



The Behavioral Layer Cake

How Layering Peak Day Messaging Increases the Value of Behavioral Energy Efficiency



September 25, 2015

Next Generation DSM

We pioneered behavioral energy efficiency and lead the industry with proven results. Now we're making your entire DSM portfolio stronger.



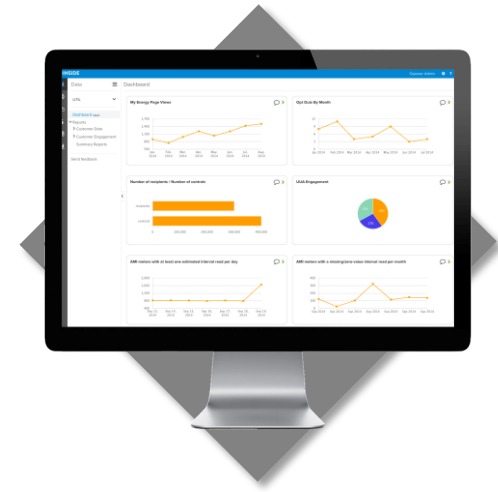
Highly targeted 1:1 conversations

- » **Segmentation and Targeting Tools**
Build new customer segments quickly and easily using hundreds of variables, from demographics to interaction data
- » **Campaigns and Experiences**
Deliver deeply personalized messages to every customer segment — at the right times and through the right channels



Portfolio-wide impact

- » **Behavioral Demand Response**
Drive reliable, territory-wide peak load reduction through personalized, multi-channel communications
- » **Marketplace Suite**
Empower your entire customer base with an effortless way to make smart purchases and redeem utility rebates



Powerful program monitoring and control

- » **Program Dashboards & Monitoring**
Get a crystal-clear window into your program results and access customer interaction data anytime
- » **BI Tooling**
Analyze data in real time to build deeper customer intelligence through custom reports and visualizations

