



AGENDA

1:00 – 1:10 p.m.

Welcome and DSM Regulatory Updates

1:10 – 1:20 p.m.

Q3 Achievement Update

1:20 – 2:00 p.m.

Disproportionately Impacted Communities Discussion

2:00 – 2:30 p.m.

Electrification & Residential New Construction

2:30 – 2:45 p.m.

Heat Savers Mode

2:45 – 3:00 p.m.

Excess Supply Partners

3:00 – 3:30 p.m.

IQ BE Pilot



DSM REGULATORY UPDATES

Q3 – 2022

Jeremy Lovelady | DSM Regulatory



Q3 60/90-Day Notices

2021 Product Evaluations – 4/12/2022

- Compressed Air Efficiency
- Business New Construction – 4/28/2022
- Energy Star New Homes
- Home Lighting & Recycling
- Residential Heating & Cooling – 4/28/2022
 - (High-efficiency AC and Heat Pumps)
- AC Rewards

Heat Pump Efficiency Update

- Posted: 4/12/2022

Business HVAC+R Systems Update

- Posted: 4/28/2022

Lighting Efficiency Update

- Posted: 4/28/2022

School Kits + IQ Kits Update

- Posted: 4/28/2022

DSM Regulatory Calendar

Filing Schedule

- 2023 DSM Plan
 - Supplemental Direct Testimony – Sept 27th
 - Answer Testimony- Nov 21st
 - Rebuttal & Cross-answer Testimony- January 9th
 - Stipulation/Settlement Agreement- January 27th
 - Settlement Testimony- Feb 3rd
 - Hearing – February 15-17th
- DSM Strategic Issues + Beneficial Electrification
 - Supplemental Direct Testimony - Nov 1st
 - Answer Testimony- Dec 8th
 - Rebuttal & Cross-answer Testimony- January 19th
 - Stipulation/Settlement Agreement- February 1st
 - Hearing – February 6-10th

DSM Regulatory Calendar

Upcoming Meetings – Save the Date!

- Q4-2022 DSM Roundtable Meeting
 - February 8th



DSM ACHIEVEMENTS

Q3 – 2022

Mark Schoenheider | Manager, Customer Energy Solutions



2022 Q3 Achievement Highlights

Electric Portfolio

- 264 GWh (51% of 522.8 GWh Target)
- 53 MW (53% of 100.5 MW Target)
- \$56.2M (62% of \$90M Budget)

Business Programs

- 133 GWh (38% of Target)
- New Construction 32.3 GWh (70%)
- Small Business Solutions 21.4 GWh (46%)
- Business Energy Assessments 8 GWh (121%)

Residential / IQ Programs

- 130 GWh (74% of Target)
- Home Lighting & Recycling 69.9 GWh (112%)
- Home Energy Insights 15 GWh (50%)
- School Education Kits 8 GWh (77%)
- Residential Heating & Cooling 4 GWh (28%)

Gas Portfolio

- 415,800 Net Dth (52% of 799,708 Target)
- \$9.8M Spend (53% of \$18.5M Budget)

Business Programs

- 41,546 Net Dth (37% of Target)
- New Construction 34,575 Dth (47%)
- Business HVAC+R Systems 4,960 (56%)
- Business Energy Assessments 1,047 Dth (28%)

Residential / IQ Programs

- 374,254 Net Dth (54% of Target)
- ENERGY STAR Homes 95,359 Dth (62%)
- Residential Heating & Cooling 127,306 Dth (75%)
- Insulation & Air Sealing 37,024 Dth (160%)
- Home Energy Insights 52,743 (57%)

Marketing Campaigns & Trade Relations Outreach

Business

Commercial & Multi-Family Electrification Kickoff Meeting - Marketing & Outreach

- With Michaels Engineering and City/County of Denver

DENVER SMALL BUSINESS EXPO

- August 25, 2022; 10AM-5:00PM MST
- Crowne Plaza Denver Airport Convention Center
- Attendee to meet with various small business groups

Rocky Mountain Mechanical Contractors Association (RMMCA)

