



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

CLEAN, AFFORDABLE, RELIABLE ENERGY & EXCELLENT CUSTOMER SERVICE





# Austin Energy: Who We Are



- Public Power Utility (8<sup>th</sup> 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*



# ERCOT - Where We Fit In

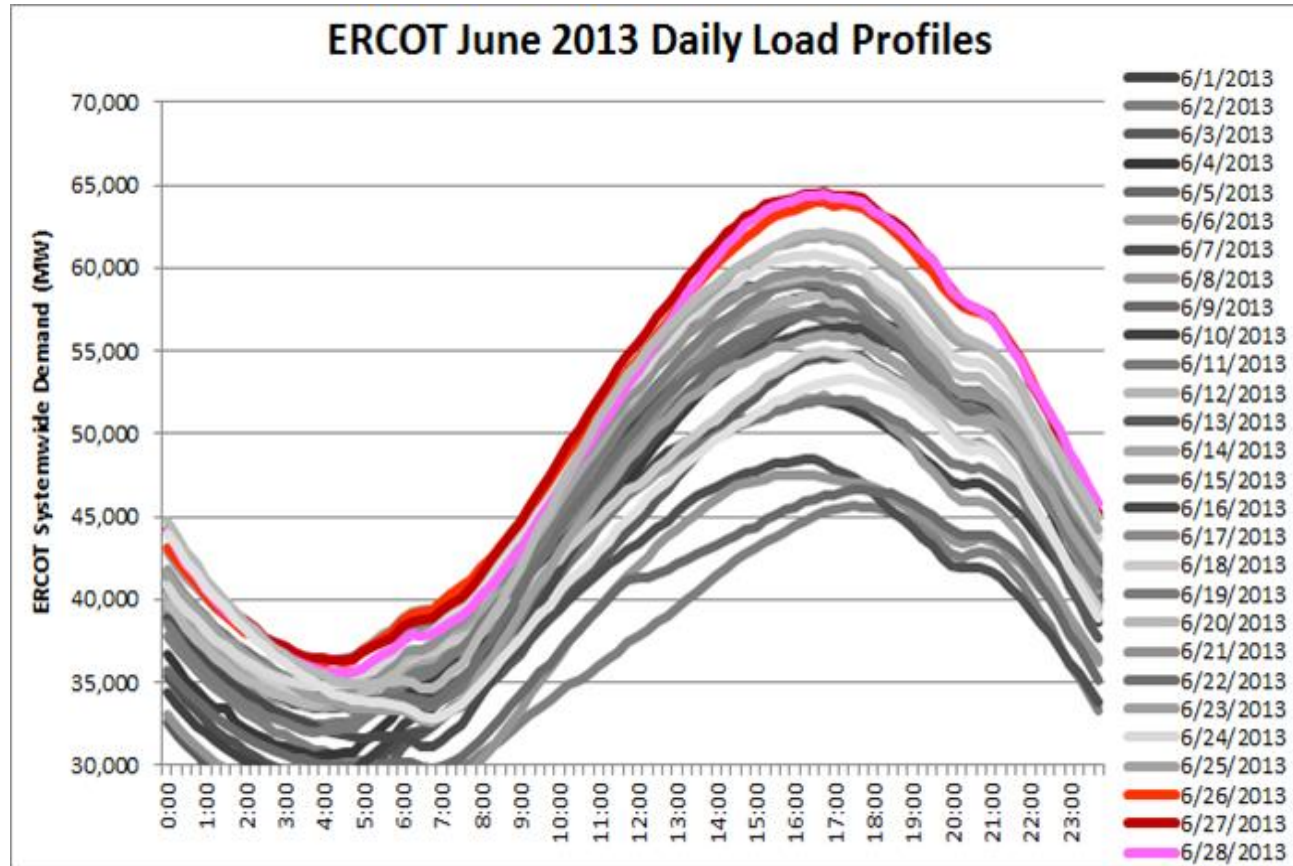
- Deregulated market managed by Electric Reliability Council of Texas (ERCOT)
- Manages electric to 23 million Texans
- Schedules Power
  - 40,500 miles of transmission
  - 550 generation units
  - AE generation comprises 3% of ERCOT





