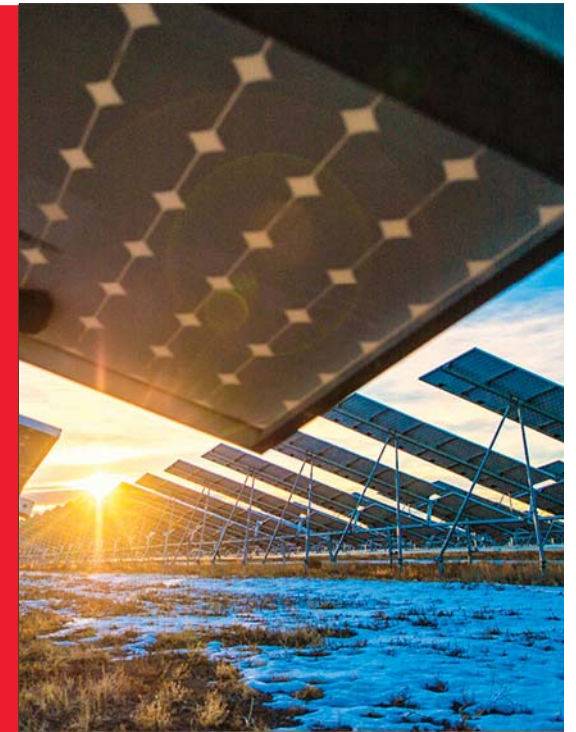




Q4-2016 Colorado DSM Roundtable

February 14, 2016



AGENDA

- 1:00 – 1:15 p.m. Welcome and DSM Regulatory Updates
- 1:15 – 2:15 p.m. DSM Programs: Q4-2016
 - » Q4 Achievement Update
 - » Business Programs
 - » Lighting Efficiency and Small Business Lighting Update
 - » Residential and Low-Income Programs
- 2:15 – 2:30 p.m. DSM Evaluations Update
- 2:30 – 2:45 p.m. -- *Networking Break* –
- 2:45 – 3:00 p.m. DSM Product Development: Q4-2016
- 3:00 – 3:15 p.m. DSM Pilot Updates: Q4-2016
- 3:15 – 3:30 p.m. Quick to Market Update: Q4-2016
- 3:30 – 4:00 p.m. Wrap up and Questions

DSM Regulatory Updates Q4-2016

Mike Pascucci
DSM Regulatory

60/90-Day Notices

- ENERGY STAR Retail Products Platform (ESRPP) Pilot
 - *Posted: Dec. 2, 2015*
 - *Implemented: Jan. 1, 2016*
- Home Lighting & Recycling
 - *Posted: Jan. 6, 2016*
- ECMs
 - *Posted: Jan. 13, 2016*
 - *Implemented: Feb. 13, 2016*
- LED Street Lights
 - *Posted: Feb. 2, 2016*
 - *Implemented: April 1, 2016*
- Data Center Efficiency
 - *Posted: Feb. 15, 2016*
 - *Implemented: Mar. 16, 2016*
- Home Lighting & Recycling (Evaluation)
 - *Posted: Feb. 5, 2016*
 - *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*

DSM Regulatory Update

- **2017/2018 Plan Settlement**
 - Unanimous settlement agreement
 - Filed November 4
 - Hearings November 17
 - ALJ Approval January 12
 - Effective February 2
 - Implementation March 1
- **2017 Strategic Issues**
 - Waiver to file by July 1, 2017
- **Next Roundtable – Save the Date!**
 - Q1-2017 DSM Roundtable Meeting:
[Tuesday, May 16, 2017](#)

DSM Achievements Q4-2016

Donna Beaman,
Manager, Customer Solutions

2016 Q4 Achievement Highlights

Electric Portfolio

- 409.7 GWh (102% of GWh Goal)
- 88.3 MW (99% of Goal)
- \$85M (92% of Budget)

Business Programs (% of kWh Target)

- EEB – 106% of Target
- Small Business Lighting – 141% of Target
- Motors & Drive Efficiency – 112% of Target
- Self Direct – 117% of Target

Residential / LI Programs (% of kWh Target)

- ENERGY STAR New Homes – 163% of Target
- Home Lighting – 155% of Target
- Residential Heating – 146% of Target
- Residential AC – 134% of Target

Gas Portfolio

- 605,602 Net Dth (98% of Dth Goal)
- \$12M Spend (88% of Budget)

Business Programs (% of Dth Target)

- Custom Efficiency – 150% of Target
- EMS – 170% of Target
- Heating Efficiency – 110% of Target
- Commercial Refrigeration – 111% of Target

Residential / LI Programs (% of Dth Target)

- Energy Star Homes – 115% of Target
- Insulation & Air Sealing – 171% of Target
- Water Heating – 286% of Target
- LI Single Family Weatherization – 172% of Target