- Annual Membership Appreciation Event
- Rockies vs. Texas Game Wednesday August 24th 1:10 PM
- Food sponsorship

Broncos Sponsorship Events

- Tuesday August 16th 9:00 – 1:00 pm Training Camp
 - 20 tickets for lighting trade partners
- Friday August 26th 11:30- 3:00 pm Broncos Charity Lunch at Dove Valley
 - We hosted 2 tables of 8 attendees each

CD Jones Denver Open House

- Thursday September 22nd 10:00 – 2:00 pm
- Booth exhibit / BBQ lunch

Broncos Suite VS Houston Texans

- Opening Day game at Mile High Stadium Sunday September 18th
- 15 tickets for hosting lighting trade partners

Annual ESource Forum

- Denver Sheraton September 14-16th

EMS Advisory Board September 29th

- Lunch/meeting at IECRM Facility; 20 attendees virtual/in-person

Marijuana Industry Group (MIG) meeting 9/20

- Discuss Indoor Agriculture and cannabis financing
- Working with Heather Braithwaite at Colorado Clean Energy Fund for cannabis project financing

Residential

Customer Outreach

- Onserts: Home Lighting, Refrigerator Recycling, Home Energy Squad
- Home Energy Squad
 - Monthly email campaign also promoting Refrigerator Recycling
 - Mass Media channels: Radio, Digital, Social
 - Community events in coordination with Partners in Energy
 - Apogee video email (August)
- Energy Efficiency Showerheads
 - August email to .6 million customers with personalized url link to the online store, making it easy to get a free showerhead kit

Trade ally/stakeholder outreach

- Bonus heat pump and swamp cooler rebates announced in July
- Ongoing collaborations to advance residential heat pump adoption
 - EEBC Heat Pump working group
 - BEL-CO (Beneficial Electrification League of CO) weekly meetings
 - Individual meetings with manufacturers and distributors including Mitsubishi, Stevens Equipment Supply/Daikin, Lohmiller/Carrier, Lennox, Johnstone Supply/Bosch
 - MeasureQuick (smart tools) demonstration at Johnstone Supply
 - Heat pump manufacturers panel at Rocky Mountain Utility Exchange (September)
- Evaporative cooler manufacturer meeting (Seeley International)

Partners in Energy Co-branded outreach

- Broomfield flyer, social media and videos –Home Energy Squad
- Broomfield city website content – residential conservation
- Westminster – Home Energy Squad
- Fort Collins Open Street– natural gas conservation
- Marshall Fire New Construction support – collateral



DI COMMUNITIES OUTREACH

Mark Schoenheider | Manager, Customer Energy Solutions



CO DI Communities Outreach

- May parties are interested in and/or represent Disproportionately Impacted Communities.
- The Company is developing and executing a comprehensive IQ/DI Community Engagement and Outreach Plan, coordinated across DSM/BE, renewable energy, electric transportation and other topics.
- This is an evolving landscape and transition from our previous focus on individually identified Income Qualified customers.
- Further details and discussion is provided in Company witness Jack Ihle's Supplemental Direct Testimony in the Strategic Issues proceeding (22A-0309EG)

CO DI Communities Outreach Plan

- Developed collaboratively with stakeholders as part of the 2022-2025 Renewable Energy Compliance Plan, Proceeding (21A-0625EG)
- Work with stakeholders to identify and contract with organizations that serve IQ customers and DI communities
- Contracted organizations would support the development, engagement and outreach of programs
- Leverage synergies with other Company programming, and provide a mechanism for more efficient and comprehensive feedback from the community
- This proposed framework is being discussed in the Strategic Issues docket.