# 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

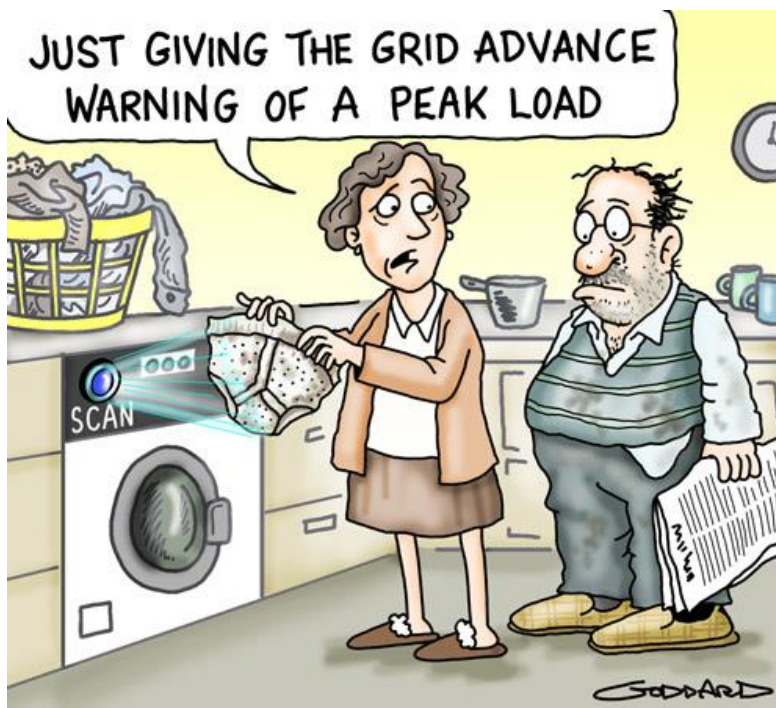
Balanced Business Model

Community Involvement

Value

Environmental

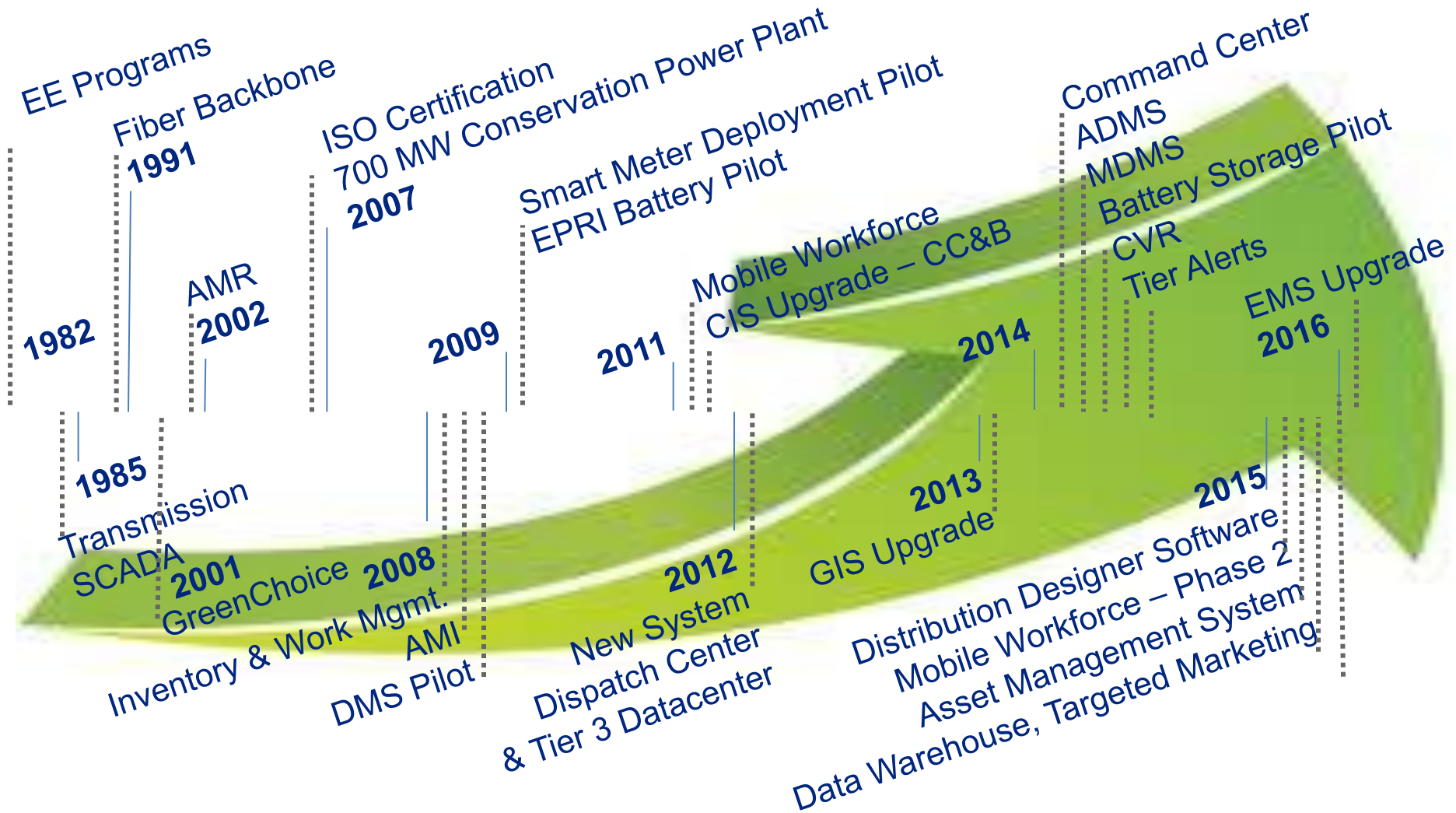
Customer Experience



... And More



# AE's Smart Utility 'Journey'





# Smart Utility Journey

**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%

900  