Marketing Campaigns & Outreach

Business

- Oktoberfest CAMPC
 - Breckenridge Brewery Littleton
- 2nd Annual Oktoberfest 2016 – EEBC
- Rocky Mountain Association Energy Engineers Energy Forum
- ABB VFD's Roadshow
- Colorado Restaurant Show
- Motors Advisory Board Mtg IECRM office
- H5 Data Center Tour / AFCOM membership Mtg
- Better Buildings, Better Sales, Better Business Workshop
- Data Center Advisory Board Mtg
- 2017 Colorado Business Economic Outlook Forum
- What's new in 2017 for Business Lighting Rebates
- Energy Services Coalition (ESC) Quarterly Meeting

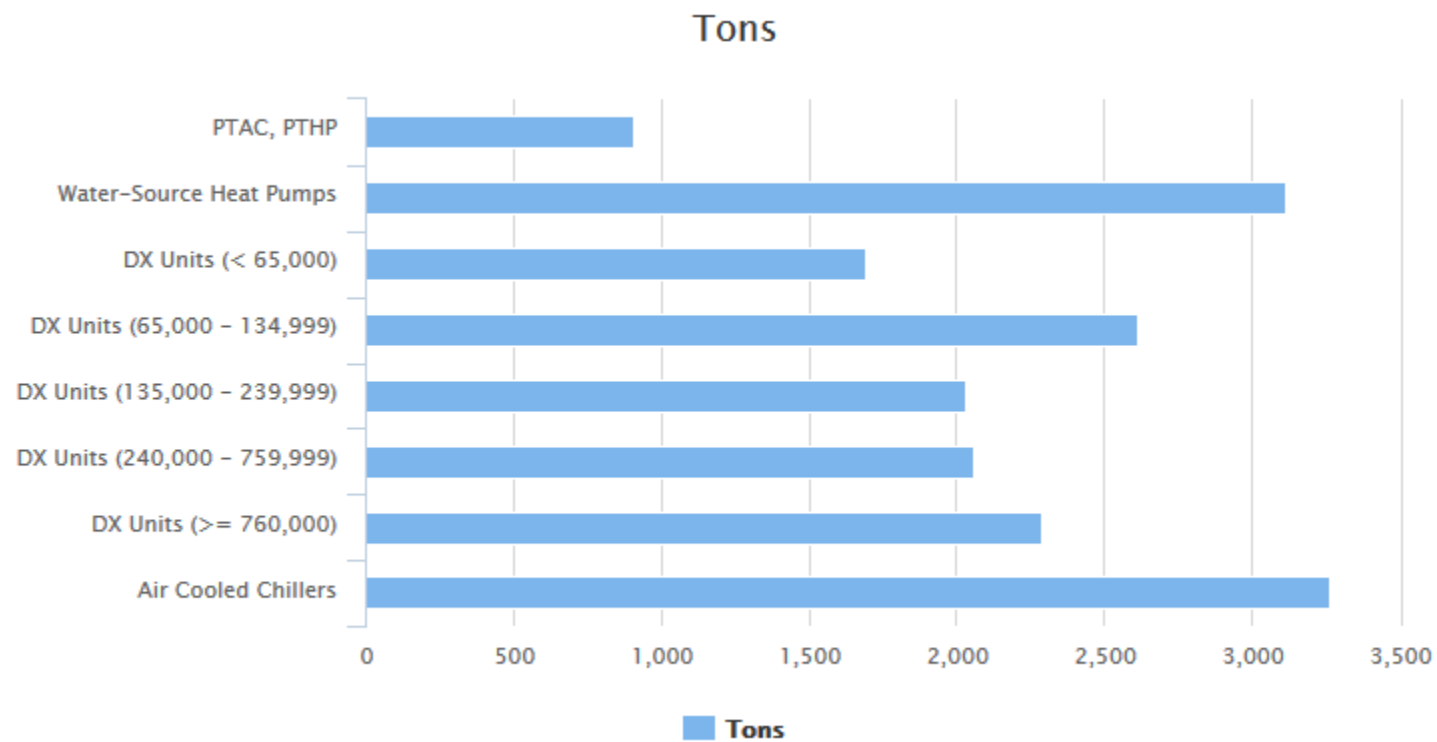
Residential

- ENERGY STAR New Homes Net Zero Energy (NZE) builder survey
- Energy Efficient Showerhead fall direct mail and email follow up to engaged readers
- Colorado Avalanche cross promotion of Home Lighting, Refrigerator Recycling, Home Energy Squad
- Heating & Insulating Bonus rebates rollout
 - Three-email series to drive participation
 - Rebate timing Sept 15 – Nov 3
- Digital Application Project (DAP) online applications, higher volumes, especially with Evaporative Cooling and Water Heating
- Saver's Switch/Red Cross \$25 promotion
- Home Energy Squad combination direct mail, email, social media outreach with Saver's Switch