DISPROPORTIONATELY IMPACTED COMMUNITIES AND DSM PARTICIPATION

Jameson Schryer | Senior Data Analyst, CS&I

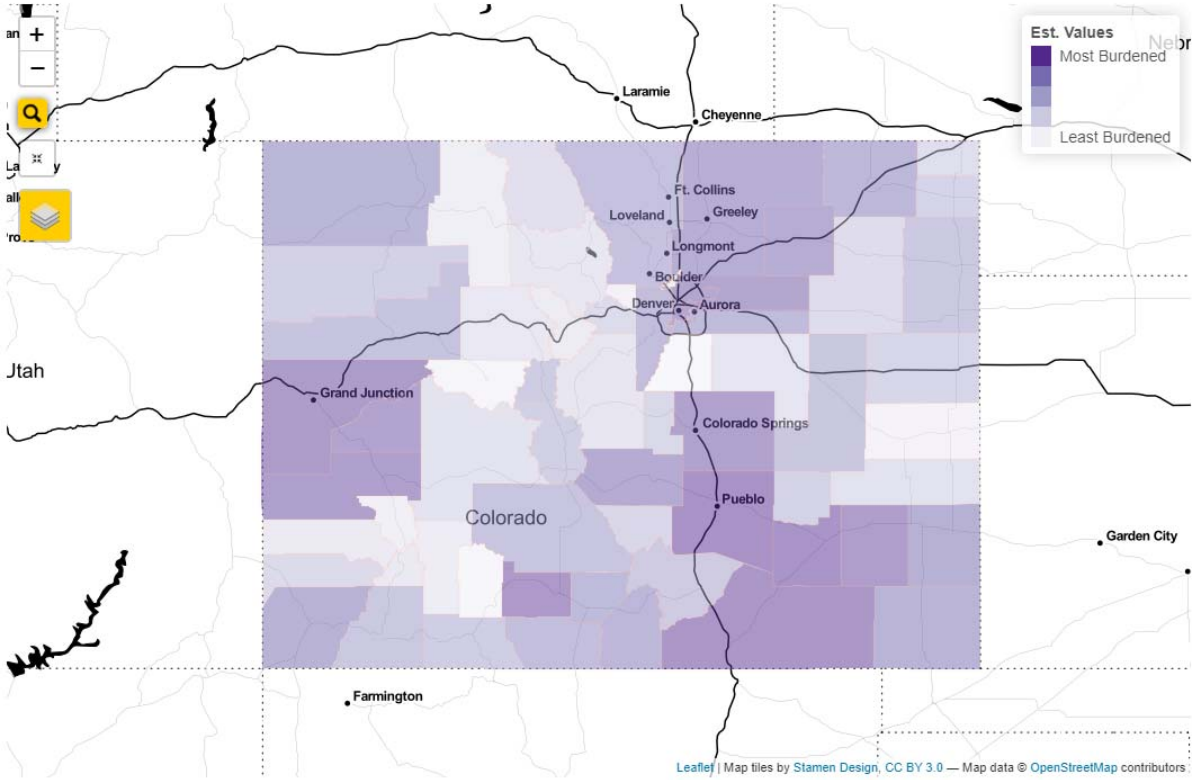


Disproportionately Impacted Communities

The Environmental Justice Act (House Bill 21-1266) defines Disproportionately Impacted Communities as:

- Census Block Groups with one of 3 demographic factors:
 - More than 40% low-income households;
 - More than 40% people of color households;
 - More than 40% housing cost-burdened households;
- Communities with a history of environmental racism perpetuated through exclusionary laws, including redlining, anti-Hispanic, anti-Black, anti-indigenous, and anti-immigrant laws; and
- Communities where multiple factors (socioeconomic stressors, disproportionate environmental burdens, lack of public participation) cumulatively contribute to persistent public health and environmental disparities.

EnviroScreen



PUC Request

(Supplemental Direct Testimony in SI Proceeding)

- *f) Produce a map illustrating disproportionately impacted communities within the Company's service territory using EnviroScreen along with the annual total incentives received and energy savings by Census block group (identifying those that are and are not disproportionately impacted under the current version of EnviroScreen) for the last three calendar years, or whatever date range is available within the Company's systems.*

Tools

- Teradata SQL
- Jupyter Notebooks
- ArcGIS

Datasets

- Active premises with associated block group
- Savings and rebate data
- EnviroScreen data

