Residential Real-Time Pricing: Bringing Home the Potential

ENERGY-SMART PRICING PLAN℠

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Assessing the Potential for Demand Response Programs

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Introduction

- Since 2003 the Community Energy Cooperative and ComEd have successfully operated the Energy-Smart Pricing Plan^{sm} (ESPP), a large real-time electricity pricing program for residential consumers
- Overview of presentation:
  - What's the program?
  - What have we learned?
  - Future directions

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The Community Energy Cooperative

- Founded in 2000 by the Chicago-based Center for Neighborhood Technology
- The Cooperative helps consumers and communities obtain the information and services they need to control energy costs
- We have worked closely with ComEd, the state and communities
- Programs have ranged from C&I curtailment to air conditioner exchanges to pricing programs

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Why Real-Time Pricing For Residential Customers?

- Two important reasons
  - Benefits to individuals
  - Benefits to the system

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Why Real-Time Pricing For Residential Customers?

- Individual benefits
  - Access to low-cost wholesale prices most hours and most days
  - Ability to avoid paying the risk premium built into flat rates
  - Choice
  - Control

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Why Real-Time Pricing For Residential Customers?

- Benefits to the system
  - Residential customers are numerous and disproportionately contribute to peak demand
  - Lower peak demand lowers prices for everybody
  - Lower peak demand improves reliability

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How ESPP Works Today

- Pilot with ComEd—to inform future rate and program options
- 3-year pilot—4th year added to extend program to the establishment of competitive procurement in Illinois
- Hourly, market based prices
- The Cooperative provides consumer education and high price notifications
- Interval meters, with cycling component for small portion of participants

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Current Program Characteristics

- Nearly 1,500 participants in 2005
- 52% have central air conditioning; 40% have window air conditioning
- 47% in Chicago; 53% Suburban
- Diversity across race, income levels and housing types
- Participant demographics fairly similar to overall ComEd customer base

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ESPP Has Seen A Variety of Prices and Weather

	Average Energy Price (¢/kWh)	Summer Maximum Price (¢/kWh)	Cooling Degree Days*	Summer Days with High Price Notifications
2003	3.2	12.4	659	9
2004	3.8	12.5	574	7
2005	5.7	19.1	1,087	57

* Ten year average cooling degree days is 799

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What We've Learned

- Third party evaluations by Summit Blue Consulting utilized the latest analytical methods to model elasticities of demand and other characteristics of participants' energy use
- **Participants significantly changed their consumption behavior, reducing peak demand**
- **Participants have a high level of satisfaction with the program**

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Participants Changed Their Behavior

- In 2005, ESPP participants responded to hourly electricity prices in a manner similar to prior years, with an overall price elasticity of -4.7%

  [A doubling in price results in a 4.7% decrease in use for that hour]

- This level of response is strong and is comparable to those found in other programs that use price signals to motivate changes in consumer behavior

