<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
</tr>
</thead>
<tbody>
<tr>
<td>1:00 – 1:10 p.m.</td>
<td>Welcome and DSM Regulatory Updates</td>
</tr>
<tr>
<td>1:10 – 1:50 p.m.</td>
<td>DSM Programs: Q4-2015</td>
</tr>
<tr>
<td></td>
<td>» Business Programs</td>
</tr>
<tr>
<td></td>
<td>» Residential and Low-Income Programs</td>
</tr>
<tr>
<td>1:50 – 2:10 p.m.</td>
<td>DSM Pilot Updates: Q4-2015</td>
</tr>
<tr>
<td>2:10 – 2:25 p.m.</td>
<td>-- Networking Break --</td>
</tr>
<tr>
<td>2:25 – 2:40 p.m.</td>
<td>DSM Product Development: Q4-2015</td>
</tr>
<tr>
<td>2:40 – 3:15 p.m.</td>
<td>2015 Comprehensive Evaluation Results</td>
</tr>
</tbody>
</table>
DSM REGULATORY UPDATES
Q4-2015

SARAH RUEN BLANCHARD
DSM Regulatory
60/90-DAY NOTICES

- Heating Efficiency
  - Posted: Nov. 5, 2015
  - Implemented: Dec. 14, 2015

- Multifamily Buildings Pilot
  - Posted: Nov. 5, 2015
  - Implemented: Dec. 14, 2015

- Energy Feedback – Business Pilot
  - Posted: Nov. 25, 2015
  - Implemented: Dec. 25, 2015

- ENERGY STAR Retail Products Platform (ESRPP) Pilot
  - Posted: Dec. 2, 2015
  - Implemented: Jan. 1, 2016

- Home Lighting & Recycling
  - Posted: Jan. 6, 2016
  - Response to Comments will be distributed by: Mar. 5, 2016

- ECMs
  - Posted: Jan. 13, 2016

- LED Street Lights
  - Comments Due: Mar. 2, 2016

- Home Lighting & Recycling (Evaluation)
  - Posted: Feb. 5, 2016
  - Comments Due: Mar. 7, 2016

- Data Center Efficiency
  - Posted: Feb. 15, 2016
  - Comments Due: Mar. 15, 2016
2015/16 DSM Plan Settlement Compliance Progress

<table>
<thead>
<tr>
<th>Paragraph</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>5(c)</td>
<td>60-Day Notice to update LED Street Light TAs to match new SL Tariff</td>
</tr>
<tr>
<td>5(j)(i)</td>
<td>Bi-Monthly PD e-mail updates circulated on 12.18.2015</td>
</tr>
<tr>
<td>5(l)(ii) &amp; 5(l)(v)</td>
<td>60-Day Notice following Comprehensive Evaluation of Home Lighting &amp; Recycling</td>
</tr>
<tr>
<td>5(n)</td>
<td>Colorado Code Consulting project plan being implemented</td>
</tr>
</tbody>
</table>

Next Roundtable – Save the Date!
- Q1-2016 DSM Roundtable Meeting: **Thursday**, May 12, 2016
Electric Portfolio
- 407.8 GWh (104% of 390.7 GWh Goal)
- 82 MW (87% of Target)
- $87M (91% of Budget)

Business Programs (% of kWh Target)
- Data Center Efficiency – 167% of Target
- Motors & Drive Efficiency – 125% of Target
- Compressed Air – 125% of Target
- Cooling – 116% of Target
- Small Business Lighting– 104% of Target

Residential / LI Programs (% of kWh Target)
- Insulation & Air Sealing – 183% of Target
- High Efficiency A/C – 126% of Target
- ENERGY STAR New Homes – 137% of Target
- Residential Heating – 135% of Target
- Non-Profit – 103% of Target
- Energy Savings Kit – 101% of Target

Gas Portfolio
- 597,748 Net Dth (98% of 608,244 Dth Goal)
- $12.9M Spend (98% of Budget)

Business Programs (% of Dth Target)
- EMS – 316% of Target
- Custom Efficiency – 99% of Target