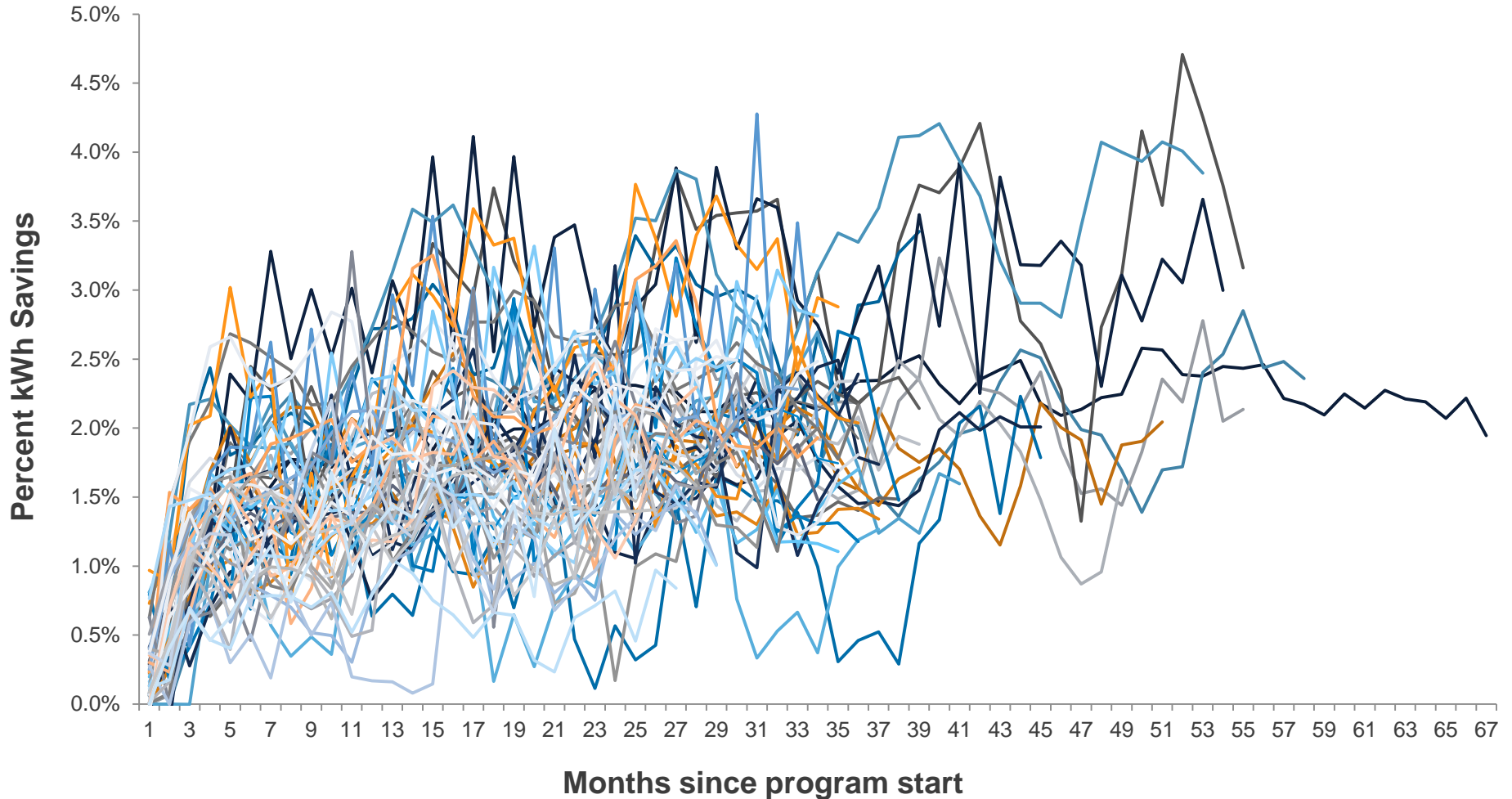


NEW MEXICO
Population: 2,085,572

Opower's clients have saved
8 TERAWATT-HOURS OF ENERGY.
That's enough to take all the homes in
NEW MEXICO OFF THE GRID FOR A FULL YEAR.

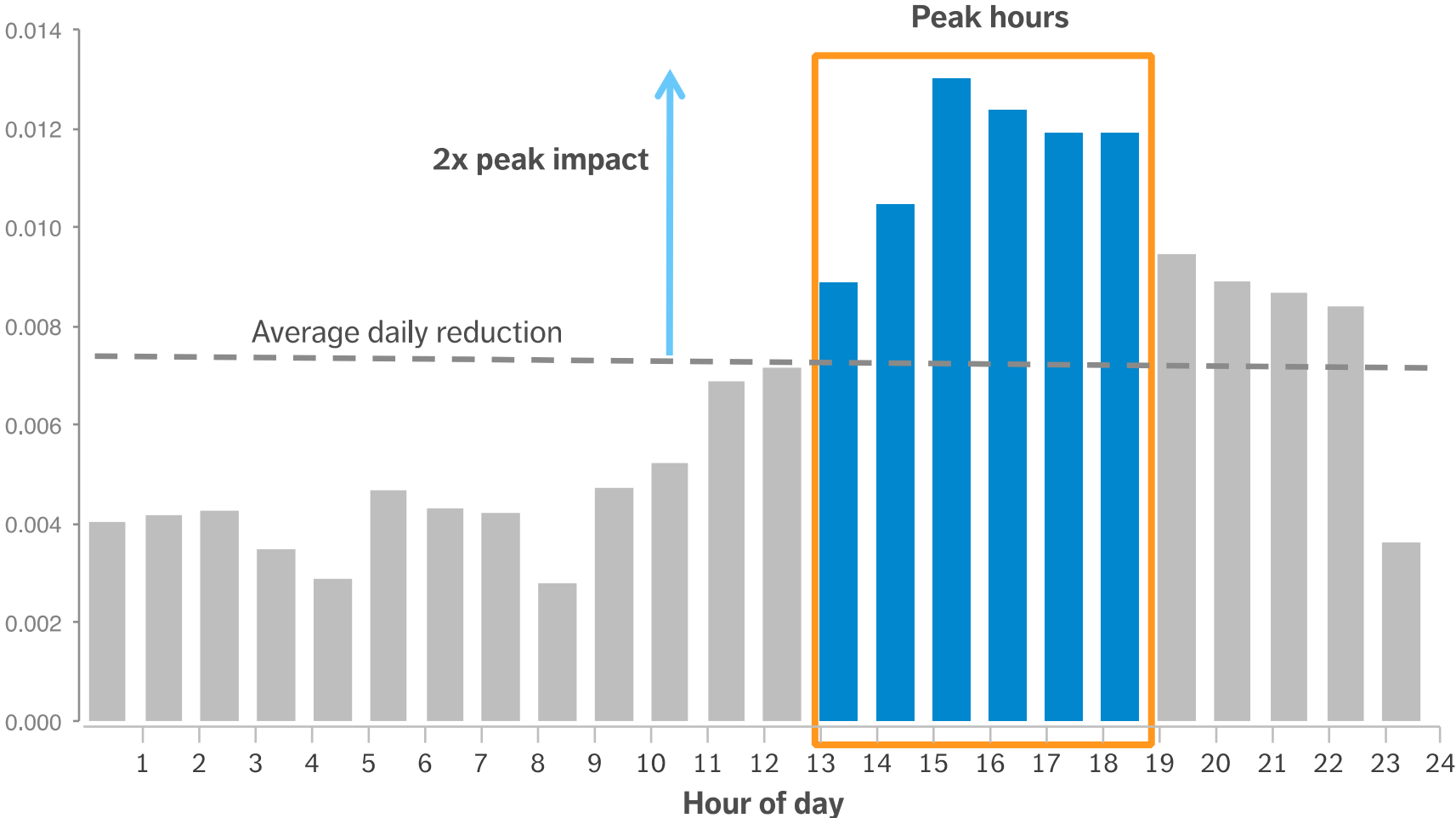
Behavioral Energy Efficiency

More than 300 programs, 95 Utilities, 50 Evaluations



Behavioral energy efficiency drives peak savings

Average hourly kW reduction per home



How do customers respond to a dispatchable behavioral program that specifically targets peak demand on peak days?