MW



950  
MW



55%  
renewable  
energy

900 MW of  
savings from  
energy  
efficiency and  
demand  
response

Solar includes  
200 from  
local; 110 MW  
from  
customer-sited

All City of  
Austin  
facilities,  
operations  
and fleet  
carbon  
neutral

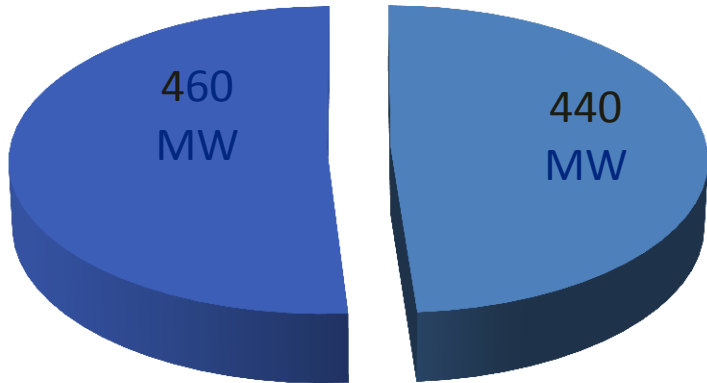
**Subject to Affordability**



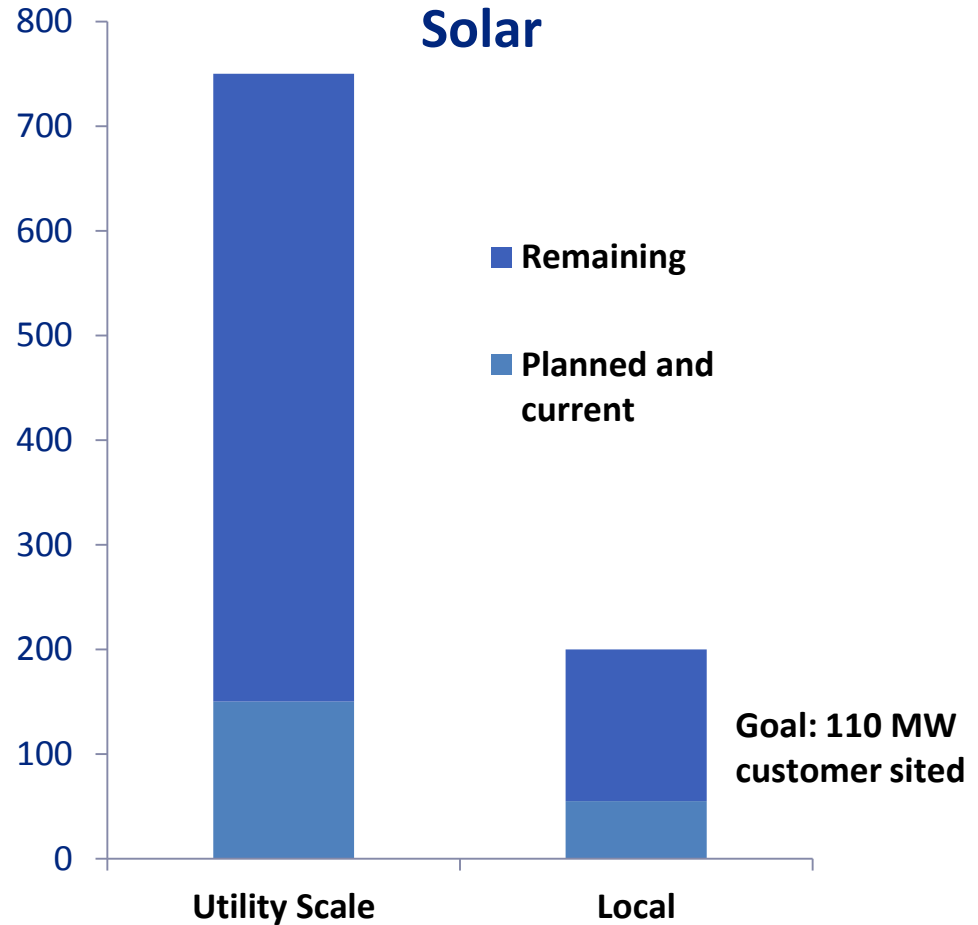