Residential / LI Programs (% of Dth Target)
- Insulation & Air Sealing – 146% of Target
- Showerheads – 149% of Target
- Non-Profit – 137% of Target
- Energy Savings Kit – 108% of Target
- Single-Family Weatherization – 106% of Target
- Multifamily Weatherization – 105% of Target
MARKETING CAMPAIGNS & OUTREACH

**Business**
- Business Heating campaign
- Plate and frame HEX campaign for Data Centers and C/I customers
- Commercial Refrigeration campaign
- Lighting Efficiency / Lighting – Small Business Promotion
- Lighting – Small Business, Direct Install
- Energy Design Assistance (New Const.) media promotions, NPR radio, USGBC, DOE, construction publications, American Institute of Architects
- Lighting training workshops (three in 2015)
- EIS Launch

**Residential**
- ENERGY STAR New Homes free training classes for sales agents and home raters
- Residential Heating Campaign
- Home Lighting community events
- Warm Up to Savings Insulation campaign
- Refrigerator Recycling campaign
- Low Income Kit e-mail campaign to qualified customers
- Showerhead Blitz
- Smart Thermostat campaign
LIGHTING
Q4-2015 HIGHLIGHTS

JACKIE DUCHARMÉ
Product Portfolio Manager, DSM Marketing
2015 Overview

- Program Launch
  - CO: Jan 15, 2015
  - 6,573,430 Net Gen kWh

- Distributor participation:
  - 95 Distributor locations signed up
  - 23-30 Distributors regularly participating
  - 70 Distributor meetings
  - 8 Distributor newsletters, 53% open/read rate

Top 5 Distributor Participation

1. Ecosystems
2. Grainger
3. Conserve-A-Watt Lighting
4. Voss Lighting
5. Regency Lighting
2015 Sales by Lamp
Total Units 2015: 123,013
Total Units 2014: 69,208
(LE & SBL 2014 Lamp Count)

Rebate bonus Launched Sept 1, 2015
LIGHTING – SMALL BUSINESS

• Lighting – Small Business achieved 104% of year-end Plan target due to:
  – Direct-Install program launch Sept 1, 2015.
    • 240 participants; saving approximately 2.7 GWh and 400 Dth
  – Bonus from May 15 2015 - Nov. 30 2015
  – Addition of new lighting measures—LED bay lighting and LED tubes—at year-end
  – Outreach campaigns from vendor and Xcel Energy
DSM BUSINESS PROGRAM
Q4-2015 HIGHLIGHTS

Kim Spickard
Team Lead, DSM Marketing
Energy Information Systems (EIS)

- Services focus on large industrial and commercial customers
- Provides strategic energy management consulting, visualization, real-time data and analytics software, and energy efficiency opportunity identification
- Three new savings measures include behavioral, low-cost/no-cost operational, and capital improvement measures
- Selected implementation consultants (via RFP):
  - Michaels Energy
  - Cascade Energy

RFQ Details

- 12 providers responded to RFQ
- RFQ questions were designed to assess the capability of each EIS solution and Xcel Energy’s ability to track and claim savings from behavioral and low-cost/ no cost operational measures
- Approved providers will be added to a qualified list for customers to reference in late Feb. 2016
• Heating Efficiency Fall Marketing Campaign – Successful Impact
• Customer bonus and trade incentive launched

• 50% participation lift was realized in the 4\textsuperscript{th} quarter due to incentives and education

• Two events were held:
  – Technical training for Trade Partners
  – Customer Heating Efficiency Best Practices