DSM Business Program Q4-2016 Highlights

Kim Spickard
Team Lead, Customer Solutions

Midstream Cooling



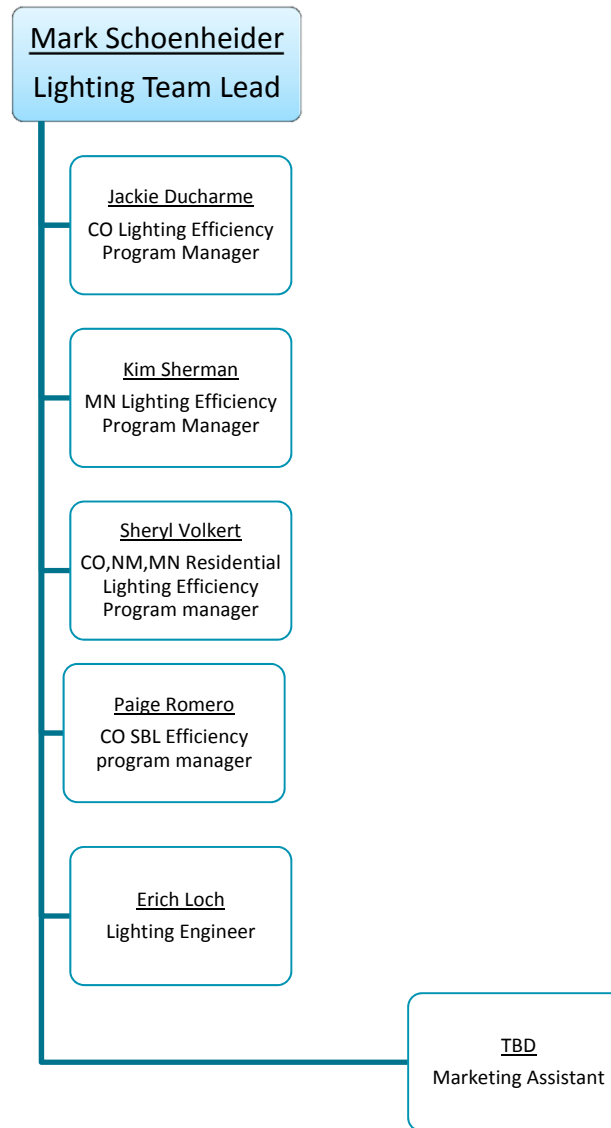
Business New Construction (EDA)

- Increased incentive on kW (from \$400/kW to \$450/kW)
- For projects entered under the ASHRAE 90.1-2013 baseline
- Intro Meetings (Project Kickoffs) taking place from 1/1/2017 to 12/31/2018.
- Influence customers and modelers to pursue more strategies that will yield higher kW savings on projects entered under the new code baseline.

Business Lighting Efficiency & Small Business Lighting Products

Jackie Ducharme
Program Manager, Customer Solutions

Strategic Lighting Team



Business LED Instant Rebate Program

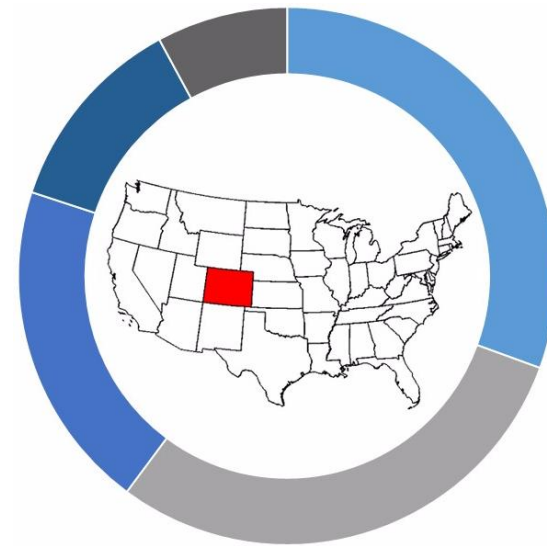
Includes both Lighting Efficiency & Small Business Lighting achievements

COLORADO

2016 Rebates Paid:
\$5,415,806.00

2016 kWh Savings:
36,669,685

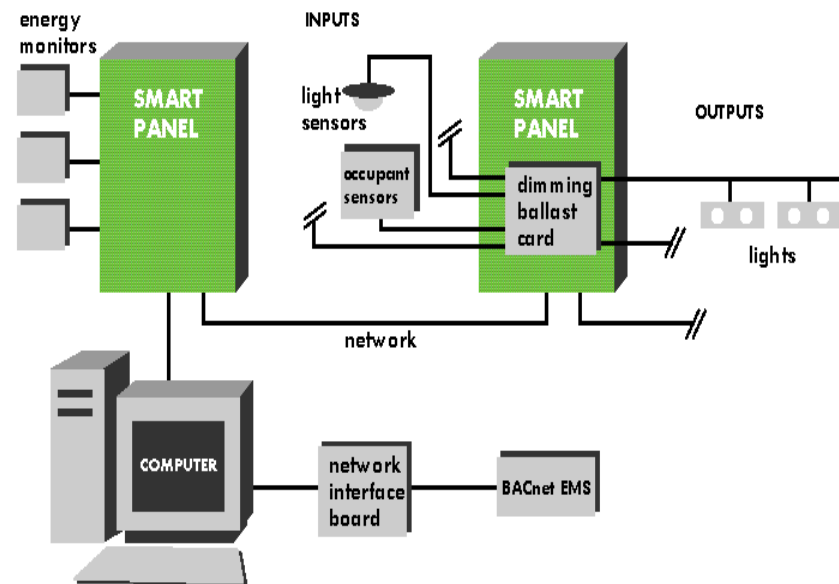
Top Five Distributors for 2016



- 1. Ecosystems
- 2. Conserve-A-Watt
- 3. Voss Lighting
- 4. Regency Lighting
- 5. Swan Supply