# Goal Status 2007- 2015

## Energy Efficiency Savings

Remaining:  
2015 - 2025



*Pre-2007 savings of 700 MW*





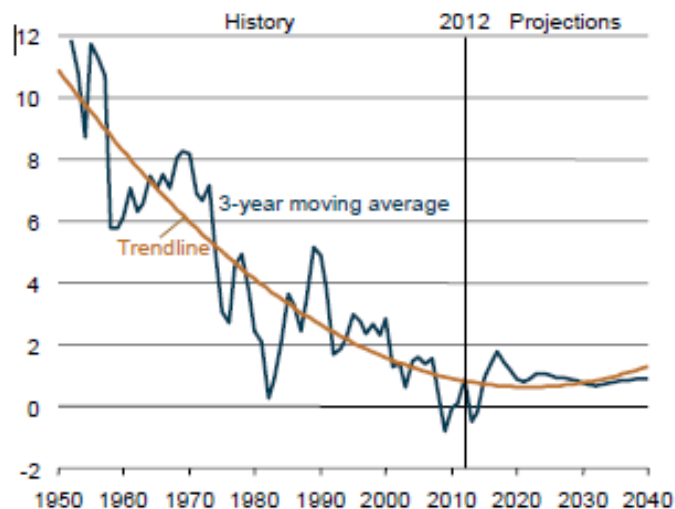
# Challenges & Opportunities

## 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)







# ERCOT, Austin Energy & DR

- “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)

