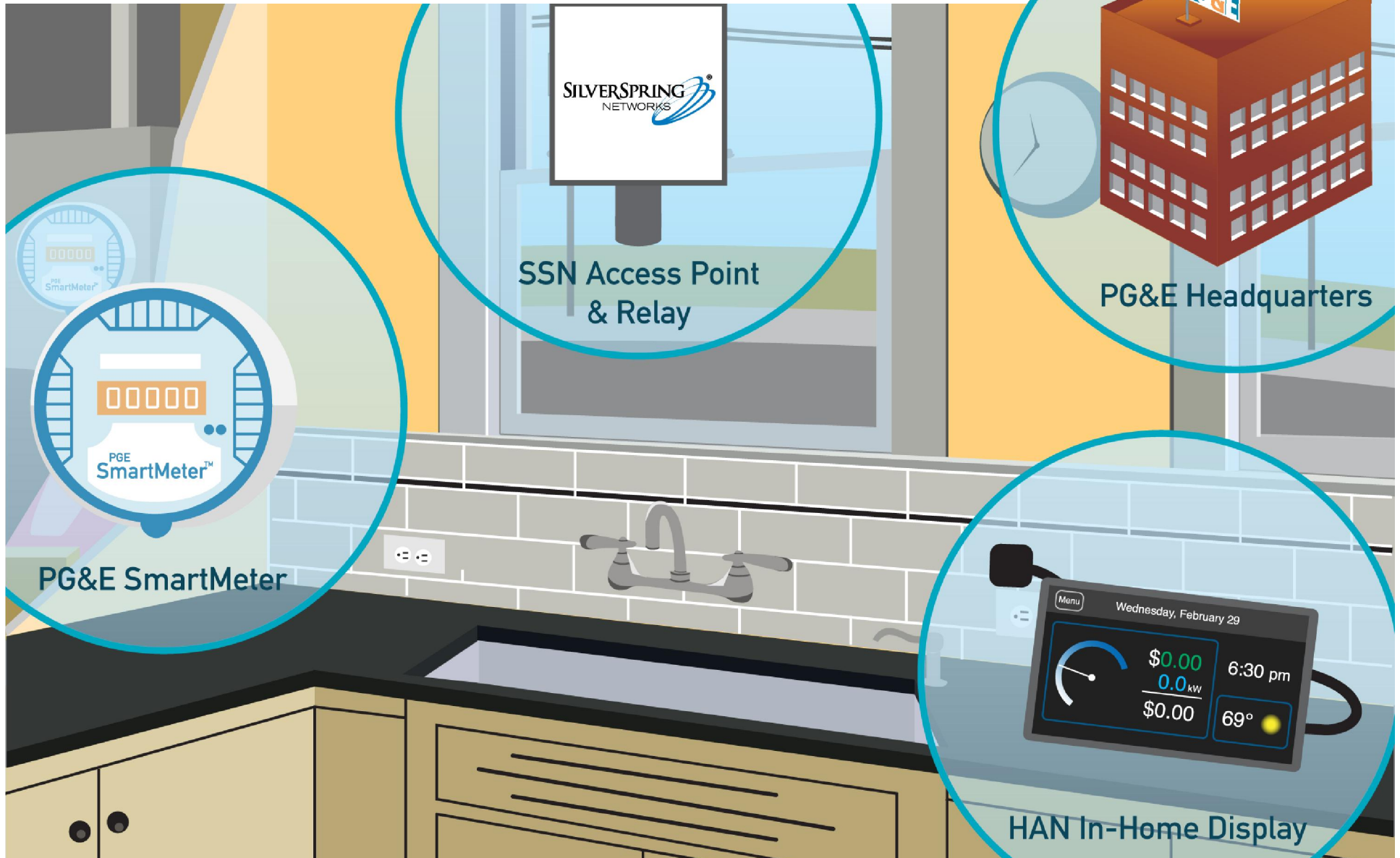
In real time

What behaviors change?

How much energy is saved?