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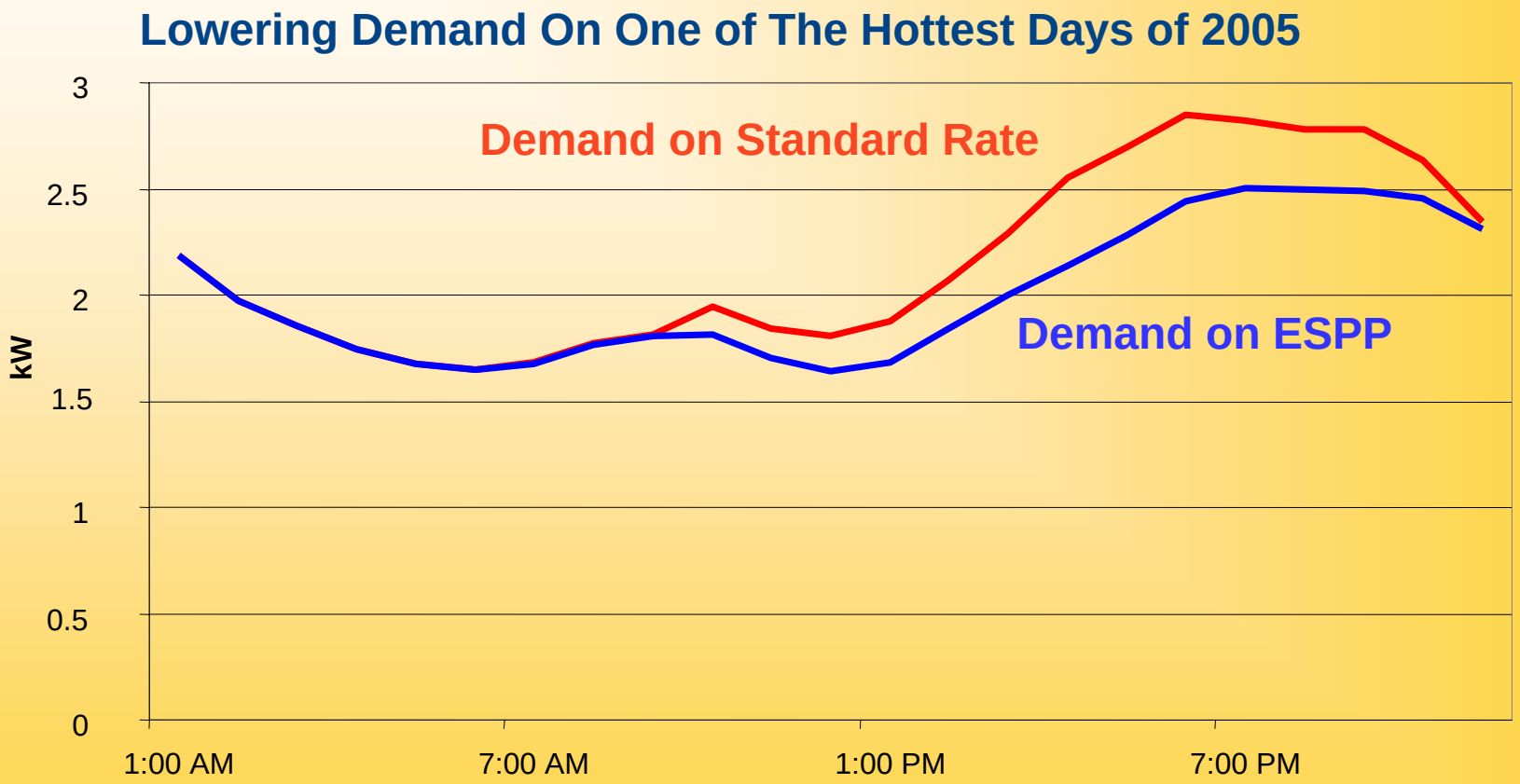
Participants Changed Their Behavior



