Q3-2016 Colorado DSM Roundtable

November 9, 2016
AGENDA

• 1:00 – 1:30 p.m. Welcome and DSM Regulatory Updates
• 1:30 – 2:30 p.m. DSM Programs: Q3-2016
  » Q3 Achievement Update
  » Business Programs
  » Lighting Efficiency and Small Business Lighting Update
  » Residential and Low-Income Programs
• 2:30 – 2:45 p.m. -- Networking Break --
• 2:45 – 3:15 p.m. DSM Pilot Updates: Q3-2016
• 3:15 – 3:45 p.m. DSM Product Development: Q3-2016
• 3:45 – 4:00 p.m. Wrap up and Questions
DSM Regulatory Updates
Q3-2016

Shawn White
DSM Regulatory
60/90-Day Notices

• ENERGY STAR Retail Products Platform (ESRPP) Pilot
  – Implemented: Jan. 1, 2016

• Home Lighting & Recycling
  – Posted: Jan. 6, 2016

• ECMs

• LED Street Lights
  – Implemented: April 1, 2016

• Data Center Efficiency
  – Implemented: Mar. 16, 2016

• Home Lighting & Recycling (Evaluation)
  – Implemented: April 6, 2016

• Business Lighting Efficiency (Evaluation)
  – Posted: February 19, 2016
  – Implemented: March 22, 2016

• Business Lighting Efficiency and Small Business Lighting
  – Posted: May 26, 2016
  – Implemented: August 1, 2016
# 2017/2018 DSM Plan Settlement Forecast & Targets

<table>
<thead>
<tr>
<th></th>
<th>GWh Savings</th>
<th>Demand Response (MW)</th>
<th>Demand Reduction from EE (MW)</th>
<th>Electric MTRC</th>
<th>Dth Savings</th>
<th>Natural Gas MTRC</th>
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<td>620</td>
<td>65.0</td>
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*2017 Budget Proposed: $80.4 M (Elect EE), $19.2 M (DR), $13.1 M (Gas EE)*

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<tr>
<th></th>
<th>GWh Savings</th>
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<th>Demand Reduction from EE (MW)</th>
<th>MTRC</th>
<th>Dth Savings</th>
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<td>1.40</td>
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*2018 Budget Proposed: $77.7 M (Elect EE), $20.6 M (DR), $12.8 M (Gas EE)*
DSM Regulatory Update (Con’t.)

• 2017/2018 Plan Settlement
  – Unanimous settlement agreement
  – Filed November 4
  – Hearings November 17

• 2017 Strategic Issues
  – Filed by March 31, 2017

• Next Roundtable – Save the Date!
  – Q4-2016 DSM Roundtable Meeting:
    Tuesday, February 14, 2016
DSM Achievements
Q3-2016

David Hueser,
Team Lead, Customer Solutions
2016 Q3 Achievement Highlights

Electric Portfolio
- 313 GWh (79% of 407 GWh Goal)
- 55 MW (62% of Target)
- $53.9 (68% of Budget)

Business Programs (% of kWh Target)
- EEB – 90% of Target
- Small Business Lighting – 101% of Target
- Motors & Drive Efficiency – 91% of Target
- Self Direct – 104% of Target

Residential / LI Programs (% of kWh Target)
- ENERGY STAR New Homes – 109% of Target
- Home Lighting – 132% of Target
- Residential Heating – 107% of Target

Gas Portfolio
- 360,321 Net Dth (35% of 615,040 Dth Goal)
- $8.8M Spend (64% of Budget)

Business Programs (% of Dth Target)
- Custom Efficiency – 92% of Target
- EMS – 131% of Target
- Heating Efficiency – 83% of Target

Residential / LI Programs (% of Dth Target)
- Energy Star Homes – 79% of Target
- Insulation & Air Sealing – 100% of Target
- Water Heating – 198% of Target
- LI Single Family Weatherization – 92% of Target
Marketing Campaigns & Outreach

Business
- Heating Efficiency customer bonus, trade incentive extended to 12/31
- Recommissioning customer implementation bonus, trade incentive
- Keys to Compliance Conference – Boilers and Conveyance
- Xcel Energy Lighting Workshop – PPA center
- Broncos Kick Off Luncheon – Trade Partners
- Energy Efficiency Workshop Denver Water
- 2016 CAMPC Industry Partner Meeting.
- Colorado Restaurant Assoc. Workshop
- AFEC Expo
- Esource Annual Forum
- Colorado C-PACE Contractor Training