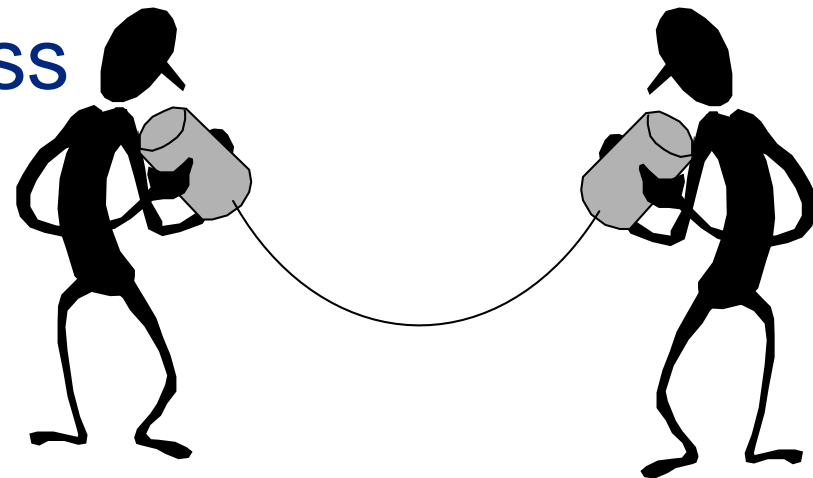


- Started in 2001
- Serves SF, MF and Com
- “Top Down”: Thermostat, install, maintenance, call center through City’s Vendor
- One Way Communication (Radio Signal on the Pager Network)
  - No smart phone connectivity for customers
  - No claim to energy efficiency savings
  - Difficult Opt Out Process
- 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

## Traditional

- High upfront cost with longterm responsibility
  - Maintenance costs
  - Call Center Costs
- Poor integration with other programs
- Limited customer choice
- Best suited for MF market

## New

- Low upfront cost with low responsibility
- Ease of integration with other programs
- Range of customer choice, poised to expand
- Promotes technological innovation
- Promotes open standards and interoperability
- Best suited for SF market

- 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



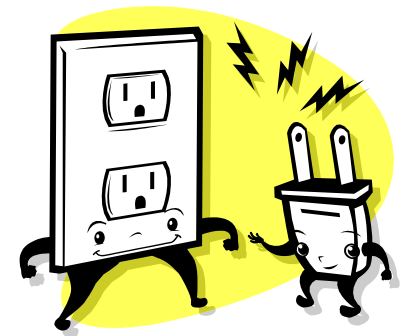
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# U.S. DOE ARPA-E Grant Participation with Autogrid

- 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





# Survey: Do You Set Your Thermostat Back?

		Survey year		
		2010	2011	2012
<i>Programmed it in the summer to go to a higher temperature when people are out of the house</i>	No			
	Yes			

Source: The Nielsen Company 2012 Energy Survey



# Customers Say .... Not Really ... And the Trend is Going in the Wrong Direction!

		Survey year		
		2010	2011	2012
<i>Programmed it in the summer to go to a higher temperature when people are out of the house</i>	No	47.3%	53.7%	56.3%
	Yes	52.7%	46.3%	43.7%