Behavioral Demand Response: Deployed to 1.5M Homes, 9 Utilities, 3 ISOs

PEAK DAY NOTIFICATIONS



PERSONALIZED ADJUSTMENT



POST-EVENT FEEDBACK



- » Targeted communication
- » Channel of choice
- » Opt-out program design

- » Large-scale engagement
- » Access to more load
- » Highly accurate EM&V

- » Immediate feedback
- » Highly personalized results
- » Ongoing encouragement

Behavioral science drives BDR

Normative call to action

Actionable tips

Peak event normative comparison

Participation rationale

Simple opt out

Having trouble viewing this email? [Click here](#)

UtilityCo

Please join your neighbors in reducing energy use on Wednesday afternoon, **August 18th from 2–7pm.**

⚠️ **You used MORE than similar homes on the last peak day.**

Last peak day: Wednesday, June 12th 2–7pm

Group	Energy Usage (kWh)
Efficient Neighbors	2
All Neighbors	5
YOU	10

■ All Neighbors: Approx. 100 occupied nearby homes that are similar size to yours, (avg. 1,523 sq ft) and similar heat type

■ Efficient Neighbors: The most efficient 20 percent from the All Neighbors group

What is a peak day?
To keep costs down on hot days, people are reducing their usage during peak days.

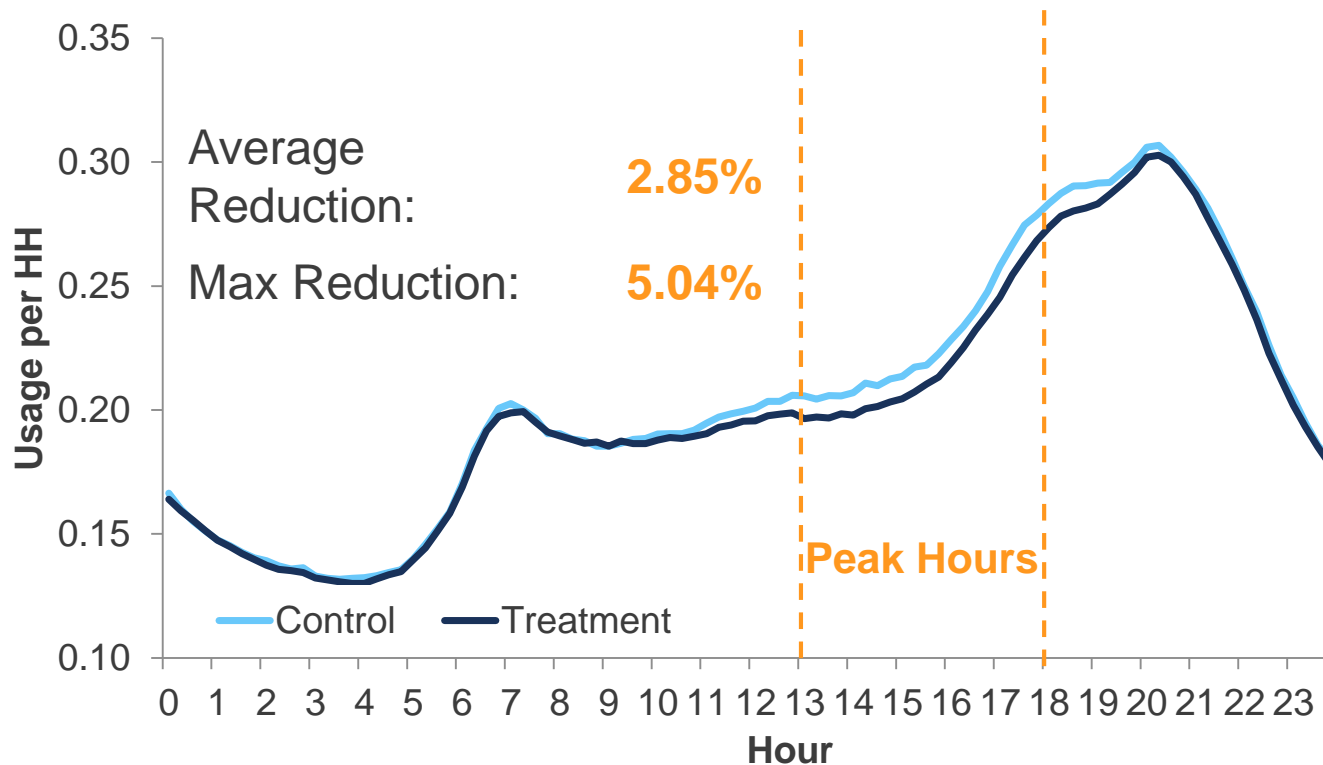
👍 **Ways to save on peak days**

Before you leave the house
Adjust your thermostat a few degrees
Pinterest yr brunch cardigan hashtag blue bottle, put a bird on it swag. Schlitz umami kogi banh mi, next level craft beer yr forage Portland church-key.

2014 BDR Result:

Large scale peak savings without a device or price

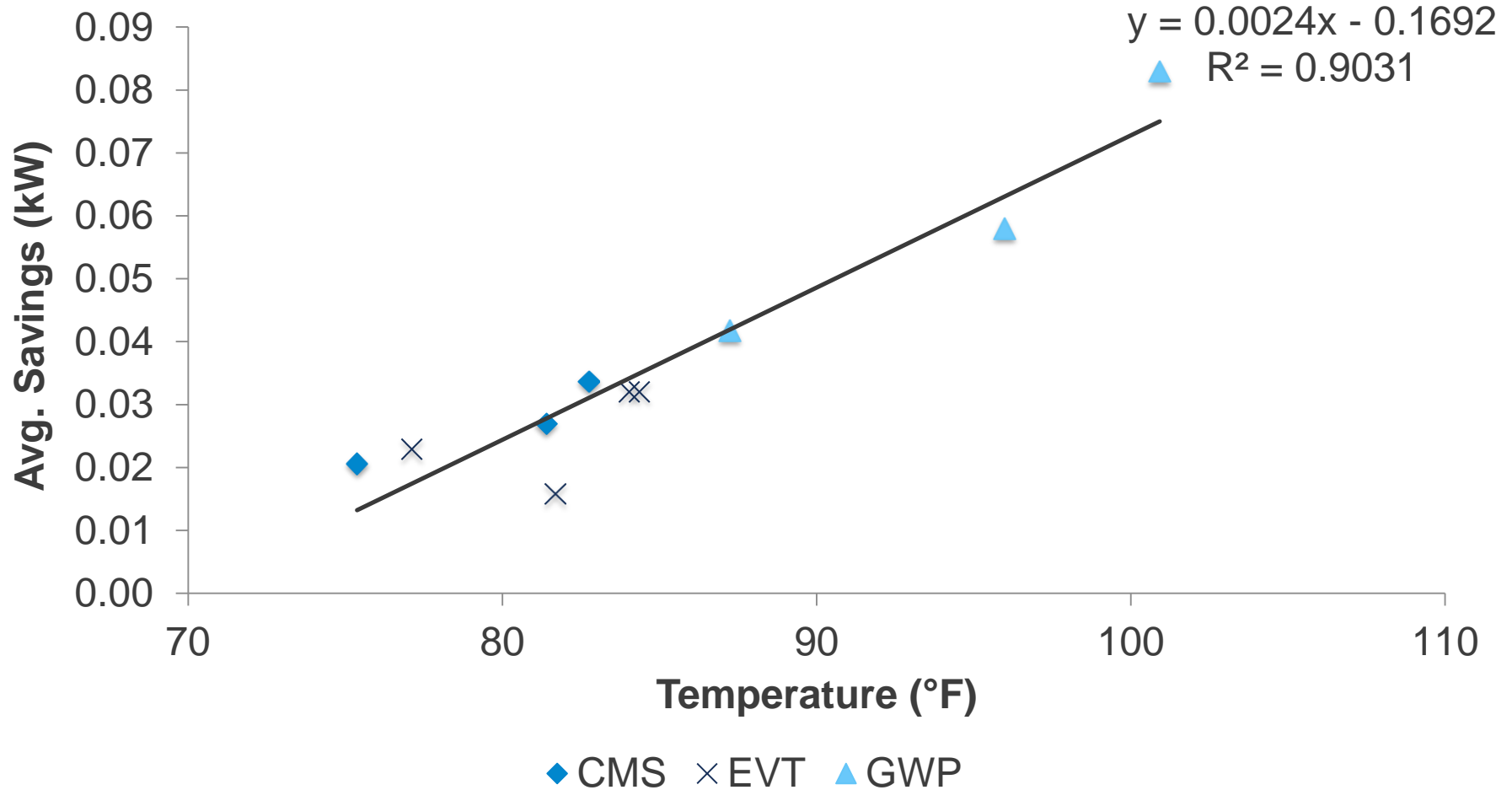
Performance across 10 events, 3 utilities