• Collaboration with the Colorado State Boiler Inspectors Office
  – Provided co-branded mutual benefits for rebates and operational safety
<table>
<thead>
<tr>
<th>Equipment Type</th>
<th>Measure Code</th>
<th>Size Category (btuh)</th>
<th>Avg EER</th>
<th>Avg SEER</th>
<th>Avg IPLV</th>
<th>Tons</th>
<th>Total kW</th>
<th>Total kWh</th>
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</thead>
<tbody>
<tr>
<td>PTAC, PTHP</td>
<td>PTAC000</td>
<td>all</td>
<td>13.1</td>
<td></td>
<td></td>
<td>63</td>
<td>27</td>
<td>44,818</td>
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<tr>
<td>Water-Source Heat Pumps</td>
<td>WSHP000</td>
<td>all</td>
<td>15.2</td>
<td></td>
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<td>653</td>
<td>138</td>
<td>206,606</td>
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<tr>
<td>DX Units (&lt; 65,000)</td>
<td>DXAC065</td>
<td>&lt; 65,000</td>
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<td>16.0</td>
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<td>1,125</td>
<td>225</td>
<td>183,141</td>
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<td>DX Units (65,000 - 134,999)</td>
<td>DXAC135</td>
<td>65,000 - 134,999</td>
<td>12.3</td>
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<td>2,600</td>
<td>295</td>
<td>247,505</td>
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<tr>
<td>DX Units (135,000 - 239,999)</td>
<td>DXAC240</td>
<td>135,000 - 239,999</td>
<td>12.1</td>
<td></td>
<td></td>
<td>2,562</td>
<td>297</td>
<td>242,806</td>
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<tr>
<td>DX Units (240,000 - 759,999)</td>
<td>DXAC760</td>
<td>240,000 - 759,999</td>
<td>11.2</td>
<td></td>
<td></td>
<td>1,439</td>
<td>215</td>
<td>482,215</td>
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<tr>
<td>DX Units (&gt;= 760,000)</td>
<td>DXAC999</td>
<td>&gt;= 760,000</td>
<td>10.8</td>
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<td>348</td>
<td>48</td>
<td>116,546</td>
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<tr>
<td>Air Cooled Chillers</td>
<td>ACCH000</td>
<td>all</td>
<td>10.6</td>
<td>15.9</td>
<td></td>
<td>3,183</td>
<td>447</td>
<td>881,173</td>
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<tr>
<td>Totals</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>11,972</td>
<td>1,693</td>
<td>2,404,810</td>
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<tr>
<td></td>
<td>2014 Results</td>
<td>2015 Results (8 months)</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<tr>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Units</td>
<td>480</td>
<td>992</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>Tons</td>
<td>5,860</td>
<td>10,274.8</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Distributor Incentives</td>
<td>$458,661</td>
<td>$756,403</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>
• Provides a direct feed of whole-building energy usage data using ENERGY STAR Portfolio Manager®

• What’s included:
  – Whole-building usage data from our metered data repository

• Get Started:
  – Set up an account with ENERGY STAR Portfolio Manager®
  – Log into the Xcel Energy Benchmarking Portal
  – Log back into ENERGY STAR Portfolio Manager® and connect your account with Xcel Energy

• What next?
  – Access national benchmarking resources
  – Partner with Xcel Energy to analyze benchmarking data
  – Take next steps to energy-saving upgrades

• Download the user guide:

ENERGY BENCHMARKING SERVICES

Annual Xcel Energy Expo

When: April 5, 2016
Where: Sports Authority Field
What Time: 7am – 2pm

Benchmarking Workshop
DSM RESIDENTIAL & LOW-INCOME PROGRAM
Q4-2015 HIGHLIGHTS

DAVID HUESER
Team Lead, DSM Marketing
Discounted CFL, LED lamp prices via upstream incentives to retailers and manufacturers.

**2015 Summary:**
- 122% Electric Target achieved on 97% of budget
- Expenditures were 30% higher than 2014, increased LED lamp buy-down
- Median stocked lamp wattages:
  - CFL 13-14W, 4-pack
  - LED 9-11W, single lamps
- Retailers expected to see decreasing lamp sales from increased saturation of longer life bulbs
- Adding “Value LEDs” to product in 2016
- New ENERGY STAR® lamp specifications, effective 1/2/17, to accommodate market changes
  - Reduced LED lifetime from 25,000 to 15,000 hours
  - Requirements removed for dimming, reduced for omni-directional
ENgErgy Start® New homEs

Provides homebuilders with incentives to exceed their local building energy code requirements by at least 10%. Homes that are ENERGY STAR certified can earn an additional incentive.