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

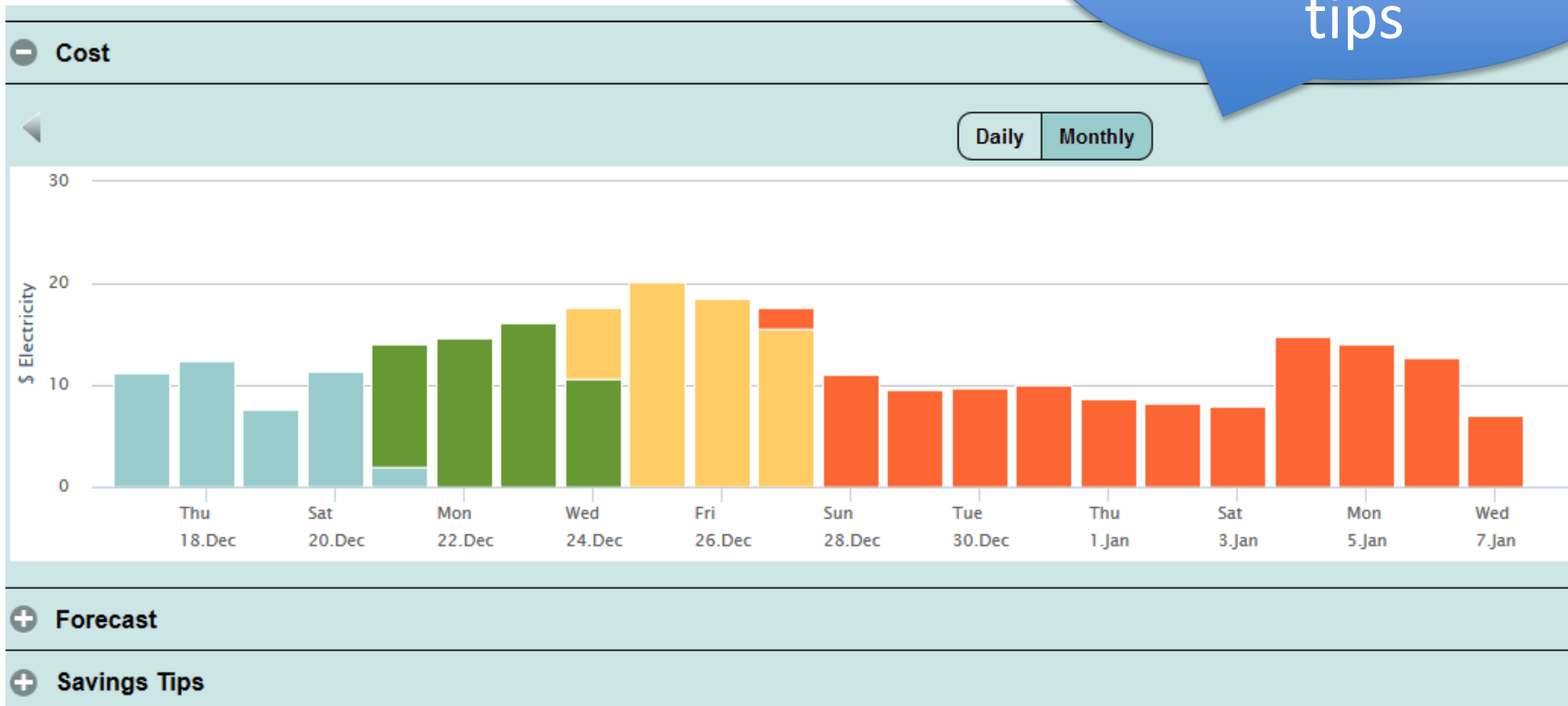


Communicate in a way that is relevant and meaningful



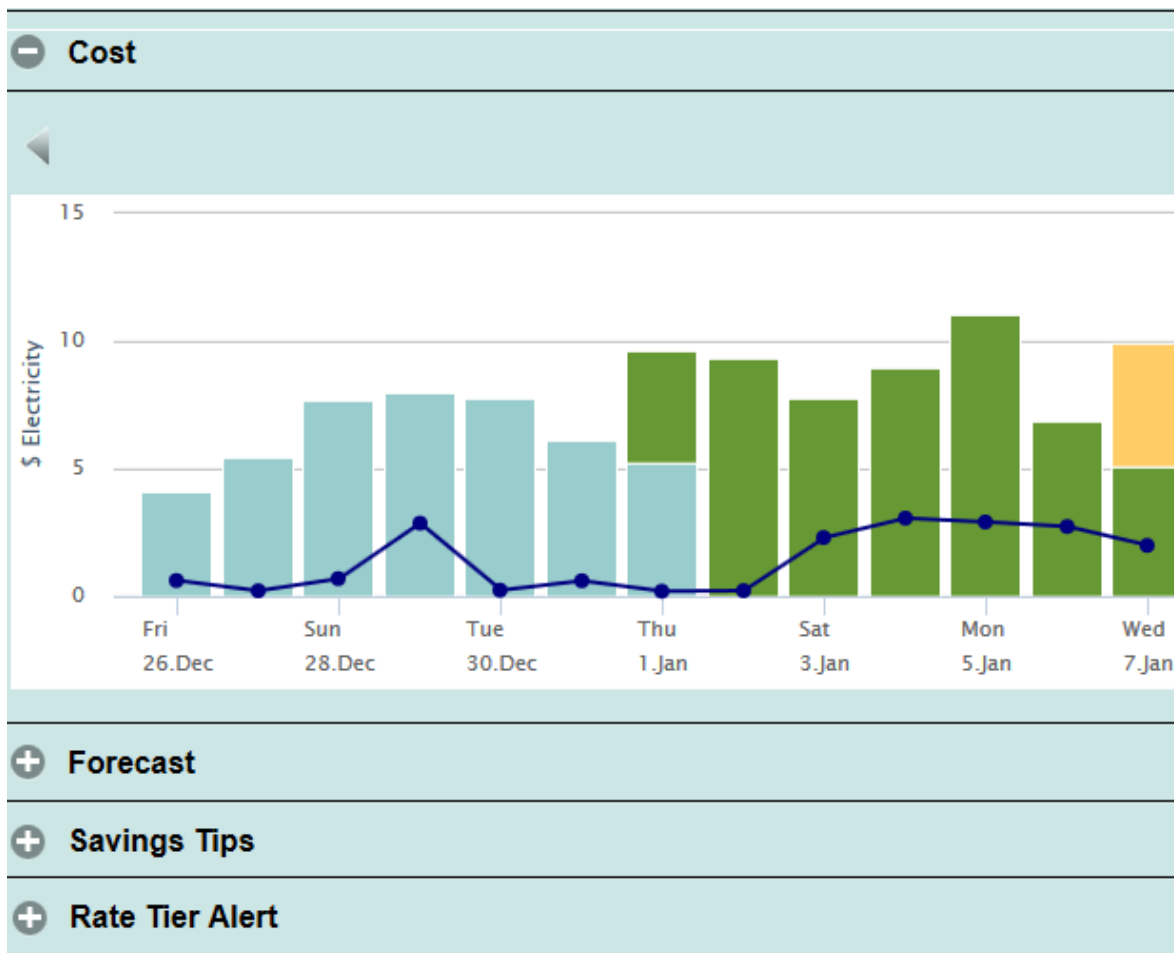
