Meeting Ambitious Goals with New Models
Debbie Kimberly, VP Customer Energy Solutions, Austin Energy
UT Energy Week, February 19, 2015
Austin Energy: Who We Are

- Public Power Utility (8th Largest)
- 435,000 Customers
- 1 Million Residents
- 437 Square Miles
- 2,800 MW Peak Demand
- $1.5 billion annual budget

- Mission: *Deliver clean, affordable, reliable energy and excellent customer service*
• Deregulated market managed by Electric Reliability Council of Texas (ERCOT)
• Manages electric to 23 million Texans
• Schedules Power
  – 40,500 miles of transmission
  – 550 generation units
  – AE generation comprises 3% of ERCOT
Big Picture: ERCOT and Energy Load

- Population Growth → Load Growth
- Peak Load is 50-70% Residential & Small Commercial AC Load
- Market cap: $9000/MWh
The Old Utility Model

- Increase Sales
- Build and Spend
- Enhance Reliability
- Customer Satisfaction
The New Utility Model

- Price
- Enhance Reliability
- Program Offerings
- Balanced Business Model
- Community Involvement
- Value
- Environmental
- Customer Experience

... And More
AE’s Smart Utility ‘Journey’

EE Programs
- Fiber Backbone 1991
- AMR 2002
- 1982
- 1985
- Transmission SCADA
- 2001 GreenChoice
- Inventory & Work Mgmt.
- 2008 DMS Pilot
- AMI

ISO Certification
- 700 MW Conservation Power Plant 2007
- Smart Meter Deployment Pilot
- EPRI Battery Pilot

2009
- Mobile Workforce
- GIS Upgrade – CC&B

2011
- New System
- Dispatch Center & Tier 3 Datacenter

2012
- GIS Upgrade

2013
- Distribution Designer Software
- Mobile Workforce – Phase 2
- Asset Management System
- Data Warehouse, Targeted Marketing

2014
- Command Center
- ADMS
- MDMS
- Battery Storage Pilot
- CVR
- Tier Alerts

2015

EMS Upgrade 2016
AE is evolving beyond working on Smart Grid Projects to implementing a Smart Utility Vision aimed at:

- improving customer engagement,
- enhancing safety and reliability,
- improving workforce efficiency and productivity, and
- integrating demand response, battery storage and renewables.
Austin Energy Goals - 2025

- 55% renewable energy
- 900 MW of savings from energy efficiency and demand response
- Solar includes 200 MW from local; 110 MW from customer-sited
- All City of Austin facilities, operations and fleet carbon neutral

Subject to Affordability
Energy Efficiency Savings

Remaining:
2015 - 2025

Achieved

Pre-2007 savings of 700 MW

Solar

Goal: 110 MW customer sited

Utility Scale

Local

Remaining

Planned and current

Goal Status 2007-2015
Challenges & Opportunities

Challenges

• Cost of energy
• Cost of delivering savings
• Building Codes
• Appliance Standards

Opportunities

• New technologies, e.g.:
  - Lighting
  - Controls
• Utility efficiency (e.g. conservation voltage reduction)
• Demand Response (DR)
• Behavioral Programs
• Upstream rebates
• Financing
• Storage, microgrids

Source: EIA Annual Energy Outlook 2014. Reference case.- annual growth (percent)
• “Passive” & Price Responsive
• Current Market Penetration:
  – ERCOT @ 4% (1600 MW)
  – AE @ 2% (58 MW)
• Recognized Potential:
  – ERCOT: 8 - 15% (3200 – 6000 MW)
  – AE: 5.5% (150 MW)
Traditional Thermostat Model
(Maintenance Mode)

- Started in 2001
- Serves SF, MF and Com
- “Top Down”: Thermostat, install, maintenance, call center through City’s Vendor
- One Way Communication (Radio Signal on the Pager Network)
  - No smart phone connectivity for customers
  - No claim to energy efficiency savings
  - Difficult Opt Out Process
- 30% Cycling Strategy
- ~ 90,000 Installed (66 MW)
- ~ 60,000 in place (44 MW)
Available Upgrades within Traditional Model

- **2-Way Communicating**
  - Response Verification
  - Customer smart phone access
  - Better curtailment strategies available
  - Energy efficiency savings
  - Business intelligence (ie: run time data)

- **Improved Opt-Out Process**

- **Upgrade is Costly**
BYOT Residential Thermostat Model

• Started in 2013
• Enroll your own internet-enabled thermostat
• Choice: 14 approved devices
  – Alarm.com, ecobee, Filtrete, Nest, Nexia Home Intelligence, Radio Thermostat
• Rebates
  – Customer: $85
  – To Vendor: $25/customer enrolled; $15/year for maintaining the customer
### Traditional VS New Business Models