- Successfully managed product expenditures, remained open throughout 2015 calendar year
- 3,971 participating homes in 2015; 20% increase over 2014
- Builders earned over $2.3 million in rebates
- Completed 20 Selling High Efficiency Homes training sessions in 2015, including the following in Q4:
  - DR Horton – Parker, Erie & Fort Collins
  - Village Homes – Loveland
  - Summit County Builders Association – Frisco
RESIDENTIAL HOME PERFORMANCE WITH ENERGY STAR®

- Natural Gas savings achieved 83% of Plan target
- Electric savings short, at 64% of Plan target
- Decrease in participation from 2014
- $100 trade incentive to promote cooling participation, electric savings

Energy Advising
- Enrolled 311 participants in 2015
- Achieved a consistent 50+ percent conversion rate (i.e., half of advising participants completed / in the process on energy efficiency upgrade).
- Advising program will continue in 2016

Improvements in 2016
- Online sign-up form
- Increased focus on marketing and promotional tactics to increase participation
- Continued evaluation of measure mix to keep program cost-effective

Primary Gas Measures:
- Ceiling/Attic Insulation
- Air Sealing
- Wall Insulation

Primary Electric Measures:
- Lighting/CFLs
- Thermostats
Provides targeted communications of energy-use comparisons and information in the *Home Energy Report* to residential customers in Colorado. An online version called *My Energy* offers additional information and tools, available to all customers.

- **440,137 participants at year-end**
- **Significantly exceeded year-end targets**
  - 26.84 GWh (159%)
  - 101,167 Dths (147%)
- **Third-party verification of online *My Energy* savings:**
  - 1 GWh
  - 11,514 Dths

### Promo Module: Evaporative Cooling

Compared to central AC, evaporative cooling systems are...

- **Better for your home:** They’re typically quieter and increase comfort and fresh air flow.
- **Better for your bill:** They use up to 75% less electricity. Plus, you can get a rebate of up to $1,200!
- **Better for the environment:** They don’t use refrigerants, which are harmful to the ozone layer.

To learn more about the Colorado Evaporative Cooling Program, visit [xcelenergy.com/rebates](http://xcelenergy.com/rebates) or call 1-800-895-4999

### Promo Module: Home Energy Squad

**Knock, knock. Our Squad has arrived!**

Save energy and money with a Home Energy Squad visit. You’ll pay only the $75 trip charge and receive a suite of energy-saving items such as compact fluorescent light bulbs, programmable thermostats, weatherstripping and more. Installation, labor, and materials are covered by us — more than a $200 value! You’ll save money and feel warm all winter long.

Call (303) 446-7910 to schedule an appointment or visit [xcelenergy.com/HomeEnergySquad](http://xcelenergy.com/HomeEnergySquad).
RESIDENTIAL REFRIGERATOR & FREEZER RECYCLING

Customers receive $50 incentive per unit removed and benefit from energy savings resulting from removal of secondary, primary refrigerators and freezers.

- Implementation partner: Appliance Recycling Centers of America (ARCA)
- Exceeded 2015 electric savings Plan targets:
  - 4.57 GWh actual vs. 4 GWh filed
  - 521 kW vs. 458 kW filed
- 2015 expenditures exceeded budget to accommodate add’l customer incentives
- 7,450 units removed in 2015, 30% over 2014
- Advertising & promotions:
  - Targeted email, direct mail, radio, print
  - Consumer Education events
  - CFL lamps left with participating customers
  - ENERGY STAR refrigerator sweepstakes
- Market note: Drop in scrap material value and other factors caused ARCA’s competitor JACO Env. to close its doors in 2015

2016 Refrigerator Recycling postcard

USE US
to recycle your fridge.