# Daily Residential Tier Data

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



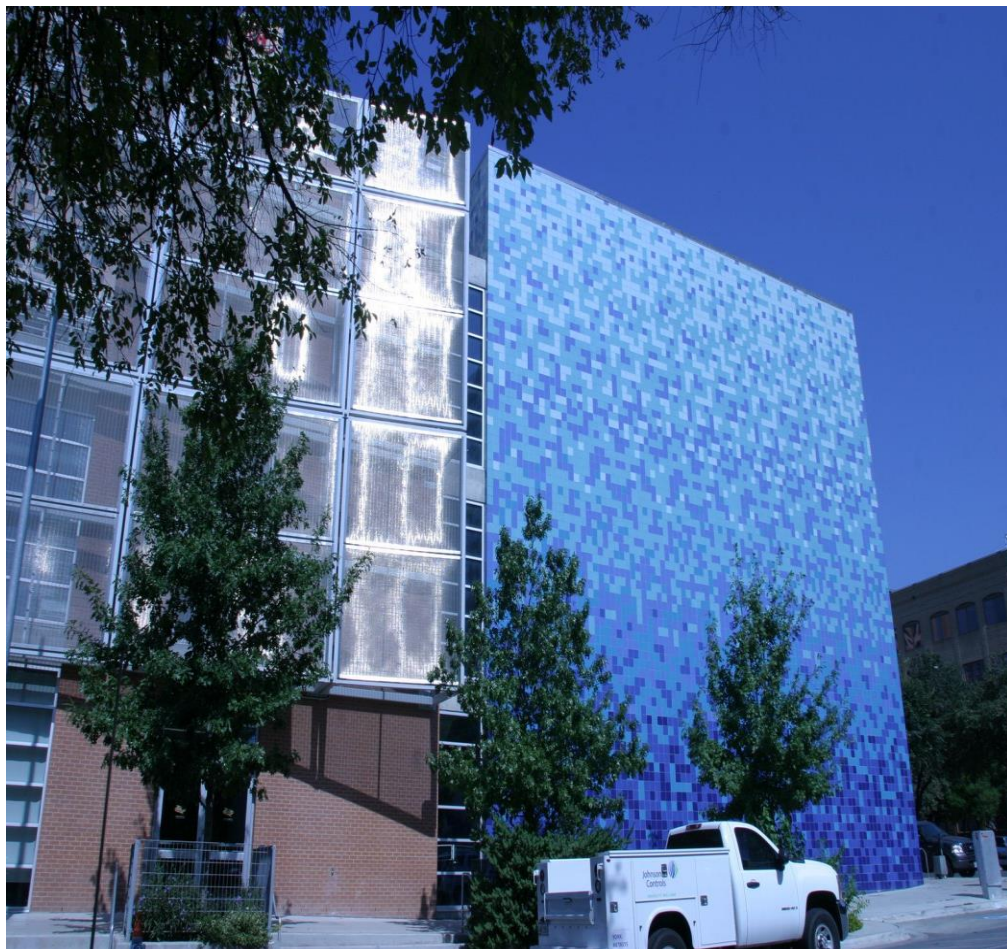
# Distributed Energy Storage

## 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