<table>
<thead>
<tr>
<th>Traditional</th>
<th>New</th>
</tr>
</thead>
<tbody>
<tr>
<td>• High upfront cost with longterm responsibility</td>
<td>• Low upfront cost with low responsibility</td>
</tr>
<tr>
<td>• Maintenance costs</td>
<td>• Ease of integration with other programs</td>
</tr>
<tr>
<td>• Call Center Costs</td>
<td>• Range of customer choice, poised to expand</td>
</tr>
<tr>
<td>• Poor integration with other programs</td>
<td>• Promotes technological innovation</td>
</tr>
<tr>
<td>• Limited customer choice</td>
<td>• Promotes open standards and interoperability</td>
</tr>
<tr>
<td>• Best suited for MF market</td>
<td>• Best suited for SF market</td>
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Really, Really Simple Marketing

• Voluntary enrollment and participation (opt out using your thermostat, phone app or web)
• Summer Only (June-September)
• Weekdays Only, No Holidays
• Events are typically 2 hours long (4-6 pm)
• Typically 15 events/year

Do you think today will be an event day?
Summer 2013 Participation

Proof of Concept: Hardware Neutrality & Open Standards

AutoGrid’s DROMS: Call Events on multiple products, one log-in

- 2 thermostat (Head-End Integration)
  - ecobee (30 units): API Integration
  - EnergyHub (30 units): Open ADR 1.0
- 1 Electric Vehicle (EV) charger
  - Coulomb (15 units): Head end to head end
  - Customer Opt Outs Handled by DROMS
First Year Results

• Low first costs
• Enrolled over 4000 thermostats in 5 months
  – With NO marketing by AE
• Good uptake by customers & media
• Good Data to work with from AMR network
  – Increased kW savings with new strategies and 2
    way communication (.7 to >1.4 kW)
  – Measured opt outs
  – First hour results exceed second hour
  – Completing research on energy savings
Changing Demographics

- Connected since birth
- Technology adept
- All have cell phones
- Open to change

Millennials
Generation Y
Net Generation

HERE COME THE MILLENIALS
Ages 18 to 37, this group is bigger than the baby-boom generation and finally poised to start spending. What it means for the economy, from housing and autos to banking and tech.
### Survey: Do You Set Your Thermostat Back?

*Programmed it in the summer to go to a higher temperature when people are out of the house*

<table>
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<th>Survey year</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
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<tr>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td></td>
<td></td>
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Source: The Nielsen Company 2012 Energy Survey
Customers Say …. Not Really … And the Trend is Going in the Wrong Direction!

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<tbody>
<tr>
<td>No</td>
<td>47.3%</td>
<td>53.7%</td>
<td>56.3%</td>
</tr>
<tr>
<td>Yes</td>
<td>52.7%</td>
<td>46.3%</td>
<td>43.7%</td>
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Programmed it in the summer to go to a higher temperature when people are out of the house

Source: The Nielsen Company 2012 Energy Survey
Residential Web Application

Any where, any time, any device
• Easy to use
• Accessible from any web-connected device
• Next day information
• Color-coded tiers
• Usage alerts

Communicate in a way that is relevant and meaningful
Customers can share savings tips
Daily Residential Solar Data
Moving Forward

- Add energy efficiency measure tracking to residential app
- Create commercial app for kW alerts
- Commercial estimation tool
  - Assess rate increases
  - Changes in fuel costs
  - Determine impact of rate options
  - Identify equipment issues and operating changes
Distributed Energy Storage

**Chilled Water Storage**
- 2.4 million gallon chilled water storage tank
- Shifts ~4.3 megawatts during AE’s peak

**Battery Project**
- Voltage stability, co-locate with 2-3 MW community solar
- Enhance integration of renewables
- Shifts ~1 megawatt during AE’s peak
To succeed in isn’t just about technology, smart grids, program design.

Listen to what customers say; pay attention to what they do.

Need to develop products and services that customers will value.

Utilities must become more customer-centric.

Communicate in terms that customers understand, via media customers use.
Customer Experience

- Leverage customer “touch points”

- Trouble calls
- Use Energy
- Inventory of touch points
- Participate in our programs
- Receive/pay bill
- Turn on, turn off service
- Turn on, turn off service
I THINK MY NEST SMOKE
ALARM IS GOING OFF.
GOOGLE ADWORDS JUST
PITCHED ME A FIRE
EXTINGUISHER AND AN OFFER
FOR TEMPORARY HOUSING.
Thank You!