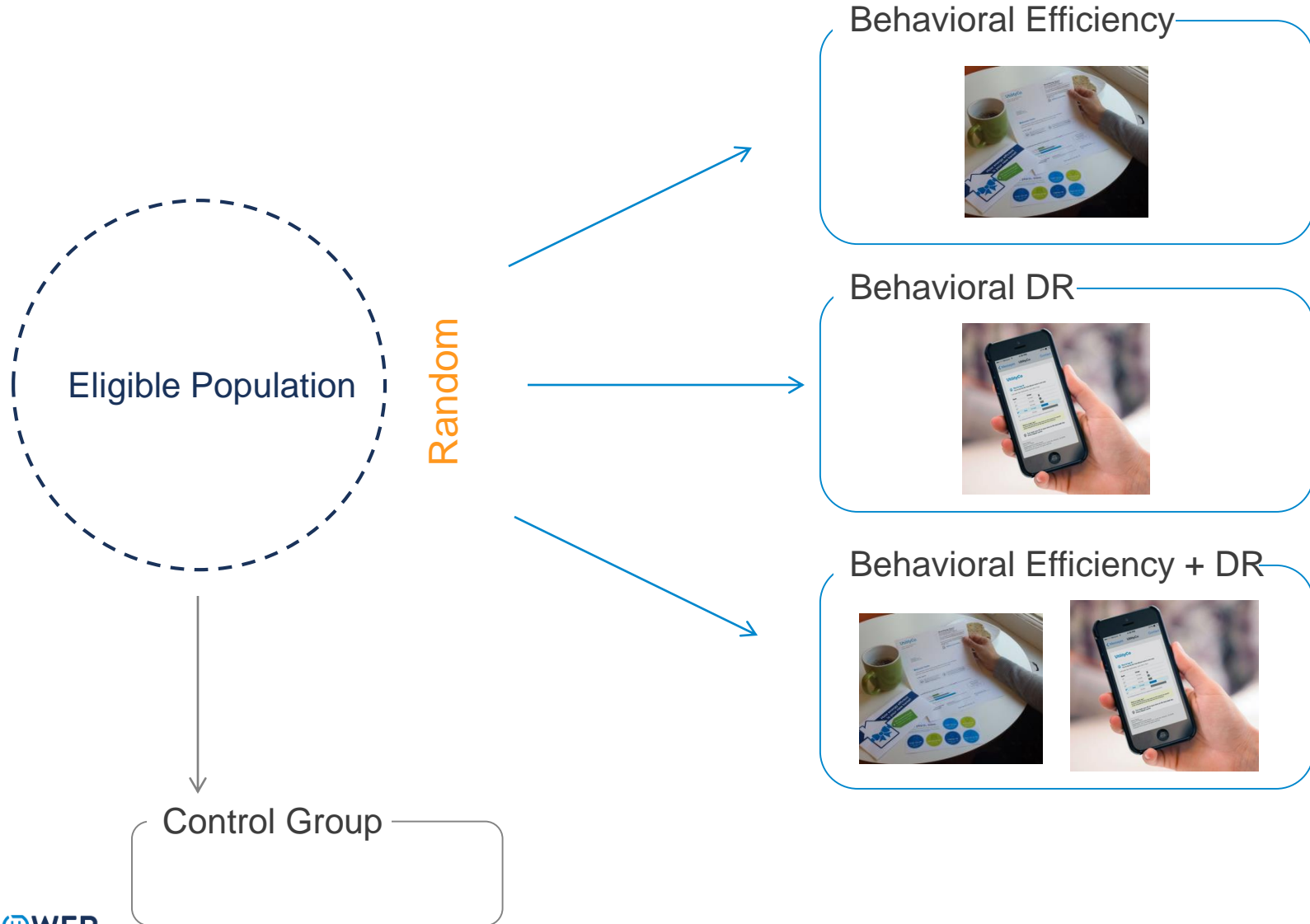
- » Results across 3 separate utilities
- » 40%-60% the cost of traditional DR measures

2014 BDR Result:

Load impact closely correlated with temperature



2014 Case Study: Layering EE and BDR RCT To Isolate impact of the program



Record Heat Waves Led to Record Demand

How would BDR respond?



R.J. Blake

@RobertoBlaque

Follow

When they finally realize I'm missing all they'll find is a puddle of sweat. #LA #heatwave

4:16 PM - 15 Sep 2014

1 FAVORITE



LADWP

@LADWP

Follow

All -time energy demand record set yesterday was shattered today. Peak demand today=6,396 MW. Yesterday was 6196MW.

