

On the left side of the slide, there are two overlapping teal circles. The top one is a darker shade of teal, and the bottom one is a lighter shade.

California Customer Acceptance of ADRS Load Control

Craig Boice
Boice Dunham Group

Advanced Load Control Alliance 2005
Las Vegas, Nevada

April 7, 2005

The ADRS Field Trial

- The Advanced Demand Response System (ADRS)
 - 2004-2005 field trial mandated by California Public Utilities Commission decision D.03-03-036
 - Sponsors: Pacific Gas & Electric (PG&E), San Diego Gas & Electric (SDG&E), Southern California Edison (SCE)
 - Participating ADRS households: 75 PG&E customers, 75 SCE customers, 25 SDG&E customers
 - The objective: to learn how homeowners experience an advanced energy management system
 - The system: Invensys GoodWatts ADRS
- Market research
 - The Boice Dunham Group

The Invensys GoodWatts System

- The ADRS includes many components:
 - a new **programmable thermostat**, set on-site or online
 - a **home energy network**, providing two-way communications between home energy controls, home computers, and the ADRS program, through wireless and cable-modem connections
 - **customized temperature profiles**, which homeowners could set and revise
 - **real-time online information tools** to view daily household energy use
 - **the Critical Peak Pricing – Fixed (CPP-F) time-of-use rate**, with premium pricing for weekday afternoons (2-7 pm), and super-premium pricing for 12 Super-Peak Days
 - **energy education** available from GoodWatts technicians and customer service staff
 - **\$100 in incentive payments**, received for participating in the program and its market research



The Customer Experience Agenda

- What fraction of the participants considered the control technology installed to be useful and reliable?
- What fraction report that the technology worked, in the sense that it either reduced their bills or gave them more control over their energy use?
- What recommendations did participants have to make the technology more useful or user friendly?
- Would some or all of these participants be willing to pay for all or most of these systems' installation costs, after they have experienced these systems' benefits over the course of the pilot?

Uses and Strategies Varied

- What fraction of the participants considered the control technology installed to be useful and reliable?
- Participants measure usefulness primarily in terms of savings on their energy bills, as well as:
 - becoming mindful about electric use
 - energy savings
 - better control of their homes
 - stewardship of their communities
- Participants used different program strategies
 - Spectators who let it function automatically
 - Converts who changed behavior as much as possible
 - Teammates who worked with the tools and data

The ADRS is Useful and Reliable

- What fraction of the participants considered the control technology installed to be useful and reliable?

Participants who report that the:	1 Strongly Agree (%)	2 Agree (%)	3 Neither Agree Nor Disagree (%)	4 Disagree (%)	5 Strongly Disagree (%)	No Opinion (%)	Mean (1-5)
System is useful	34	51	9	2	0	5	1.77
System is reliable	28	46	20	0	0	6	1.91
System has performed well	28	52	12	2	2	5	1.93

The ADRS Offers Savings & Control

- What fraction report that the technology worked, in the sense that it either reduced their bills or gave them more control over their energy use?

Participants who report that they:	1 A Lot (%)	2 Some (%)	3 A Little (%)	4 Not at All (%)	No Idea (%)	Mean (1-5)
Saved money on our electric bill	35	42	15	6	2	1.99
Gained better control over our home	41	41	8	5	5	1.78
Learned more about how to use energy	44	40	13	2	1	1.74
Used less energy in our home	47	39	10	2	2	1.65
Shifted energy use to different times	59	33	8	0	0	1.48

ADRS Customers are Satisfied

Participants who report that:	1 Strongly Agree (%)	2 Agree (%)	3 Neither Agree nor Disagree (%)	4 Disagree (%)	5 Strongly Disagree (%)	No Opinion (%)	Mean (1-5)
I am satisfied with the program	25	49	17	6	0	4	2.05
I would recommend the program	38	40	8	5	0	10	1.76

The ADRS Met Expectations

Participants who report the program has met their:	1 Strongly Agree (%)	2 Agree (%)	3 Neither Agree nor Disagree (%)	4 Disagree (%)	5 Strongly Disagree (%)	No Opinion (%)	Mean (1-5)
financial expectations	18	45	20	8	2	8	2.33
expectations for saving energy	26	45	17	8	2	3	2.11
expectations for providing environmental benefits	20	37	29	3	0	11	2.17

Customers Wanted More

- What recommendations did participants have to make the technology more useful or user friendly?
- Timely and regular feedback on behavior, results, and recommendations:
 - my energy usage and my bills (baseline and ongoing)
 - programming and reprogramming routines
 - program economics for me, my utility, and my community
- Provide control, not merely data:
 - easier navigation and simpler data presentation (website, thermostat, printed materials)
 - more convenient control of pools, spas, and other appliances

Customers Might Pay for More

- Would some or all of these participants be willing to pay for all or most of these systems' installation costs, after they have experienced these systems' benefits over the course of the pilot?

Participants who report that they:	Definitely (%)	Probably (%)	Maybe (%)	Probably Not (%)	Definitely Not (%)
Would continue with the program, if it remained free	52	33	7	7	1
Would continue with the program, if there were an additional \$5 monthly charge	20	29	21	18	12

Primary Conclusions

- Across utilities, strategies, and time, most ADRS participants:
 - defined the program in terms of savings on the electric bill and better control over my home
 - were satisfied with the program, believed it worked for them, and would recommend it to others
- Customers seek a few money-saving control routines:
 - action-oriented information, training, and devices
 - simpler, easier, and more convenient system operations
 - easily understood program economics: rates, pricing, savings, benefits
- The ADRS customer experience has been positive

Concluding Unscientific Postscript

- Why don't we give customers what they want?
 - a reliable, well-supported, money-saving system, easy to learn, convenient to use
 - a reliable, easy to understand time-of-use rate, with significant peak/off-peak price differences
 - a bill that indicates personal and program-wide savings
 - a program that demonstrably improves the economics and lowers the risks of their utility's operations
- Do we know what we want from customers?
 - peak-shaving is one thing, power marketing is another
 - extreme event/energy purchasing modeling supports many systems, but requires we solve for a rate



For Further Conversation

Craig Boice

President

The Boice Dunham Group

30 West 13th Street

New York, NY 10011

Telephone: 212-924-2200

E-mail: BDGBUSDEVL@MSN.COM