Advanced Lighting Controls

- Lighting controls, LED technology only- not to be combined with HVAC
- \$600/kW rebate (same as Energy Management Systems)
- Same custom process as Custom Efficiency program
- Separate Rebate application & workbook
- Lighting must be networked and have a remote user interface



DSM Residential & Low-Income Program Q4-2016 Highlights

David Hueser,
Team Lead, Customer Solutions

2017/18 DSM Plan Settlement Modifications, Residential Products with Electric & Gas savings impacts

Modifications focused on improving cost-effectiveness and increasing participation

Residential Product	Product changes, additions	Next Steps
ENERGY STAR New Homes	Summarize trade survey research, interest in Net Zero Energy	If cost-effective, post 60-day notice to add measures and/or policies
Evaporative Cooling	Increase budget, forecast for 65 MW EE demand reduction	
High Efficiency Air Conditioning	New equipment installation focus	If additional mini-split tiers are cost-effective, add via 60-day notice
Home Energy Squad	Add smart thermostats if pilot is successful	Partner with implementer and fund more joint marketing efforts in '17 and '18
Home Performance	Increase funding if cost-effective	
Home Lighting & Recycling	Ramp down lamp promotions in stores on the border of service territory	Explore cost-sharing of lamp discount incentives with neighboring utilities, CEO
Residential Heating		Increase incentives mid-year if trailing goal
Water Heating	Investigate more cost-effective product delivery	Report results of investigation, plan in Q1 2018

Residential Heating (Electric & Gas savings)

Participation increased 300 for Electric (+8%) and Gas (+10%) vs. 2015

- 2015/2016 DSM Plan Rebate levels

Qualifying Equipment

COLORADO 2015–2016 Heating System Rebates for existing home equipment replacement or new construction installation		
EQUIPMENT	AFUE	2015–2016 REBATE
Furnace	95%	\$120
ECM		\$100

- Opportunity to attract more trade participation
 - 60% Combination Electric & Gas customers may receive up to \$220, more for limited-time offers
 - Roughly 20% of homes are gas-only or electric-only and may not qualify for a rebate for the other fuel
 - Open program will attract more participation and improve ease of doing business with XE
- Regular trade partner communications and training
- Top 2% of contractors drive nearly 30% of rebates



Photo: Goodman



ECM diagram: GE

Trade participation changes to meet increased EE demand reduction and energy savings in 2017/18 DSM Plan

- CO Residential Heating
 - Removing NATE certification requirement
 - Barrier for trade participation
 - No additional Quality Installation (QI) savings
 - Mirroring Minnesota's open-format EE product
 - Applications may be submitted by contractor or customer – e.g. online application.
- CO Residential Air Conditioning
 - Removing NATE certification requirement for AC, ASHP, GSHP
 - Continuing/revising the required AC online class
 - Increasing inspections and feedback to new trade participants
 - No trade participation requirements for new Mini-Split Heat Pumps offering

ENERGY STAR® New Homes (E&G savings)

Remained Open Full Year, Finished Strong

- Year End Q4 2016 achievement:
 - Added 1,788 homes in Q4
 - 5,300 homes participated at YE, highest participation level since program inception
 - Exceeded YE energy saving targets
 - 1,800 homes earned ENERGY STAR bonus rebate
 - Completed 30 Selling High Performance home trainings with almost 700 attendees
- Overspent product gas budget by 106%, Dth savings were 116% of Year-end Target
 - Rebalanced DSM portfolio budget to accommodate spend
- Homes completing under 2015 IECC continues to increase
 - 32 in Q4, 5 in Q3
 - Expect this trend to increase significantly in 2017



Plan: by Oakwood Homes



Plan: by Copper Creek, Grand Junction

Residential Home Performance with ENERGY STAR®

2016 Year-end Achievement:

Year	kW	kWh	Dth
2015	183	347,834	13,478
2016	213	213,231	13,196

- kWh deficit likely due to less lighting measures throughout 2016 – no minimum bulb requirement, market saturation
- Less overall participation due to un-aligned air-sealing requirements in standalone program – corrected in 2017/2018 DSM plan
- Planning co-marketing outreach with community programs and grassroots marketing efforts to promote program more in 2017

Q4 Bonus Results September 15 – November 30th

- High Efficiency Furnace bonus: **1 participant**
- \$250 Insulation Bonus: **3 participants**
- \$200 blanket bonus w/ Boulder Energy Smart: **5 participants**