We’ll roll it away. You’ll help the environment, save money and make a little extra cash.

xcelenegy.com/fridge
Energy Outreach Colorado (EOC) partners with the Colorado Energy Office, utilities like Xcel Energy and other sources to fund multifamily, affordable housing improvement projects to lower residents’ energy costs

- In 2015, the product met its electric savings target of 1.9 GWh and exceeded natural gas savings with 10,955 Dth (105% of Plan target)
- Areas of significant energy savings in 2015:
  - Large, predominantly low-income apartment complexes
  - Commercial-sized boilers for space heating and distributed hot water, pipe insulation
  - Low water usage showerheads and faucet aerators
  - Insulation, weather-stripping
  - Lighting, both common area and in-unit
- Bundled E&G-saving retrofit proposals analyzed for cost-effectiveness
- EOC leveraged nearly $1,000,000 in additional funding to augment Xcel Energy’s rebates to complete projects in 2015
DSM PILOT UPDATES
Q4-2015 HIGHLIGHTS

COLIN LAMB
Team Lead, Product Development
# DSM PILOT HIGHLIGHTS

<table>
<thead>
<tr>
<th>PILOT</th>
<th>STATUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Online Energy Feedback</td>
<td>In Progress</td>
</tr>
<tr>
<td>2 Energy Feedback – Business Pilot</td>
<td>In Progress</td>
</tr>
<tr>
<td>3 Smart Thermostat Pilot</td>
<td>In Progress</td>
</tr>
<tr>
<td>4 Small Business Smart Thermostat Pilot</td>
<td>Vendor contracting</td>
</tr>
<tr>
<td>5 Building Optimization DR Pilot</td>
<td>In Progress</td>
</tr>
<tr>
<td>6 Multifamily Buildings Pilot</td>
<td>In Progress</td>
</tr>
</tbody>
</table>
Propensity Score Matching was used to measure energy savings. Savings are statistically significant.

Savings
- 1.04 GWh
- 87.5 kW
- 11,514 Dth
No statistically significant savings measured in 2015.
Continuing as a pilot in 2016.
• 1.5 million square feet enrolled
• 2 buildings in optimization mode
• Continue to recruit participants
• May pilot through 2017
DSM PILOT HIGHLIGHTS
MULTIFAMILY BUILDINGS

• 2015 Results
  – 10 energy assessments completed
  – Direct installation of energy efficient equipment at 148 apartments
  – Phase 3 projects identified

High-Efficiency Lighting (CFLs and LEDs)
Energy-Efficient Showerheads (1.5 GPM)
Bathroom/Kitchen Faucet Aerators (1.5 GPM)
Water Heater Blanket
DSM PILOT HIGHLIGHTS
RESIDENTIAL SMART THERMOSTAT

- Over 2,600 by end of 2015
- Over 75% using online storefront with instant rebate
- Continue to recruit participants for EE and DR
- Implement DR events during summer cooling

$50 INSTANT REBATE ON ANY THERMOSTAT
LIMITED TIME OFFER

- Wi-Fi enabled
- Control remotely from your smartphone
- Lowest price with this exclusive offer
- Free shipping on all orders

Claim yours now!

*Valid only for Xcel Energy residential customers in Minnesota and Colorado.
DSM PILOT HIGHLIGHTS
SMALL BUSINESS SMART THERMOSTAT

- Continuing to work through contracting with parties
- Direct-install model
- Will recruit participants upon contract execution
- Implement DR events during summer cooling
Energy Star Retail Products Platform (ESRPP) Pilot

- 60-Day Notice Completed in 2015
- National program beginning March 1
- In contracting process now with data services, retailers
- Product mix for 2016:
  - Dryers
  - Soundbars
  - Room A/C
  - Air cleaners
  - Freezers
- Networking Break -
DSM PRODUCT DEVELOPMENT
Q4-2015 HIGHLIGHTS

THOR BJORK
Team Lead, Product Development
## DSM PRODUCT DEVELOPMENT

### 2017/18 DSM Plan product development:

<table>
<thead>
<tr>
<th>Concept</th>
<th>Product</th>
<th>GWh (estimate)</th>
<th>Dth (estimate)</th>
</tr>
</thead>
<tbody>
<tr>
<td>C&amp;I Refrigeration</td>
<td>Commercial Refrigeration Efficiency</td>
<td>1.0</td>
<td>-</td>
</tr>
<tr>
<td>Mini-Split AC</td>
<td>High Efficiency Air Conditioning and Cooling Efficiency</td>
<td>0.5</td>
<td>-</td>
</tr>
<tr>
<td>Advanced RTU Controllers</td>
<td>Cooling Efficiency</td>
<td>2.8</td>
<td>-</td>
</tr>
</tbody>
</table>