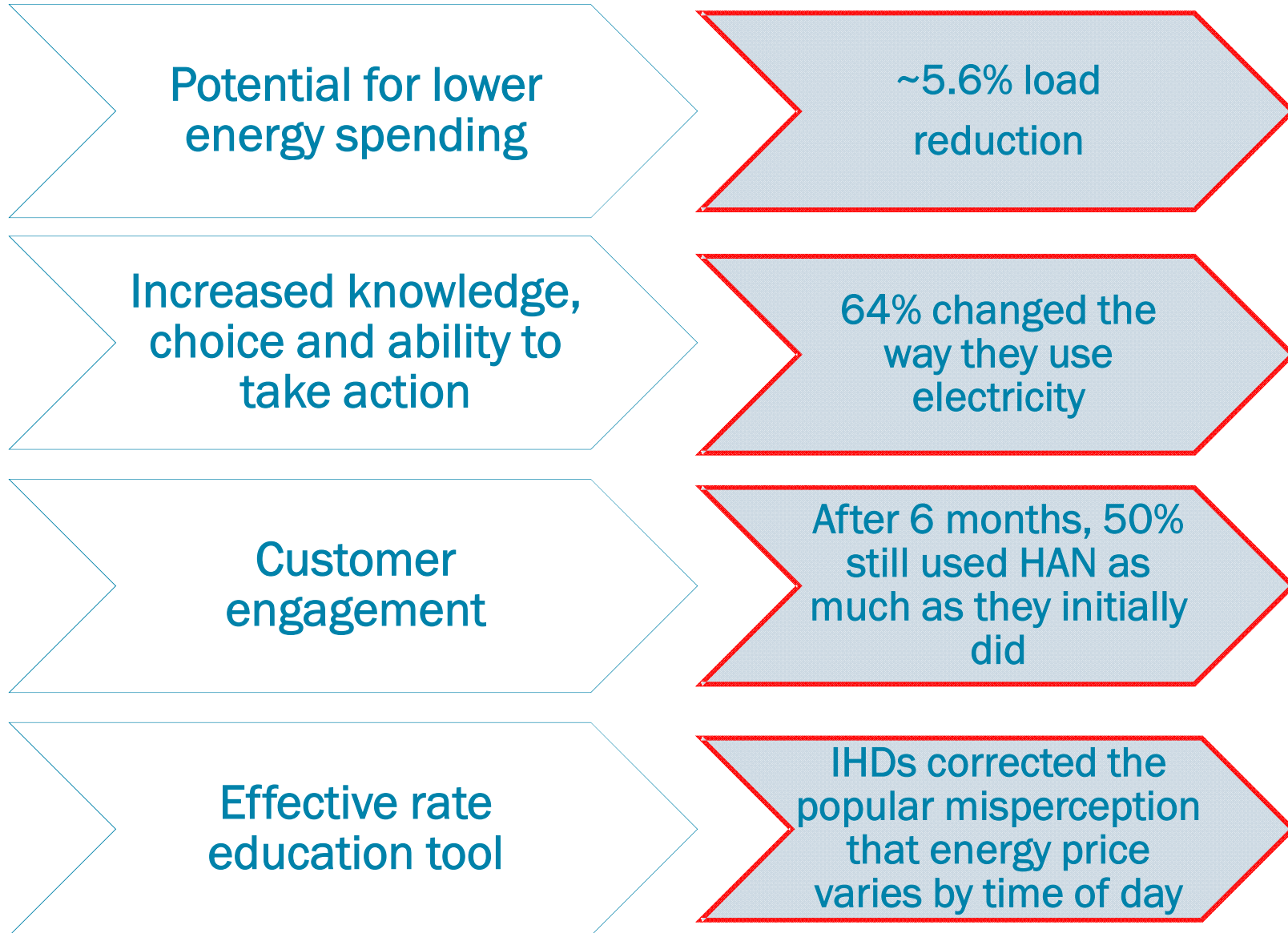


Early HAN Proof of Concept





Proof of Concept Findings





HAN Phased Rollout

2012