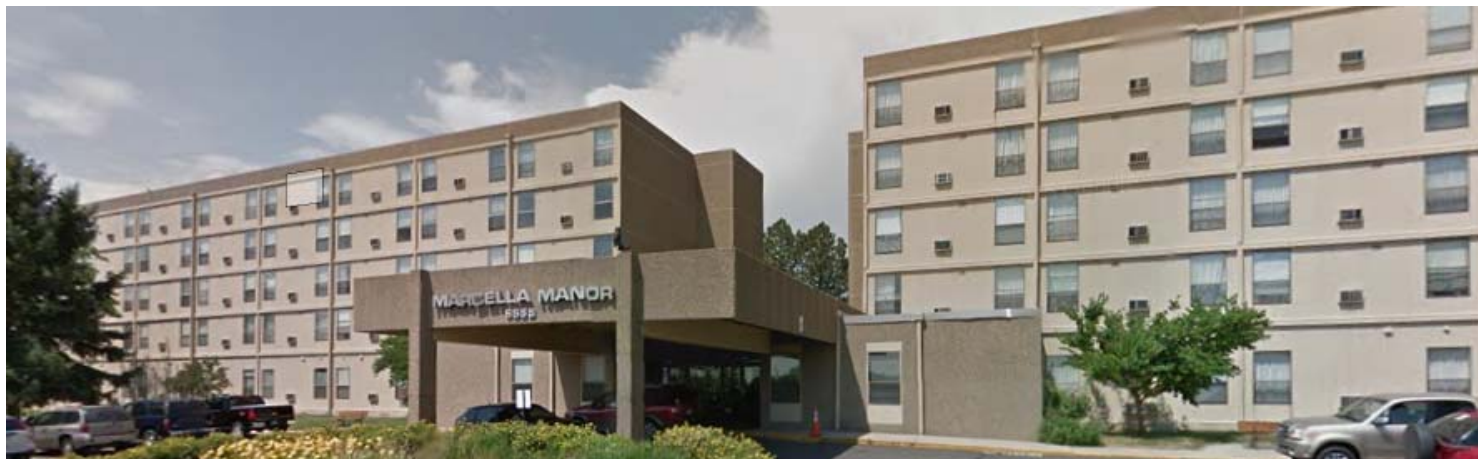
Bonuses Currently in Market through 3/31

- \$200 furnace bonus
- \$200 attic and/or insulation bonus with air-sealing

Low-Income Multifamily Weatherization (E&G)

Energy Outreach Colorado (EOC) partners with utilities including Xcel Energy, as well as donors and other city/county organizations, to fund equipment retrofits and improvements in low-income multifamily facilities

- Product exceeded 2016 demand reduction (kW) goals:
 - Large common-area and/or in-unit lighting retrofits, cooling, windows
 - Electric-only facilities
- Common natural gas-savings measures continue to be boilers, insulation & weather stripping, as well as some facilities with in-unit heating
- 8 of 10 largest projects were in cities other than Denver and Boulder: Arvada, Lakewood, Sterling, smaller initiatives in Grand Junction



2016 DSM Program Evaluations Q4-2016 Highlights

Nick Minderman
DSM Regulatory

Programs Evaluated

Process and Impact Evaluation

- Computer Efficiency
- Lighting Efficiency – Small Business

Process-Only Evaluation

- Non-Profit Energy Efficiency
- Water Heating

Evaluation Tasks

Task	Process-Only	Comprehensive
Kick-off Meeting define objectives	Yes	Yes
Staff/Implementer Interviews understand program	Yes	Yes
Participant Survey/Interviews gather data	Yes	Yes
Non-Participant Survey/Interviews gather data	NPEE only	Yes
Net-to-Gross Analysis evaluate influence	No	Yes
Trade Partner Interviews learn trends in market	NPEE only	Yes
Peer Utility Benchmarking compare to other programs	Yes	Yes

Computer Efficiency

- Includes downstream and upstream components
 - Upstream = power supplies
 - Downstream = PC power management systems & desktop virtualization
- Upstream delivered by implementer, downstream delivered by Xcel Energy
- Program not previously evaluated in CO

Computer Efficiency Recommendations

Summary of Key Recommendations:

- **NTG:**
 - **88% for upstream** (same as current)
 - **80% for downstream** (same as current)
- Add **new manufacturers** and **increase outreach**
- **Monitor impacts of reducing upstream incentives**
- Review PC power management **incremental cost assumptions**
- Evaluate the feasibility of **increasing the downstream incentive**
- Improve **follow-up efforts**
- Increase **engagement with PC power management software vendors**
- **Educate PC power management vendors on program eligibility requirements.**
- Review the opportunities for **small form factor or mini towers.**

Lighting Efficiency – Small Business

- Includes direct install, downstream, and mid-stream components
 - Direct install = screw-in LEDS, low flow aerators
 - Downstream = prescriptive and custom lighting technologies
 - Midstream = ENERGY STAR qualified screw-in LEDs and downlight solid state retrofit kits
- Each component delivered by implementers
 - Lighting Efficiency and Small Business Lighting share the same program implementer for midstream.
 - Downstream and direct install are administered by another program implementer.
- Program not previously evaluated in CO