July 25, 2005

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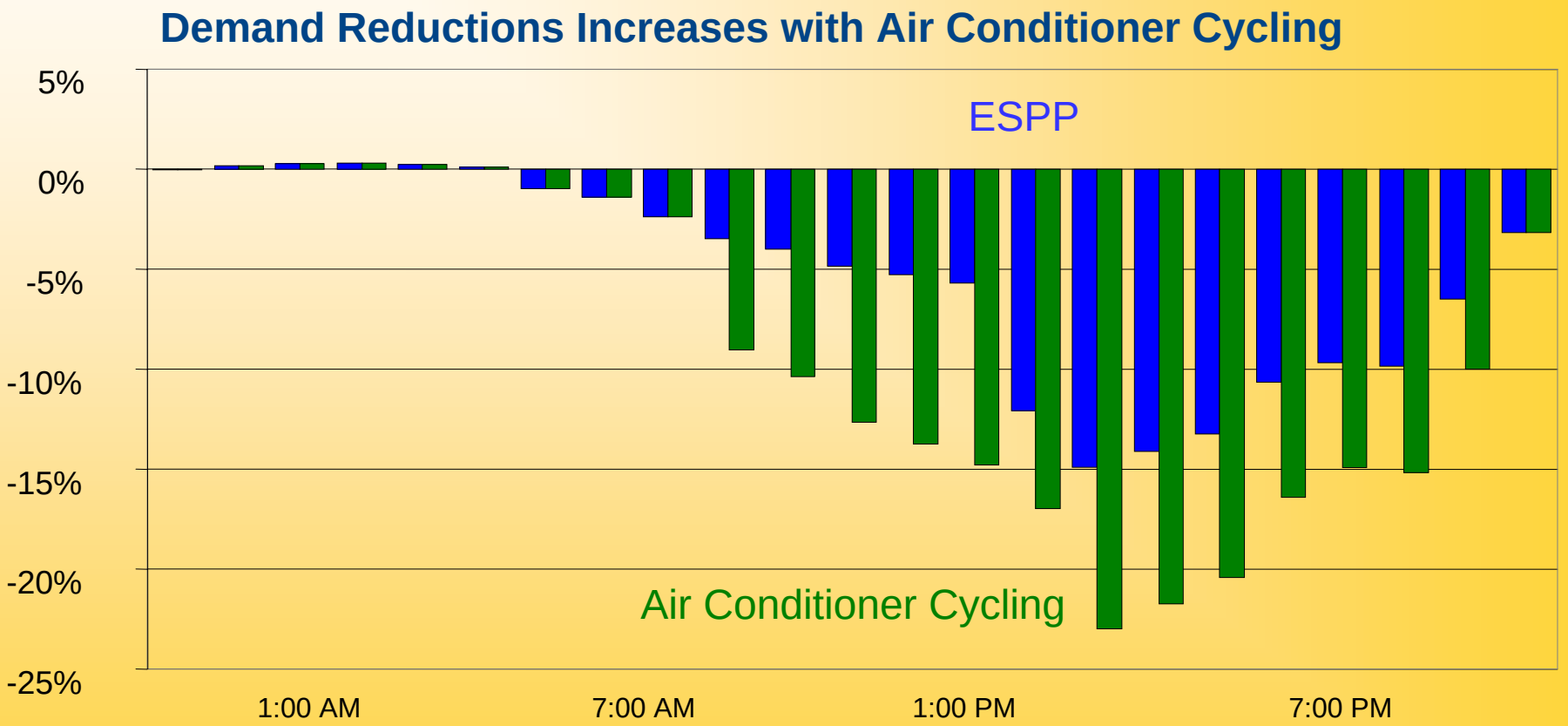
Participants Changed Their Behavior



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Participants Changed Their Behavior

- ESPP participants' overall monthly summer energy (kWh) usage suggests a conservation effect
  - Reduction in usage of 3% to 4% relative to estimated usage had they not received hourly electricity prices
  - Surveys indicated that participants said they were almost always buying EnergyStar when replacing appliances

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People Like The Program

"I appreciate this program… I feel empowered to make a difference in my energy budget and in how I conserve energy. Thank you."

"I have long felt that joining the ESPP Plan is one of the smartest decisions I'd ever made!"

"I am very happy with this program. I feel my bills have been lowered by my participation. It's good to know that I can make an impact on my electric bill by making small changes in my routine- Thanks!"