### Other development efforts:

<table>
<thead>
<tr>
<th>Concept</th>
<th>Product</th>
<th>GWh (estimate)</th>
<th>Dth (estimate)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Whole Facility New Construction*</td>
<td>Data Center Design Assistance</td>
<td>1.5</td>
<td>-</td>
</tr>
<tr>
<td>Energy Benchmarking Service</td>
<td>Indirect</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Upstream Electronics (set-top boxes, power strips)</td>
<td>TBD</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>Efficient Process/Commercial Dehumidification</td>
<td>Cooling Efficiency</td>
<td>1.0</td>
<td>-</td>
</tr>
</tbody>
</table>

*60-Day Notice posted Feb 2016*
Share your Product Ideas:

www.xcelenergy.com/productideas
CO DSM 2015 Evaluation Report

Lighting Efficiency, Home Lighting, Colorado Lighting Market Study

February 17, 2016
Evaluation Process

**Kick-off**
- Define objectives; refine evaluation plan

**Staff Interviews**
- Understand program design and processes

**Materials Review**
- Examine marketing and customer touch points

**Benchmarking**

**Collect Data**
- Surveys
- Site Visits
- Trade Ally Interviews

**Data**
- Analysis
- Recommendations

**Report**
Lighting Efficiency Evaluation
## Lighting Efficiency Research Approach

<table>
<thead>
<tr>
<th>TOPICS</th>
<th>RESEARCH ACTIVITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Program design, operations, performance; delivery protocols; challenges; process changes</td>
<td>Staff interviews (5)</td>
</tr>
<tr>
<td>Customer satisfaction with program processes, lighting solutions, freeridership; spillover; program influence on EE decisions; program awareness and barriers to participating</td>
<td>Participant and Nonparticipant surveys/site visits (71)</td>
</tr>
<tr>
<td>Trade partner program satisfaction, challenges, improvements, program influence on practices</td>
<td>Trade partner interviews (23)</td>
</tr>
<tr>
<td>Compare program structures, measures, eligibility requirements, incentive levels, impact achievements</td>
<td>Benchmarking study (7); Previous research baseline comparison (2005 CO Potential study)</td>
</tr>
<tr>
<td>Assess program impacts (freeridership, spillover, market effects)</td>
<td>Net-to-gross savings analysis using all of the above data collection activities</td>
</tr>
</tbody>
</table>
Lighting Efficiency Key Findings

Program awareness and engagement through lighting professionals

High satisfaction among participants (96%) and trade partners (100%)

Customer familiarity with efficient lighting technologies increased, particularly LEDs and credit to program.

Trade partners value:
- Comprehensive measure mix
- Training opportunities

Barriers
- Eligibility requirements (prescriptive)
- Lack of visibility for estimated rebate amounts (custom)
- Upfront costs, capital, and identifying cost-effective measures
- Application process
## Lighting Efficiency Impacts

<table>
<thead>
<tr>
<th>NTG Component</th>
<th>Value</th>
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<tbody>
<tr>
<td>Freeridership</td>
<td>9.3%</td>
</tr>
<tr>
<td>Participant Spillover</td>
<td>0.3%</td>
</tr>
<tr>
<td>Nonparticipant Spillover</td>
<td>0.1%</td>
</tr>
<tr>
<td>Trade Partner Spillover</td>
<td>8.1%</td>
</tr>
<tr>
<td>Market Effects</td>
<td>0.0%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>99.2%</strong></td>
</tr>
</tbody>
</table>
Lighting Efficiency Recommendations

- Improve access to program
- Address barriers with tools
  - Business/industry-specific case studies with LED paybacks
  - Mobile/online payback calculator for trade partners
- Continue efforts to streamline application process
- Continue to update and maintain trade partner contact list
- NTG = 99%
Home Lighting Evaluation
## Home Lighting Research Approach