7:52 PM - 16 Sep 2014

103 RETWEETS 17 FAVORITES



USA TODAY

A GANNETT COMPANY

NEWS

SPORTS

LIFE

MONEY

TECH

TRAVEL

OPINION



CROSSWORDS

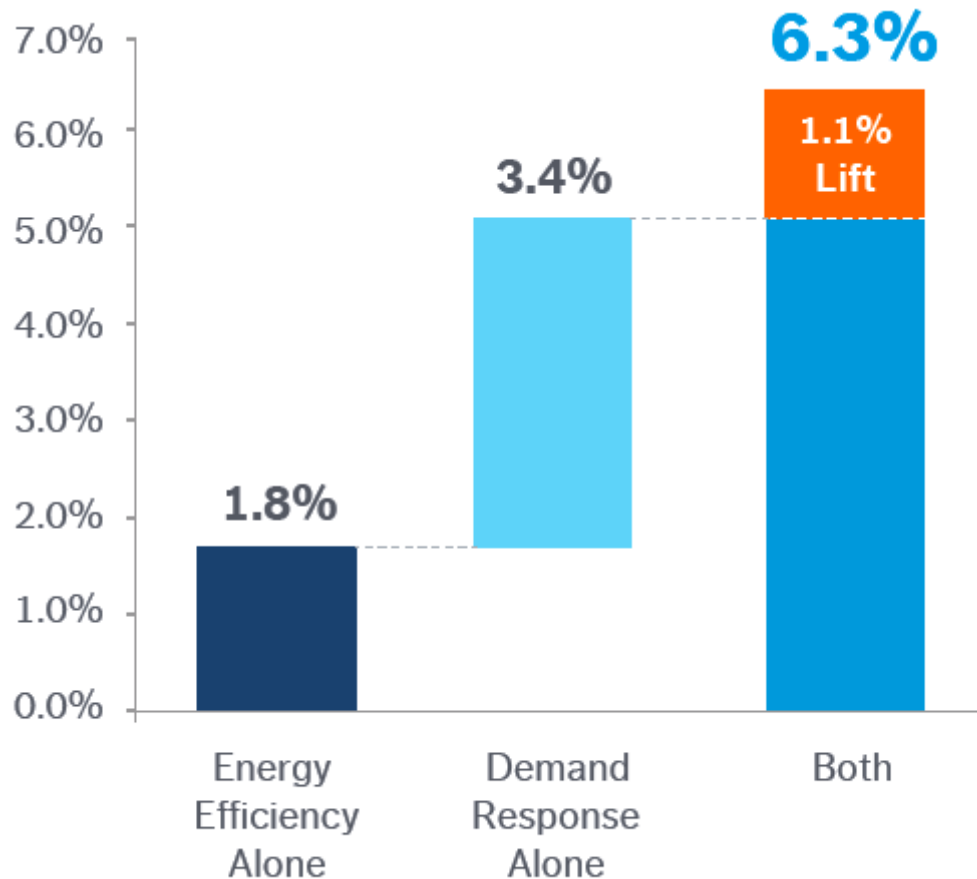
YOUR TAKE

INVESTIGATION

Southern California swelters in heat wave

Surprising result: These solutions are better together

Peak savings rate at a California Utility



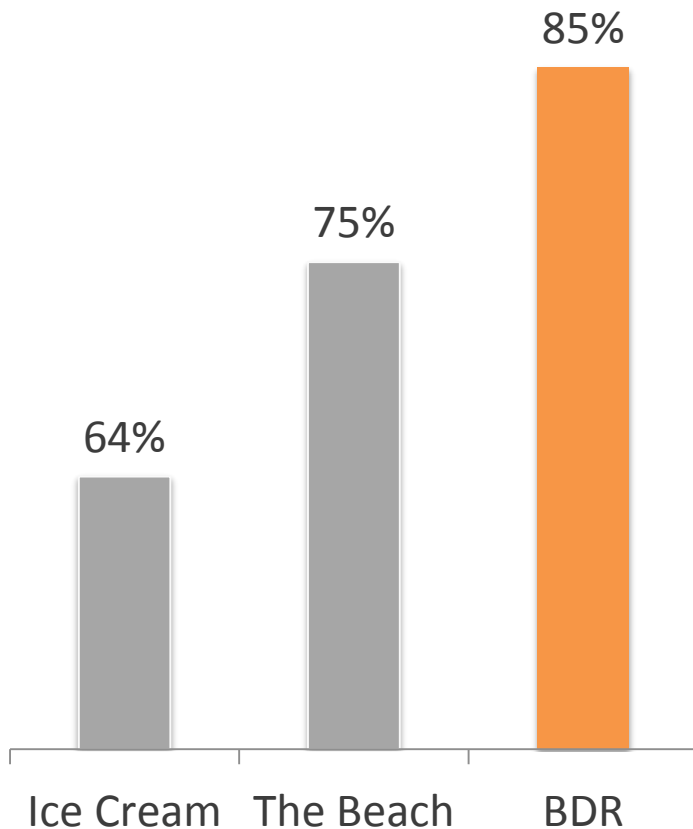
Snapshot of this program

- » Average peak savings across 3 events in summer 2014 in California
- » Customers randomly assigned to three groups
- » Peak impact is greater when resources combined