Lighting Efficiency – Small Business Recommendations

Summary of Key Recommendations:

- **NTG:**
 - **89 percent for downstream rebates** (currently 100% for prescriptive and 96% for custom)
 - **90 percent for the direct install** (currently 100%)
 - **92 percent for the LED Instant Rebate program** (currently 100%)
- Explore **integrating direct install** from multiple small-business programs.
- Review LED Instant Rebate instant discounts and eligible equipment.
- **Shift more LEDs from prescriptive** to LED Instant Rebate.
- Continue to improve customer and trade partner **outreach and communication**.
- **Consider ways to simplify the applications** (prescriptive and custom)
- **Promote advanced lighting controls** under the custom program.
 - Once adoption increases, transition controls to prescriptive track.

Non-Profit Energy Efficiency

- Holistic offering (Custom & Prescriptive for all energy end uses) for non-profits focused on low income housing or supportive services
- Implementer is also a funding partner, leveraging non-Xcel Energy funds to increase available services for EE investments
- Applications are competitively bid to ensure that projects are funded in advance and to increase likelihood of installation
- Not previously evaluated in CO

Non-Profit Energy Efficiency Recommendations

Summary of Key Recommendations:

- Continuously **evaluate incentive** levels to ensure they are sufficient.
- Provide **training to trade partners** to increase project approval speed.
- **Maintain current high levels of support and communication** with trade partners and with customers.
- Continue current efforts to maintain high participant satisfaction and **monitor issues that could lead to dissatisfaction**.
- Consider **additional outreach** targeted at eligible nonprofit customers.
- Consider providing additional marketing materials, trainings, or tools to **trade partners that may be willing to help with program marketing**.

Water Heating

- Prescriptive rebate for high efficiency water heaters sold by retailers and trade partners
- Not cost effective due to low natural gas prices but offered as an option for customers that may not have access to other programs
- Implemented by Xcel Energy staff
- Not previously evaluated in CO

Water Heating Recommendations

Summary of Key Recommendations:

- **Evaluate whether administrative costs can be managed** by combining programs.
- Maintain streamlined participation processes to **encourage future involvement in energy efficiency programs**.
- Continue using or enhance the **program application that is easy for customers and contractors to complete**.
- If program design changes are made, maintaining a **streamlined application** process and **timely rebate processing** will be key to maintaining high satisfaction ratings.

Lighting Study – Small Business

- Deeper dive into small business using method similar to 2015 business segment lighting market study.
- General Service and linear make up similar portions of interior lighting (42% and 38%)
- Inefficient systems (incandescent, halogen, T12) make up ~1/3 of the bulbs in each
- Past program participants consistently had lower lighting power density than non-participants
- Controls opportunities are significant:
 - Manual switches control 60% of lamps
 - 29% of lamps are “always on”.

2017 Evaluations

- General RFP for 2017-2018 closed 1/31
- Expect to have selection very soon
- Process Evaluation – Commercial Refrigeration
- Comprehensive Evaluations
 - Cooling Efficiency
 - Data Center Efficiency
 - Insulation/Air Sealing
 - Residential Heating

- *Networking Break* -



DSM Product Development Q4-2016 Highlights

Thor Bjork
Team Lead, DSM Product Development

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
 - 8/2016 – 6/2017: Testing at FLEXLAB
- Efficient Process/Commercial Dehumidification for indoor farming
 - Exploring options for field study

DSM Product Development

Stage 1 – Opportunity identification

- Selected several measures to move into Stage 2 – Framing
 - Expansion of Refrigerator Recycling
 - Advanced Lighting Controls
 - Window Treatments and Windows
 - Heat Pump Clothes Dryer
 - Ozone Laundry
 - Permanent Magnet Motors
 - Small Embedded Data Centers
 - Fault Detection Software
- Expect to complete framing and move into Stage 3 – Development end of Q1

Product idea submissions

Share your Product Ideas:

www.xcelenergy.com/productideas

DSM Pilot Updates Q4-2016 Highlights

Colin Lamb
Team Lead, Product Development

Pilot progress

	PILOT	STATUS	
1	Smart Thermostat Pilot	Completed 12/31	EM&V in progress
2	Small Business Smart Thermostat Pilot	Completed 12/31	EM&V in progress
3	Energy Feedback – Business Pilot	Completed 12/31	Evaluating next steps
4	Building Optimization DR Pilot	In Progress	
5	Multifamily Buildings Pilot	Completed 12/31	Program 2017-18
6	ENERGY STAR Retail Products Platform	In Progress	

DSM Pilot Highlights - Thermostats

Residential smart thermostat

- Analysis in progress
- Results to inform DR and EE program design
- Goal is to be in market for cooling 2017