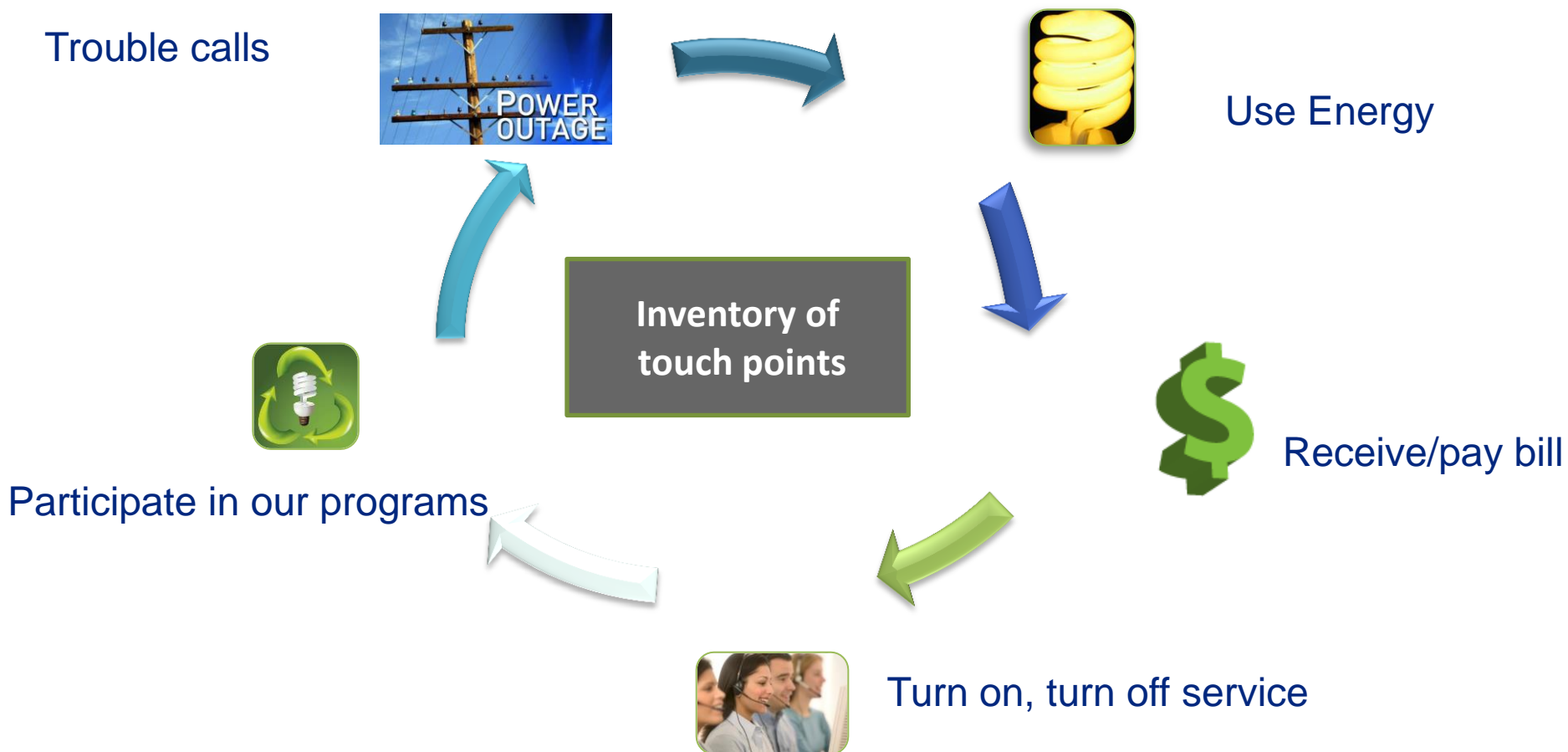
# Final Thoughts – Smart Utility of The Future

- 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”





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# Thank You!