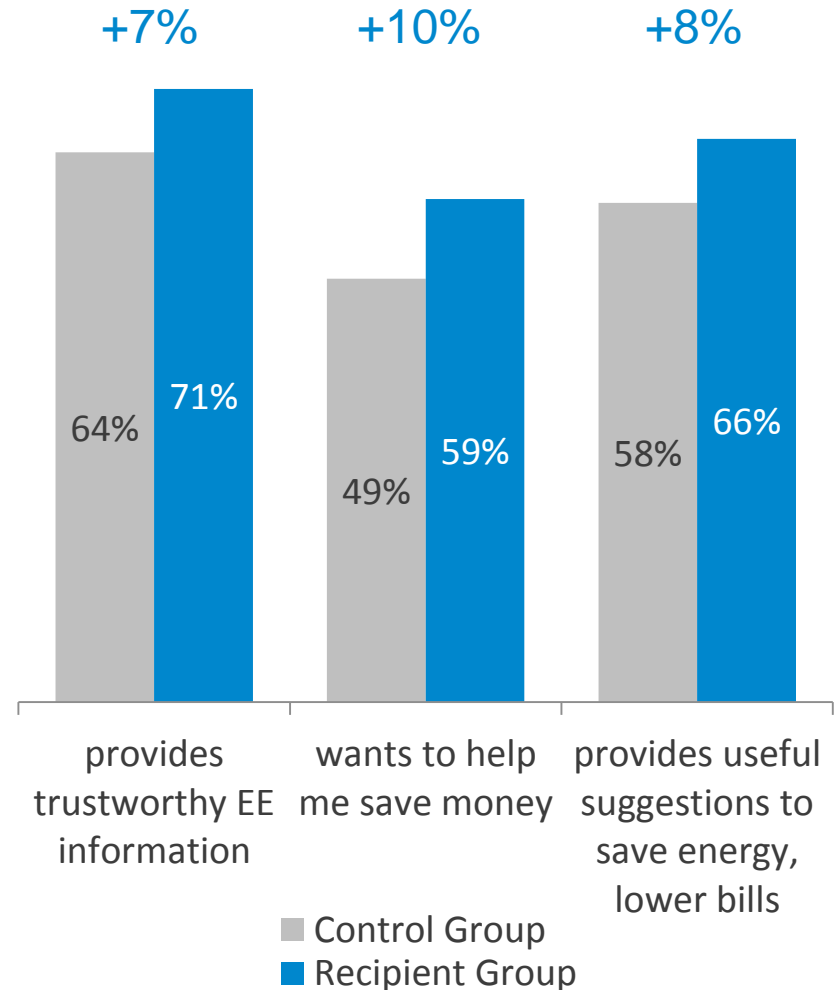
Result: 85% Customer Satisfaction

Turns out customers like BDR...more than ice cream

I'm satisfied with...