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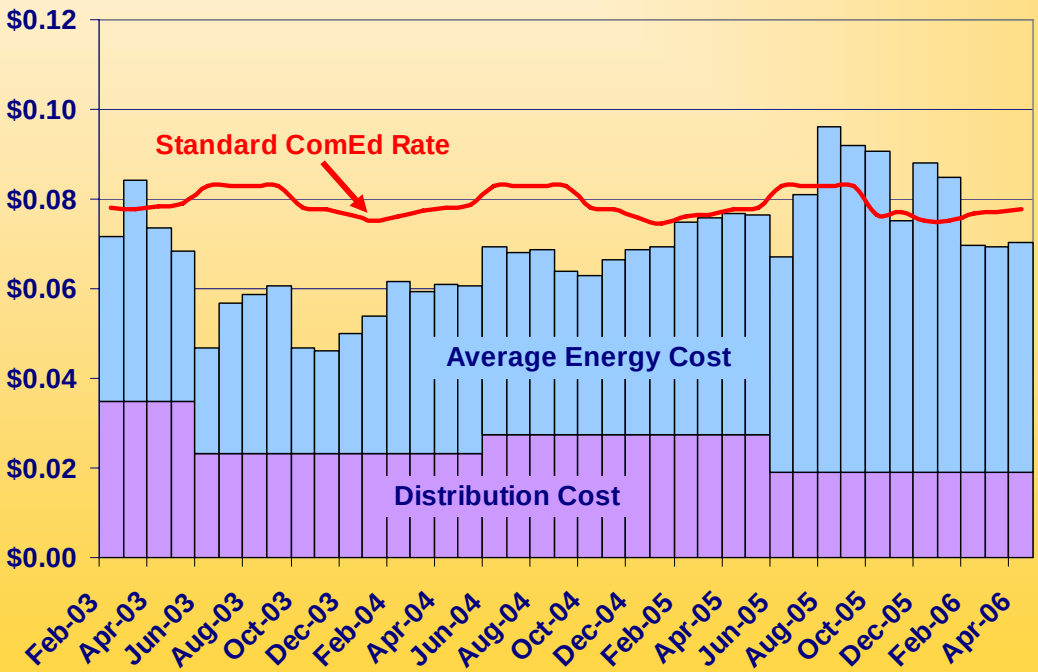
People Like The Program

- Saved money compared to standard rate—though results varied considerably, and included some months with higher costs than the standard rate



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- Comparison to standard rate is not helpful for quantifying future value of RTP
  - Currently this is a comparison to a frozen rate
  - 2007 rates will be unbundled with standard distribution and transmission costs

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People Like The Program

- In 2005, despite a very hot summer, and high power prices driven by natural gas costs, still a high retention rate

Year	Percent Renewing
2003	99%
2004	99%
2005	87%

Does not include participants who moved during the year

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Conclusions Thus Far

- RTP can be successfully implemented with relatively inexpensive incremental technology
- Useful, reliable pricing information is critical component
- Consumer education needed (people want and use energy information that's relevant to their situation)
- High price notifications focus people's attention
- An automatic curtailment option such as an air conditioner cycling switch or a smart thermostat produces added benefits

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A Large Scale Program Would Require…

- Information system for participants that goes beyond what an IDC can offer (price, usage, education, etc.)
- Education/awareness/exposure to RTP rate idea
- Appropriate metering infrastructure

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What Is The Value To Customers?

- Elimination of risk premium
  - Recent New Jersey and Maryland results suggest a 20-40% premium
  - We don't know yet what it will be in Illinois
- Ability to manage use and risk
- Information about energy, costs and efficiency options
- Customers value having control and choice

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Meaningful Scale: Short-term

- Over the next 3 to 4 years initial market penetration (~3% of customers)
  - Create the accompanying program and outreach efforts
  - Determine cost allocation for meters and program
  - Measure participant behavior
  - Identify and test add-on technologies that increase price responsiveness
    - Cycling switches
    - Smart thermostats
    - ???

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Meaningful Scale: Long-Term

- Customers will be more aware of choices
- Meter costs continue to decline
- Full benefits of price response can be quantified
- Full potential of RTP becomes clear and achievable

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More Long-Term Opportunities

- Grid friendly appliances

- New homes with enabling technology built-in

- Innovative information communications systems

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How Would This Work In The Illinois Post-2006 Structure?

- Procurement
  - Already includes a provision for utility supplied hourly pricing for all customer classes
- Distribution
  - Current rate cases include unbundled charges that are level between supply options (except metering)
- Gives residential customers same rate choices as commercial/industrial customers

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What's Next In Illinois?

- ComEd and Ameren's proposed 2007 rates will give all customers the option of real-time pricing
- Current rate cases include proposals for residential RTP program and funding mechanism
- SB1705 passed unanimously by Illinois General Assembly mandates RTP as an option for residential customers and allows for the inclusion of meter and program costs in the rate base if the ICC finds there would be net benefits from a large-scale program
- Current rate cases and related proceedings over the next few months will determine specific program parameters

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