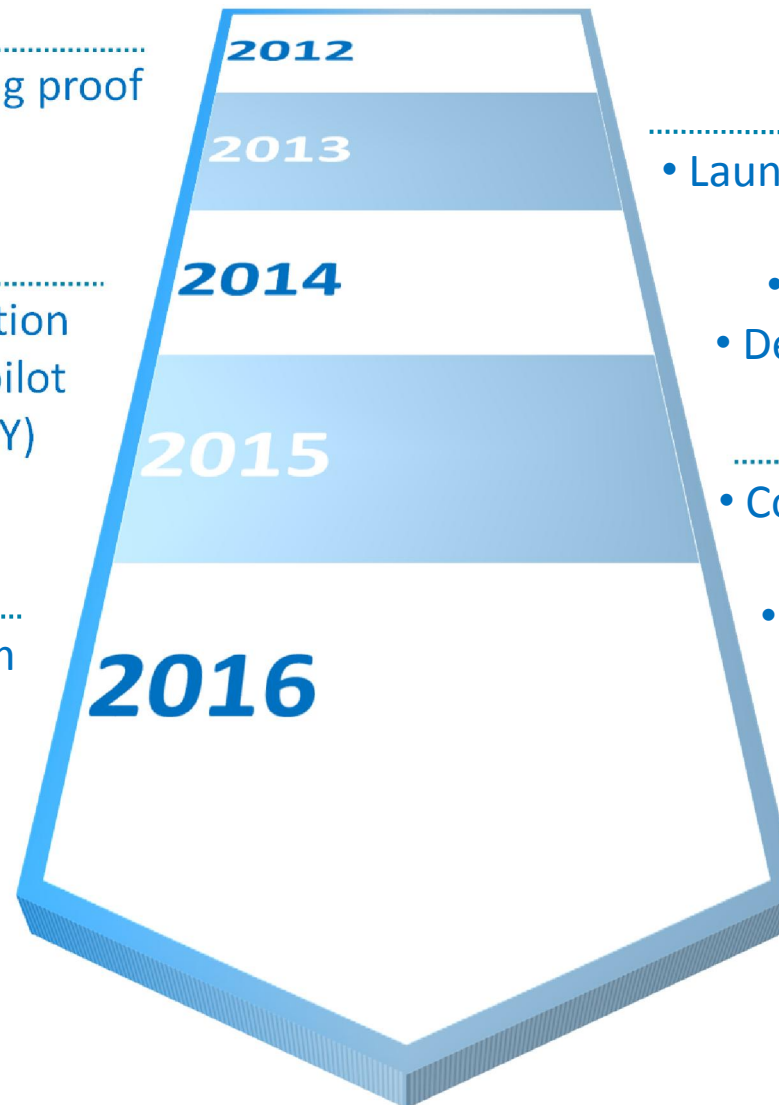
- Usage/pricing proof of concept

2014

- Self-registration
- Pricing/DR pilot (results by EOY)