<table>
<thead>
<tr>
<th>TOPICS</th>
<th>RESEARCH ACTIVITY</th>
</tr>
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<tbody>
<tr>
<td>Program design, operations, performance; delivery protocols; challenges; process changes</td>
<td>Staff (5) and implementer (4) interviews</td>
</tr>
<tr>
<td>Efficient lighting penetration and saturation; awareness of XE promotions</td>
<td>Home lighting inventories and surveys (70)</td>
</tr>
<tr>
<td>Purchase decisions, program awareness, intended use</td>
<td>In-store intercept survey (335)</td>
</tr>
<tr>
<td>Pricing and sales trends, marketing approaches, barriers, program attribution</td>
<td>Supplier interviews: manufacturers and retailers (27)</td>
</tr>
<tr>
<td>Context for key program design and performance indicators</td>
<td>Benchmarking (7)</td>
</tr>
<tr>
<td>Assess impacts: freeridership, spillover, market effects</td>
<td>Demand Elasticity analysis (2014 sales data), intercepts, supplier interviews, and 2009 evaluation baseline comparison</td>
</tr>
</tbody>
</table>
Home Lighting Key Findings

Program exceeded targets in a challenging year with rapid LED price declines and impacts felt from EISA standards.
Home Lighting Findings Continued

**Awareness**

Most (79%) are not aware of Xcel Energy lighting discounts. (Similar to 2009, 80%)

However, relative to other upstream programs, a higher proportion of Xcel Energy customers are aware (21% to 39% aware versus 12% - 26%).

**Familiarity & product satisfaction**

Mean satisfaction with CFLs = 8.2; LEDs = 7.5

68% very familiar with CFLs, 26% very familiar with LEDs

Satisfaction (9-10 ratings) with CFLs increased from 37% in 2009 to 55% in 2015

Manufacturers and store managers also very satisfied with program
Suggested improvements
Manufacturers interested in expanding program qualified bulbs for specialty LEDs and retrofit kits.

Store managers interested in more frequent contact and signage

Supplier sales perceptions
Since 2010: CFL sales declining while LED sales increasing

No longer stocking EISA impacted incandescent bulbs

Bulb recycling rates increased (41% disposed of CFL at a recycling center compared to none in 2009)
# Home Lighting Impact Findings

<table>
<thead>
<tr>
<th>NTG Component</th>
<th>CFL Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freeridership</td>
<td>35%</td>
</tr>
<tr>
<td>Spillover</td>
<td>8%</td>
</tr>
<tr>
<td>Market Effects</td>
<td>6%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>79%</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>NTG Component</th>
<th>LED Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freeridership</td>
<td>23%</td>
</tr>
<tr>
<td>Spillover</td>
<td>8%</td>
</tr>
<tr>
<td>Market Effects</td>
<td>6%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>91%</strong></td>
</tr>
</tbody>
</table>
Home Lighting Recommendations

- Continue efforts to increase program visibility
- Continue efforts to keep measure mix current with rapidly changing market
- Review HOU technical assumptions
- Use NTG of 79% for CFLs; 91% for LEDs
Lighting Market Study Topics

<table>
<thead>
<tr>
<th>TOPICS</th>
<th>RESEARCH ACTIVITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Change in home and business saturation by bulb types and customer</td>
<td>Home and Business Inventories</td>
</tr>
<tr>
<td>awareness of different technologies</td>
<td></td>
</tr>
<tr>
<td>Availability of EISA-restricted bulbs</td>
<td>EISA Bulb In-Store Shelf Survey</td>
</tr>
<tr>
<td>Retail store stocking levels of different bulb types and prices</td>
<td>Online Shelf Survey</td>
</tr>
<tr>
<td>2009-2015 sales and prices by bulb type – Colorado, nearby states,</td>
<td>Point of Sale Data Analysis</td>
</tr>
<tr>
<td>and national</td>
<td></td>
</tr>
<tr>
<td>Business familiarity with energy-efficient lighting</td>
<td>Business Participant Surveys,</td>
</tr>
<tr>
<td></td>
<td>Trade Ally Surveys</td>
</tr>
</tbody>
</table>
Residential Market