Residential
- Energy Efficient Showerhead fall direct mail, email to drive participation
- Insulation & Air Sealing Trade Ally training in September
  - 2017 Preview, planning
  - Clarify what does/does not qualify for rebate
- Heating & Insulating Bonus rebates rollout
  - Rebate timing Sept 15 – Nov 3
- Digital Application Project (DAP) online applications, limited-release and contractor education
- Home Energy Squad combination direct mail, email, social media outreach with Saver's Switch
DSM Business Program
Q3-2016 Highlights

Kim Spickard
Team Lead, Customer Solutions
Advanced Rooftop Unit Controls - ARC

**Definition**

Digital controllers for retrofit applications that improve the rooftop unit’s (RTU’s) ability to optimize for heating, cooling, and ventilation load based on temperature, humidity, or occupancy through enhanced control of air flow and variable or multispeed control or efficient cycling of one or more of the following: compressor, burner, evaporator fan, and condenser fan.

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<th>ARC Capability</th>
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<th>Optional</th>
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<tr>
<td>Variable or multiple speed control or efficient cycling of mechanical components</td>
<td>x</td>
<td></td>
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<tr>
<td>Enhanced control of airflow</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Fault detection and diagnostics</td>
<td>x</td>
<td></td>
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<tr>
<td>Data acquisition and reporting capabilities</td>
<td>x</td>
<td></td>
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<tr>
<td>Enhanced temperature control when networked with an advanced programmable thermostat</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Additional communications, monitoring, and control features</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Automated demand response (ADR) capabilities</td>
<td>x</td>
<td></td>
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</table>
Advanced Rooftop Unit Controls - ARC

• Market Potential
  – Unitary packaged and split system equipment serves approximately 57 billion square feet, or 66 percent of the commercial building floor space in the US
  – PNNL estimates that ninety percent of the installed base is constant air volume equipment lacking effective controls to operate efficiently at part load conditions, which represent the vast majority of run hours in most commercial buildings
  – ARCs retrofits can improve the operational efficiency of these systems yielding savings typically in the range of twenty percent to fifty percent of HVAC energy
Advanced Rooftop Unit Controls - ARC

As of March, 2016, there were four manufacturers offering packaged ARC retrofit kits

- Bes-Tech offering the Digi RTU
  - Offered through Engineering firms, large building owner management
- Enerfit, LLC. Offering the Enerfit
- Nex Rev LLC offering the Drive Pack ARC
- Transformative Wave offering the Catalyst
  - Direct to mechanical contractor or direct to customer
Advanced Rooftop Unit Controls - ARC

• When does a retrofit make sense?
  – Constant volume single fan speed over 7 tons of cooling capacity
  – RTU does NOT require expensive repairs
  – RTU is less than 10 years old or have sufficient remaining life to realize payback
Advanced Rooftop Unit Controls - ARC

• Market Barriers
  – Awareness – Low awareness and understanding among building owners and decision makers and contractors
  – Business Model Alignment – Contractors
    • ARC’s are viewed as complex to install and not worth the extra time to the contractor.
  – Business Model Alignment – Distributors
    • Challenging to get distributors to stock and promote ARCs because they’re currently a low volume product
  – Contractors Skills Mismatch—Need for Training
    • Focused mainly on comfort and not airflow controls to reduce energy use
Advanced Rooftop Unit Controls - ARC

Utility Programs

ComEd
- 7.5 to 25 tons
- Constant volume
- No Tune up Requirement
- Contractors must be trade allies to receive incentives

Bonneville Power Administration
- Full and Lite ARC Retrofit
- > 5 ton Unitary only with constant speed supply fan
- No Tune up Requirement
- No Contractor training or qualification requirement
Utility Programs

Efficiency Vermont
- Screening Criteria - Supply fan control with variable speed
- Must meet manufacturers RTU performance requirements
- Efficiency Vermont qualified contractor

Focus on Energy – Wisconsin
- Only available to chain stores and franchise program
- 7 or greater tons, < 15 years old, functioning economizer and single speed fan
- No tune up requirements or contractor training
Advanced Rooftop Unit Controls - ARC

Southern California Edison (SCE)
- Variable or multispeed fan control, ADEC, DCV, may include FDD
- Standard 180 requirements
- Contractors much of minimum 5 years exp.
- Testing, Adjusting, and Balancing (TAB) certification