Process

Read in Data and Packages

```
In [ ]: # Import geopandas as gpd
import pandas as pd
import seaborn as sns
import os
import matplotlib.pyplot as plt

In [ ]: # Read in Block Group Data from GIS Team (Jacob Kaufmann)
bg = pd.read_csv(r"S:\General-Offices-GO\EfficiencyMktg\Data & Analytics\Requests\20220922_CPUC_Request\Active_PSCD_updated_sep" + ".")

In [ ]: # Drop nulls
bg=bg.dropna(subset=["GEOID"])
bg

In [ ]: # Read in rebate and savings data
app = pd.read_excel(r"S:\General-Offices-GO\EfficiencyMktg\Data & Analytics\Requests\20220922_CPUC_Request\3 years of class sheet_name = 'Pivot_Cleaned')
app.drop_duplicates(subset='Premise', keep='first', inplace=True)
app.info()
```

Combine Data

Join Cust Data to Block Group Data

```
In [ ]: # Left join data to maintain all records from the block group data
df_merged = pd.merge(bg, app, left_on='Premise ID', right_on='Premise', how='left')
df_merged
```

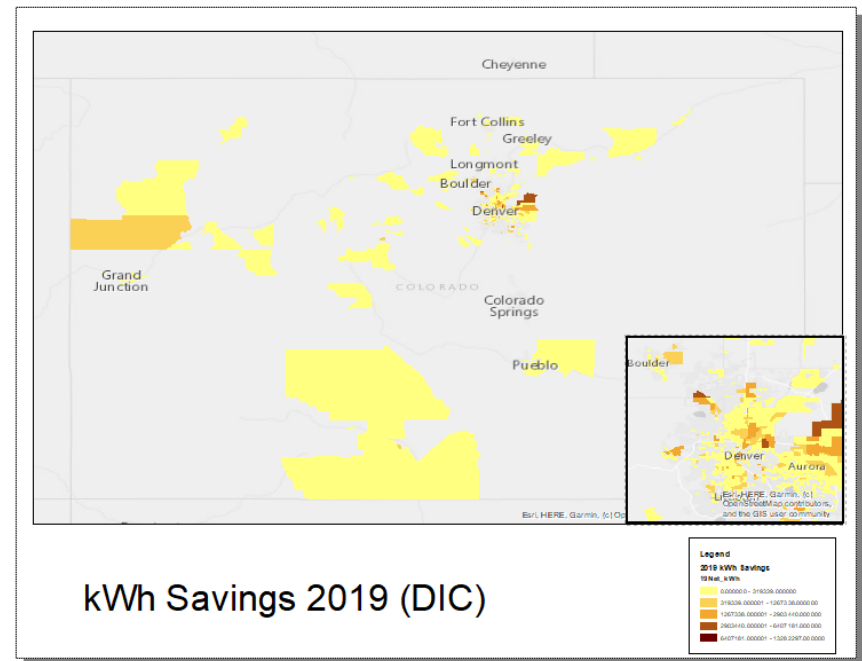
Get Customer Counts by Block Group

```
In [ ]: # Get customer count per block group
bg_cust_count=df_merged.groupby(by='GEOID')['Premise ID'].count()
bg_cust_count=bg_cust_count.to_frame()
bg_cust_count
```

Aggregate the Savings and Rebate Data to Block Group Level

```
In [ ]: # Drop premise identifier
df_merged = df_merged.drop(['Premise ID'],axis=1)

In [ ]: # Group by block group
bg_aggregated_values = df_merged.groupby(by='GEOID').sum()
bg_aggregated_values
```



CO DI Communities Preliminary Take-Aways

- Premise count based on 10/2022
- DSM achievements and spend from 2019-2021 for programs reporting premise level savings
- Product teams are digesting the information, digging into product specific achievements and spend

DI Community?	Premises	kWh Saved	Electric Rebates	Therms Saved	Gas Rebates
No	56.8%	51.4%	51.5%	61.2%	57.8%
Yes	43.2%	48.6%	48.5%	38.8%	42.2%