Honeywell

Radio  **Thermostat**

Radio Thermostat Company of America

 **EnergyHub**

 **ecobee**

 **SIMPLE**
energy

nest

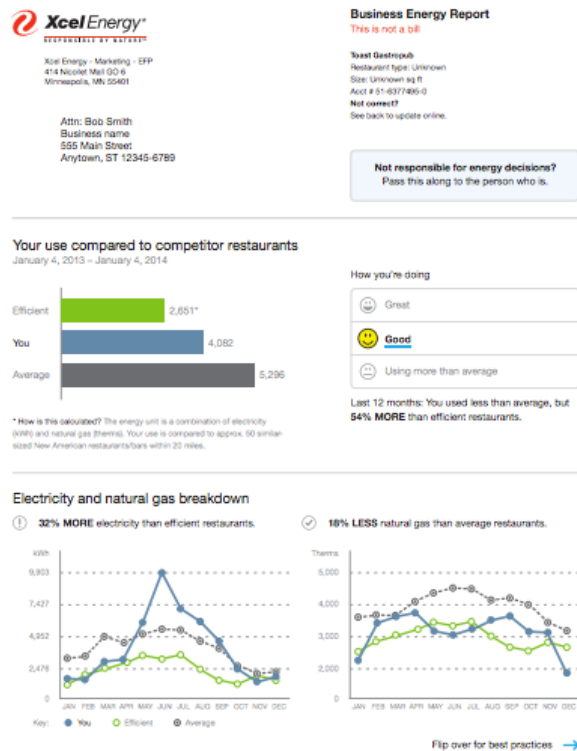
Small Business smart thermostat (DR)

Honeywell

- Analysis in progress
- Lower priority for new program than residential

DSM Pilot Highlights

Energy Feedback – Business



- Analysis in progress
- No savings claimed
- Using what we learned for SMB engagement strategies

DSM Pilot Highlights

Building Optimization DR

- Contract extensions underway to enable at least one full year of testing for each building
- Inconsistent savings observed and none claimed in 2016
- Working to test winter DR as well as ensure buildings ready for summer DR



DSM Pilot Highlights

Multifamily Buildings

- Completed energy assessments for 2016
- Savings achievement was under budget, primarily due to sizes of “stage 3” projects that closed
- Working on 2017 pipeline and expansion to program



DSM Pilot Highlights

ENERGY STAR® Retail Products Platform

The Rationale

- Increased market share and performance of energy efficient products drives down available per-unit energy savings and reduces per unit incentive offerings
- Cost effective rebates may be inadequate to drive consumer behavior (small rebate/high price/large incremental cost products)
- Low retailer interest in traditional energy efficiency programs:
 - Not core to business
 - Introduce cost and complexity
- Data for savings and program attribution hard to secure

US retailers sell more than 2B products that use >80K GWh/year.

Energy efficiency programs can leverage this channel to cost-effectively meet program goals with a shift in tactics.

Then (2004)



- 30% energy savings economical.
- Mail-in rebates up to \$200 available.

Now (2015)



- Soon, cost-effective rebates may be closer to ~\$25

DSM Pilot Highlights

ENERGY STAR® Retail Products Platform

The pilot was designed to

- Test a mix of different products
- Prove the program concept, and
- Streamline implementation

The 2016 pilot incented the following products:

- **ENERGY STAR certified dryers**— new category
- **ENERGY STAR certified air cleaners**— small unit sales, high per unit energy savings
- **ENERGY STAR certified freezers**— difficult to administer cost effective downstream rebates
- **ENERGY STAR certified sound bars (+50%)**— high growth category, limited per unit savings
- **ENERGY STAR certified room air conditioners**— revised specification, positioned to influence stocking plans for 2016



sears

 **Xcel**Energy®

DSM Pilot Highlights ENERGY STAR® Retail Products Platform

	Net Gen kW	Net Gen kWh	Net Dth
Plan	221	821,415	359
Actual	373	1,286,064	1300



SAMSUNG **SAVE GREEN. LIVE GREEN.** Purchase ENERGY STAR® certified appliances and you'll save \$500 over the products' lifetimes. FIND OUT MORE AT homedepot.com/ecooptions

SPECIAL BUY **WASHER OR ELECTRIC DRYER** **\$749** EACH
WAS \$1099 EACH
SAVE \$700 ON PAIR
ACTIVEWASH™ 5.0 CU. FT. BLACK STAINLESS STEEL WASHER OR 7.4 CU. FT. STEAM DRYER
 • Super speed cycle washes full load in 36 minutes
 • Multi-steam technology removes odors and freshens clothes
 WASD9B8000AV (Depot Direct 1001759432) (Depot Direct 1001759432) Gas dryer available at additional cost. White available at lower price.

Built-in sink with water jet for pre-treating stains

LG **Easy-access front control panel with LED display** **SPECIAL BUY** **WASHER OR ELECTRIC DRYER** **\$549** EACH
WAS \$749 EACH
SAVE \$400 ON PAIR
4.5 CU. FT. HE WASHER OR 7.3 CU. FT. DRYER
 • TurboWash™ cycle saves up to 20 minutes on every load
 • Nine drying options customize care for all fabrics
 WT1601CW (Depot Direct 1001571374) (DL1501W (Depot Direct 1001571481)) Gas dryer available at additional cost.