Platte River Power Authority
- After market controllers that utilize variable supply fan control combined with integrated economizer and demand ventilation controls.
- RTU Tune-up required
- Have tried to work with contractors and manufacturers without success to date
- No rebates or installations yet.
Business Lighting Efficiency & Small Business Lighting Programs

Jackie Ducharme
Program Manager, Customer Solutions
Business LED Instant Rebate Program
Includes both Lighting Efficiency & Small Business Lighting achievements

**kWh Savings by lamp**

- A Lamps: 8,059,016.91
- All GU Bases: 3,211,292.04
- BR/R30: 4,135,692.52
- BR/R40: 915,787.77
- Decorative: 2,131,726.65
- MR/X16 MR25: 30,191.39
- PAR/R20: 793,735.47
- PAR 16: 54,139.25
- PAR30: 3,793,801.23
- PAR 38: 665,705.03
- Retrofit Kits: 7,947,749.6

**Monthly kWh savings**

- January 2016: 3,593,223.56
- February 2016: 4,814,817.67
- March 2016: 3,285,370.9
- April 2016: 4,290,753.69
- May 2016: 4,019,692.24
- June 2016: 3,500,910.32
- July 2016: 1,913,958.19
- August 2016: 1,357,399.89
- September 2016: 2,841,315.5
- October 2016: 2,121,395.9

**YTD kWh savings:** 31,738,838
T12 to LED Limited Time Rebate Promotion

• 900,000 kWh forecasted to close in 2016

• YTD Closed over 400,000 kWh in savings- launched Aug 1

• Preliminary Advertising Campaign Results
  – 1.2 million impressions
  – 2,000 clicks
  – 7% Click through rate
  – Media partners: Google- keyword targeting, LinkedIn- target based on job title, AdTheorent- contextual targeting
DSM Residential & Low-Income Program
Q3-2016 Highlights

David Hueser,
Team Lead, Customer Solutions
ENERGY STAR® New Homes (E&G savings)

No sign of slowing down in 2016, participation levels high

• Q3 2016 achievement:
  – Added 1,375 homes
  – YTD 3,512 homes have received a rebate

• Year-End forecast – 5,000 plus homes:
  – First full-year the product has exceeded this level

• Expect product to remain open full year:
  – Will exceed product gas budget
  – Gas DSM funds from other products forecasting lower

• More homes complete under 2015 IECC:
  – 5 YTD, all in Q3
Residential Home Performance with ENERGY STAR®

YTD Q3 2016 Achievement:
- kW and Dth remain ahead of 2015 benchmarks,
- kWh continues to trail
- Same trend through Q1 & Q2

<table>
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<tr>
<th>Year</th>
<th>kW</th>
<th>kWh</th>
<th>Dth</th>
</tr>
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<tbody>
<tr>
<td>2015</td>
<td>101</td>
<td>232,815</td>
<td>8,254</td>
</tr>
<tr>
<td>2016</td>
<td>128</td>
<td>128,137</td>
<td>8,277</td>
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Q3 Bonuses Currently in Market:
- High Efficiency Furnace bonus: $200 through Nov. 15th. Extended to Nov. 30th
- $250 Insulation Bonus on attic or wall insulation when 25%+ air-sealing reduction is achieved. Extended to Nov. 30th

Boulder Energy Smart Co-Marketing Direct Mail Results:
- Increase in advising enrollment
- Additional leads to standalone programs/2017 HP pipeline
- Going to try a similar initiative in 2017
Evaporative Cooling (Electric savings)

Positive 2016 effect from 2015 rebate increases, especially Standard/Tier 1 systems

- YTD Q2 electric DSM savings 21% of 2016 goal on 31% of spend. Mid-year 2016 participation increased by over 40% vs. prior year driven by Standard/Tier 1 systems, generally window- or wall-mounted units

- Q2 trade partner training, including “big 3” manufacturers representatives, focused on customer benefits, sizing, ducting, technical basics

- Outreach and marketing efforts focused on targeted mailings, email, trade relations – especially Western Slope

- Product is not expected to achieve its 2016 filed goals, but year-over-year participation is expected to significantly improve

Most popular-selling units from “big 3” manufacturers

- Champion/Mastercool 4001DD
- PMI Brisa BD4000
- Breezair EXV155

Home Depot

- Bonaire/Durango 4500E
- Hart/Cooley
Low-Income Program, Energy Saving Kit Product (E&G)

For customers who have received Low-Income Energy Assistance Program (LEAP) funding or any other form of energy assistance