Energy efficient bulb saturation increasing faster than other regions

<table>
<thead>
<tr>
<th>CFL Bulb Installation Characteristics</th>
<th>2015</th>
<th>2009</th>
<th>Percentage Increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Xcel Energy Penetration</td>
<td>99%</td>
<td>65%</td>
<td>52%</td>
</tr>
<tr>
<td>Saturation (MSB Sockets)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Xcel Energy</td>
<td>37%</td>
<td>19%</td>
<td>96%</td>
</tr>
<tr>
<td>Upstate New York</td>
<td>22%</td>
<td>19%</td>
<td>16%</td>
</tr>
<tr>
<td>Massachusetts</td>
<td>32%</td>
<td>26%</td>
<td>23%</td>
</tr>
<tr>
<td>Georgia</td>
<td>19%</td>
<td>16%</td>
<td>19%</td>
</tr>
<tr>
<td>Kansas</td>
<td>29%</td>
<td>19%</td>
<td>53%</td>
</tr>
</tbody>
</table>
Average Number of Bulb Types

On average, 48.3 sockets per home, Program bulbs make up 77% of CFLs and LEDs
Efficient Lighting Retail Sales

Colorado sales of CFLs and LEDs has out-paced the nation and neighboring states.

- Market share of CFLs and LED grew from 19% in 2009 to 21% in 2014.
- Nearby states (AZ, NE, UT) declining market shares for CFLs & LEDs.
EISA Impacted Bulbs

- EISA restricted bulbs no longer available in stores.
- Phase out seen in sales over time

75-watt and 75-watt equivalent sales

![Graph showing sales trends for CFL/LED, Halogen, and Incandescent bulbs from 2009 to 2014.](image-url)
Average Retail Pricing

- CFL bulb prices higher in nonparticipating stores
- Standard halogens are lowest cost bulbs available

Since 2010, prices decreased most for halogen bulbs (60%); LEDs decreased (<1%); CFLs mostly stable; increases in other bulb types
Residential Customer Familiarity

- Customers are more familiar with CFLs than LEDs
- Familiarity with CFLs increased since 2009

<table>
<thead>
<tr>
<th>Familiarity Level</th>
<th>CFLs</th>
<th>LEDs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very familiar</td>
<td>68%</td>
<td></td>
</tr>
<tr>
<td>Somewhat familiar</td>
<td>26%</td>
<td>30%</td>
</tr>
<tr>
<td>Not too familiar</td>
<td>35%</td>
<td>1%</td>
</tr>
<tr>
<td>Not at all familiar</td>
<td>32%</td>
<td>7%</td>
</tr>
</tbody>
</table>

CFLs: 68% very familiar, 26% somewhat familiar, 35% not too familiar, 32% not at all familiar
LEDs: 30% somewhat familiar, 7% not familiar
Business Lighting Market

- Xcel Energy mix of business accounts shifted to smaller (retail) businesses since 2005
- Majority of commercial lighting in fluorescents
Overall saturations of T12 lighting technologies largely unchanged since 2005, although 7 of 10 sampled program participants had no T12s. Smaller buildings more likely to have T12s. Task Lighting shifting to CFLs and LEDs.
Business Efficient Lighting Awareness

Both program participating trade allies and business customers attribute increased knowledge of energy efficiency to the program.

Business Customer Survey Responses

- CFLs: 75% familiar, 60% increased familiarity over 5 years, 54% program important
- LEDs: 90% familiar, 94% increased familiarity over 5 years, 69% program important
- T8s: 63% familiar, 61% increased familiarity over 5 years, 61% program important
- T5s: 63% familiar, 50% increased familiarity over 5 years, 50% program important
- Controls: 69% familiar, 72% increased familiarity over 5 years, 63% program important

Key:
- Familiar (6-10) with technology
- Increased familiarity over 5 years ago
- Program important in increasing familiarity
QUESTIONS