2016

- DR program bundling



2012

2013

2014

2015

2016

2013

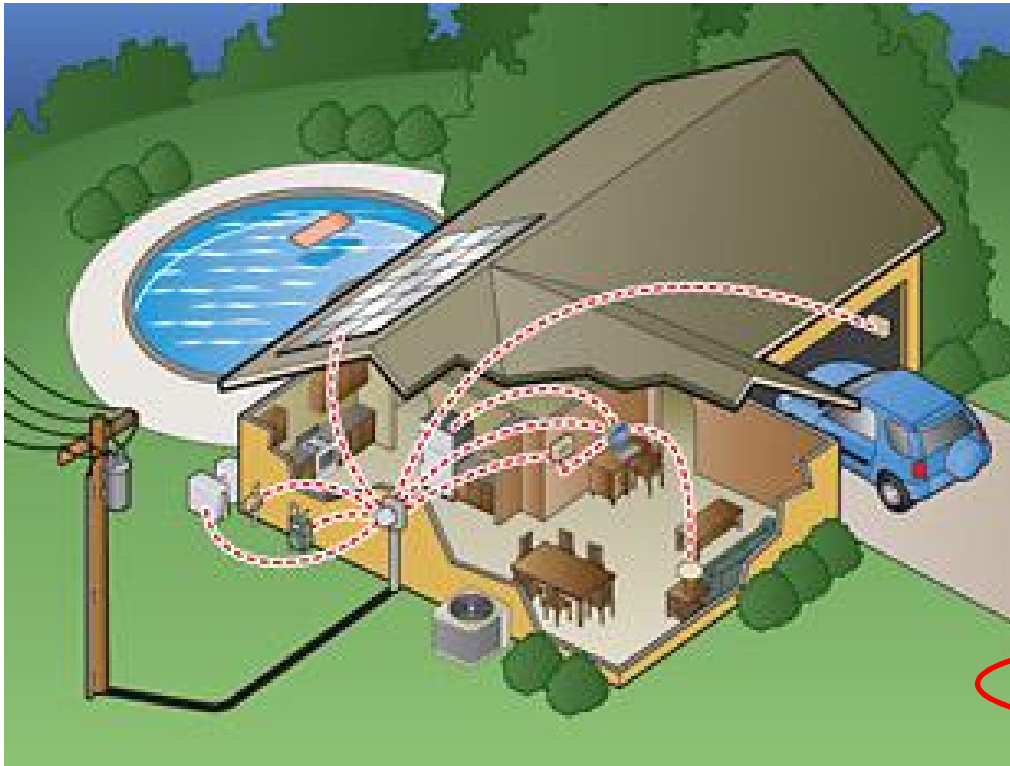
- Launched Res/SMB platform
 - System scaling
- Device validation

2015

- Commercial eligibility
 - Manual Response
- Direct Load Control
 - Telemetry



Pricing/DR Pilot



Real time info from meter:

- Energy demand and consumption (kW and kWh)

starting Jan 2015

- Real-time price
- Estimated costs to date & estimated bill this month
- DR Event alerts

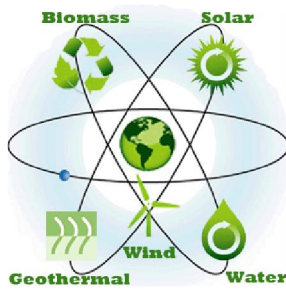
Goals:

1. Technology assessment of system performance
2. Customer feedback on **information** (vs. device experience)



Pricing/DR Pilot Preliminary Findings

Targeted Participants



- Unprecedented recruitment success: 35% acceptance rate (typical is 7-10%)
- 85% survey participation
- Energy usage and PG&E bill are prime motivators for participation



Pricing/DR Pilot Preliminary Findings

Information

- 60% look most at real time usage
- Estimated bill this month least seen
- 25% look at all data equally

Engagement

- 50% of IHD users look at it more than once a day
- Only 12% gateway+cloud look > once a day



Pricing/DR Pilot Preliminary Findings

9

Room for improvement on SmartDay notification on both device types:

- 53% of IHD users report seeing a SmartDay notification, compared to 25% of gateway+cloud users
- Those that did see a SmartRate notification found it helpful



Key Takeaways So Far (and a question)



- Device experience can have a big impact on behavior change and program effectiveness
- Market segmentation matters
- Real-time information can be a sticky and persistent education tool for many (but not all)

Can pushing personalized, relevant, actionable information increase program effectiveness?



Some Challenges

Cutting edge technology

- Identifying and resolving early adopter system issues
- Expertise, resource, infrastructure needs
- Support/escalation process for critical issues

Industry standards

- Device interoperability issues
- Competing standards means consumer/industry confusion



Behavior Opportunities

Telemetry	DR event performance visibility
Manual Response	Customer choice (vs. utility controlled t-stat programs)
Low Income	Real time information/education about usage/costs
High Bill Inquiries	Ongoing access to usage/cost information may help reduce repeat issues
Rate Transition Tool	Small/medium businesses transitioning to time varying pricing



Thank you!

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