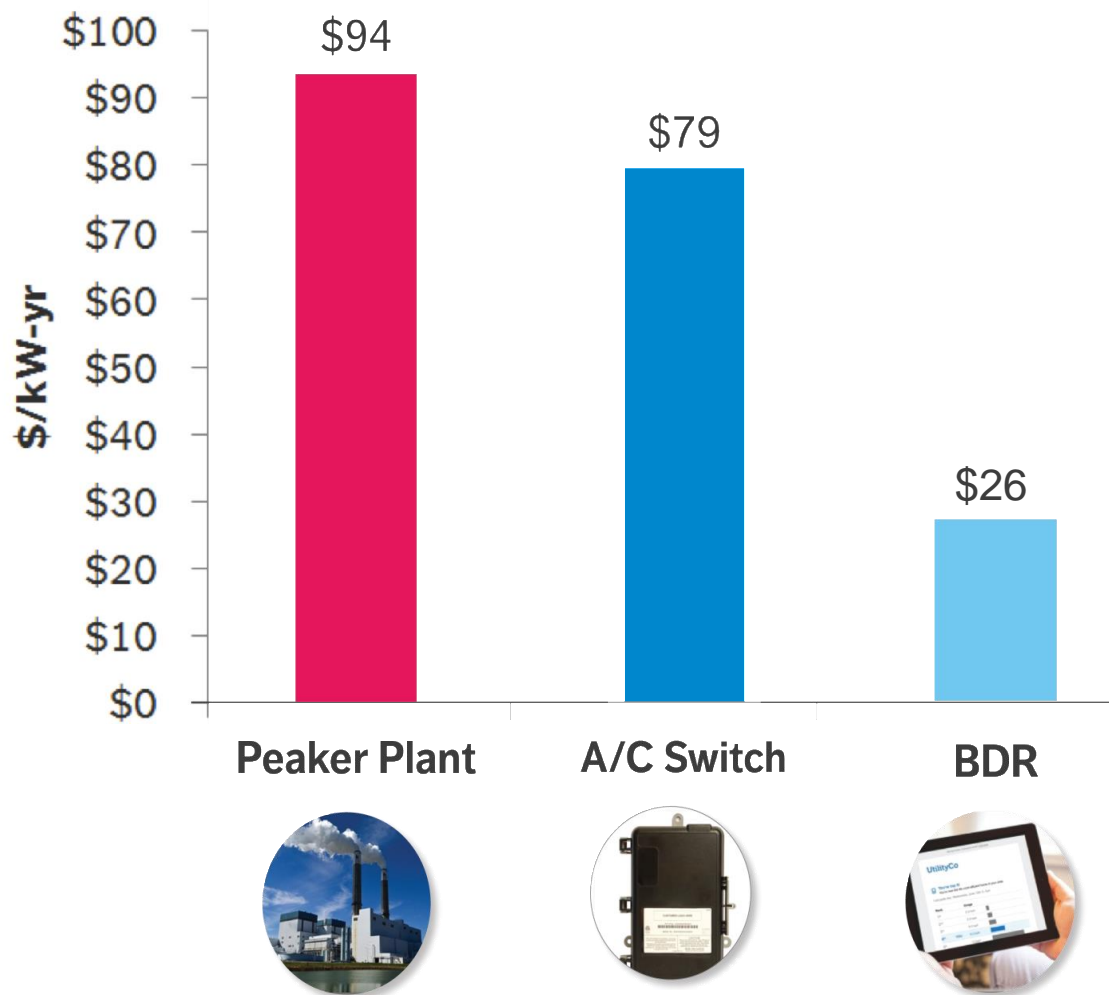


My Utility....



Result: 1/3 the Cost of Traditional DR Resources

Without a price or device, BDR is highly cost effective



What have we learned?

Multiple benefits of behavioral programs

1. Behavior can be tailored to meet your particular needs

Behavioral programs can be designed to meet evolving challenges by adjusting the type and timeliness of information

2. Peak-focused behavioral programs are highly effective

We designed a peak-hour, day-ahead dispatchable behavioral program and measured over 3% peak savings using an RCT

3. Well-designed behavioral programs deliver kWh and kW

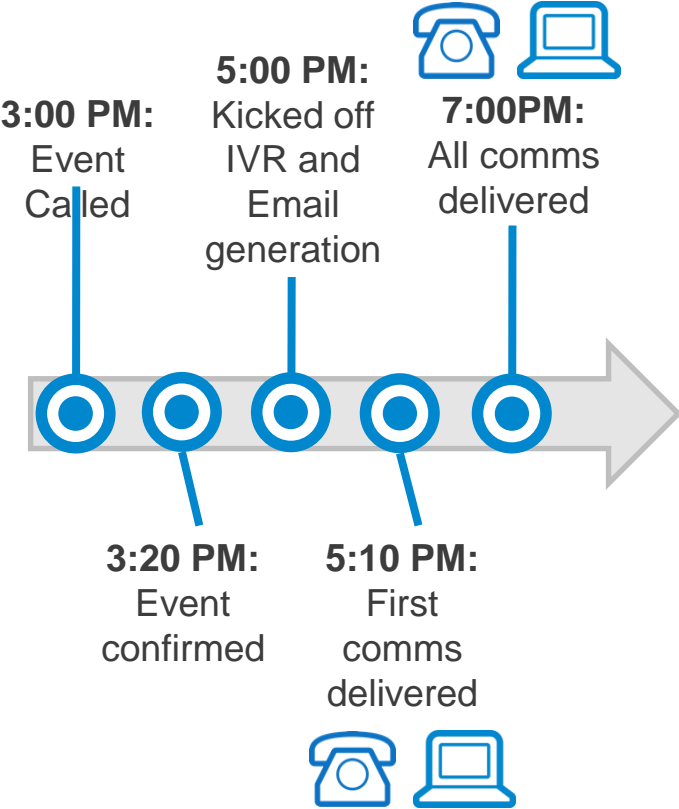
Best practice should include combining monthly, indirect behavioral feedback with peak-focused, direct behavioral feedback to maximize cost effectiveness

Appendix



Snapshot of a BDR event

Pre-Event (July 21)



Peak Event (July 22)

Post-Event (July 23)