- First 2016 direct mail offer had a 20% response rate
- Response rates consistent with past years
- Four Product offers in 2016 (2 direct mailers, 2 emails)
- Year-End forecast: Product will fall short of savings goals
  - kWh forecasted to hit 73% of goal for 2016, .7 GWh
  - Dth savings are forecasted to hit 56% of goal for 2016.
- Any shortfall in Electric or Gas DSM energy savings and/or budget spend will be made up in the other three Products in the Low-Income Program:
  - Low-Income Multifamily Weatherization
  - Low-Income Non-Profit
  - Low-Income Single-Family Weatherization
Networking Break
DSM Pilot Updates
Q3-2016 Highlights

Colin Lamb
Team Lead, Product Development
## Pilot progress

<table>
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<tr>
<th>PILOT</th>
<th>STATUS</th>
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<tbody>
<tr>
<td>1  Smart Thermostat Pilot</td>
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</tr>
<tr>
<td>2  Small Business Smart Thermostat Pilot</td>
<td>In Progress</td>
</tr>
<tr>
<td>3  Energy Feedback – Business Pilot</td>
<td>In Progress</td>
</tr>
<tr>
<td>4  Building Optimization DR Pilot</td>
<td>In Progress</td>
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<tr>
<td>5  Multifamily Buildings Pilot</td>
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<tr>
<td>6  ENERGY STAR Retail Products Platform</td>
<td>In Progress</td>
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DSM Pilot Highlights
Residential Smart Thermostat

• Fully subscribed (5,800 with 5,000 participant filed target)
• About 60% used online storefront with instant rebate
• Ran 10 DR events in Colorado
• EM&V is the focus today
DSM Pilot Highlights
Small Business Smart Thermostat

• Technical challenges delayed installation
• Ran 5 events in Q3
• Good data, similar event participation to residential
• EM&V also the focus here
DSM Pilot Highlights
Energy Feedback – Business

- Latest measurement continued to show negligible savings
- Clear that customers are engaged with reports
- Pilot runs through 2016
- Actively exploring next steps
DSM Pilot Highlights
Building Optimization DR

• 2 Successful demand response events completed
  – July (single building) and August (two building)
  – Evaluating savings methodology

• Completed multiple building upgrades necessary to bring other buildings on-line
  – Meter installations
  – Network upgrades

• Challenges:
  – Finding many buildings that do not actually meeting minimum requirements
  – High variability in cyber-security requirements
  – Competing priorities for building managers and staff creates coordination issues
DSM Pilot Highlights
Multifamily Buildings

- Completed energy assessments for 2016
- Direct installation of energy efficient equipment at 1,800 units met in Q3
- Working on 2017 pipeline
DSM Pilot Highlights
Energy Star Retail Products Platform (ESRPP) PILOT

• Completed review of Retailer activities to date and plans
  • Adjusted promotion period start date (from March 1 to June 1) to align incentive payments with active Retailer participation
  • Plans update for remainder of the year
• 100% in-store visits completed
  • Baseline audit for EM&V
  • Education/Outreach for Store Staff
  • POP distribution
• Continued engagement with national working groups

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<tr>
<th></th>
<th>YTD</th>
<th>Target</th>
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<tr>
<td>Participants</td>
<td>8424</td>
<td>10,218</td>
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<tr>
<td>kW</td>
<td>308</td>
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<tr>
<td>kWh</td>
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<td>Dth</td>
<td>942</td>
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<td>Incentives</td>
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Home Depot: Off-shelf featured Energy Star AC

Increase in incentive payments offset by substantially lower administrative costs than anticipated.
DSM Product Development
Q3-2016 Highlights

Thor Bjork
Team Lead, DSM Product Development
DSM Product development

Efficient Process/Commercial Dehumidification for indoor farming

- High-efficiency heat exchanger to condense excess moisture
- A study was required to overcome customer hesitancy and to prove savings

- Study completed last week
- Show savings potential but need to do more in depth review

Figure 1 - Diagram of MSP technologies cooling process (source: www.msptechnology.com)
DSM Product Development

- Advanced Roof Top Unit Controllers
  - Continue working with CEE Commercial HVAC Committee

- Net Zero Energy New Construction
  - No new updates

- “Beyond Widgets” research project with DOE’s Lawrence Berkeley National Laboratory

- Stage 1 – Opportunity identification
  - Refreshing our idea list to find new programs and measures
Product idea submissions

Share your Product Ideas:

www.xcelenergy.com/productideas
Questions?

- Thank you -