AMANA **SPECIAL BUY** **WASHER OR ELECTRIC DRYER** **\$299** EACH
WAS \$399 EACH
SAVE \$200 ON PAIR
3.5 CU. FT. WASHER OR 6.5 CU. FT. DRYER
 • Deep water option uses more water to help break down stains
 • Sensors monitor temperature and control drying time to prevent over-drying
 WED4055EW (Depot Direct 1001373488) (Depot Direct 1001373537) (Depot Direct 1001373537) Gas dryer available at additional cost.

SAMSUNG **SPECIAL BUY** **STACKABLE WASHER OR ELECTRIC DRYER** **\$599** EACH
WAS \$999 EACH
SAVE \$800 ON PAIR
PLATINUM FINISH 4.2 CU. FT. STEAM WASHER OR 7.2 CU. FT. STEAM DRYER
 • Steam wash cycle eliminates stains without pretreatment
 • Steam dry cycle eliminates odors and reduces wrinkles
 WF42H500AP (Depot Direct 1000043845) (DV42H500EP (Depot Direct 1000043880)) Gas dryer available at additional cost. White available at lower price.

PEDESTALS SOLD SEPARATELY

Whirlpool **SPECIAL BUY** **STACKABLE WASHER OR ELECTRIC DRYER** **\$599** EACH
WAS \$799 EACH
SAVE \$400 ON PAIR
4.5 CU. FT. WASHER OR 7.4 CU. FT. DRYER
 • 14 adaptive wash actions adjust time and temperature automatically
 • Moisture sensors adjust cycle to prevent under- or over-drying
 WJF76HEFW (Depot Direct 1001766818) (WED76HEFW (Depot Direct 1001766806)) Gas dryer available at additional cost.

PEDESTALS SOLD SEPARATELY

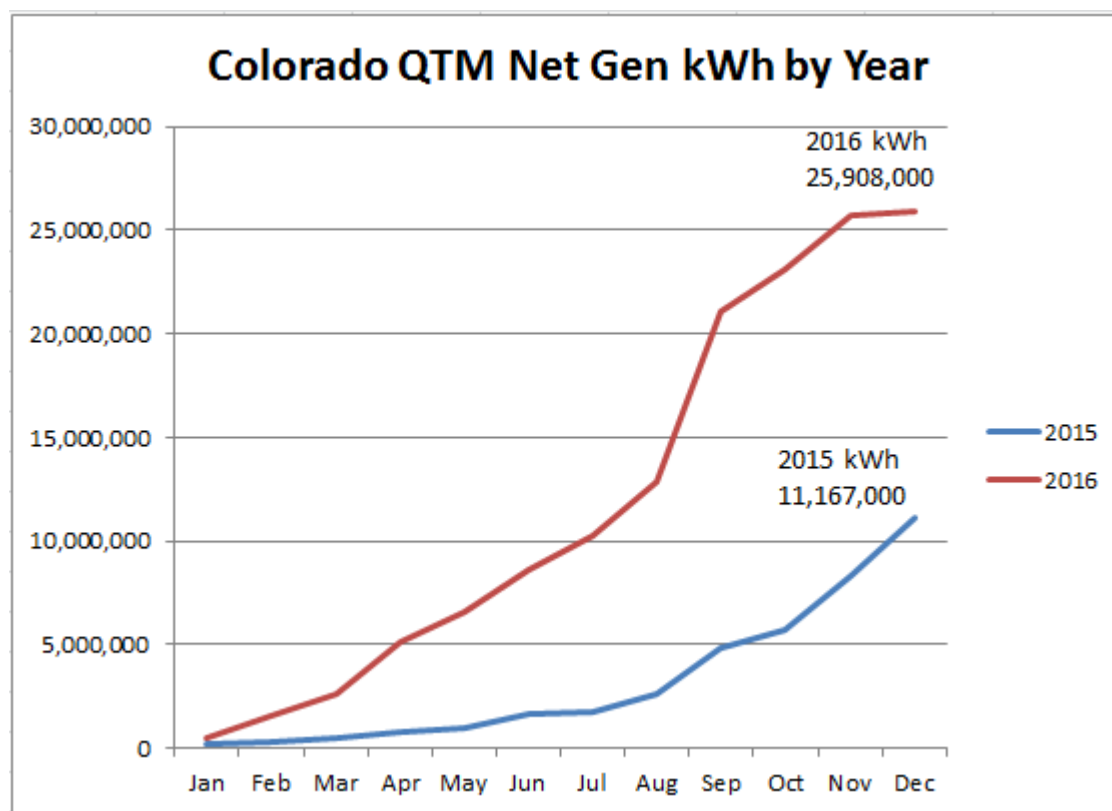
FOLLOW THE HOME DEPOT READ CUSTOMER REVIEWS & RATINGS ON APPLIANCES

DSM Quick to Market Q4-2016 Highlights

Mike Papula
Energy Efficiency Engineer, Energy Efficiency Engineering

DSM Quick to Market

2016 Achievements



Questions?

- Thank you -