ALL ELECTRIC NEW CONSTRUCTION MODELING

Nick Mark | Manager, DSM Policy and Strategy



Electrification & Residential New Construction

Supplemental Direct Testimony in Strategic Issues

- Commission Requirement
 - 15 year analysis of 14,000 new homes per year
 - Compare conventional to all-electric assuming increasing fraction are all-electric
 - Include locational assumptions to avoid new capital investment
 - Identify increased/decreased capital cost, revenue, emissions for both gas & electric
 - Estimate “net expected rate impact” for combined gas & electric customers

Approach

Define “Home Types” and “Concentration Profiles” that can be combined into Scenarios

Home Types:

- Defined characteristics (appliances, square footage, ACH, etc)
- Hourly annual energy usage modeled using REM/Rate
- Usage model used TMY3 data (not utility design day)

Concentration Profiles

- Estimated cost-per-home for utility infrastructure based on what we assume needs to be built

Home Types

“BAU” – Conventional gas/electric home, using averages from new construction program participants

“BAU-EV” – Same, with addition of EV charging

“ASHP-NG” – Replace gas appliances with electric, retaining high-efficiency furnace for backup heat

“ASHP-ER” – Same, but use electric resistance for backup heat

“GSHP” – Replace gas appliances with electric, replace heating system with geothermal

“GSHP-N” – Networked district heating/cooling using ground-source heat pumps

All homes except “BAU” include EV charger.

Concentration Profiles

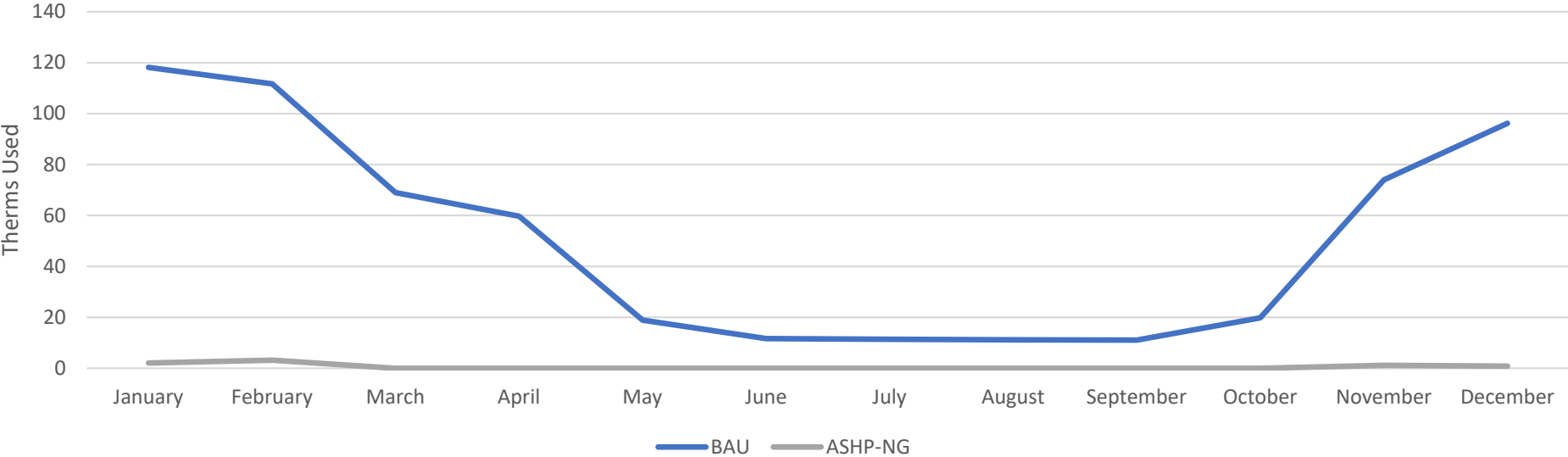
“Minimal Impact” – Plenty of distribution capacity; only build service laterals (and electric generation if Encompass indicates need)

“System Average” – Current system-wide average distribution costs by category

“Concentrated Greenfield” – No utility service exists; need to build everything.

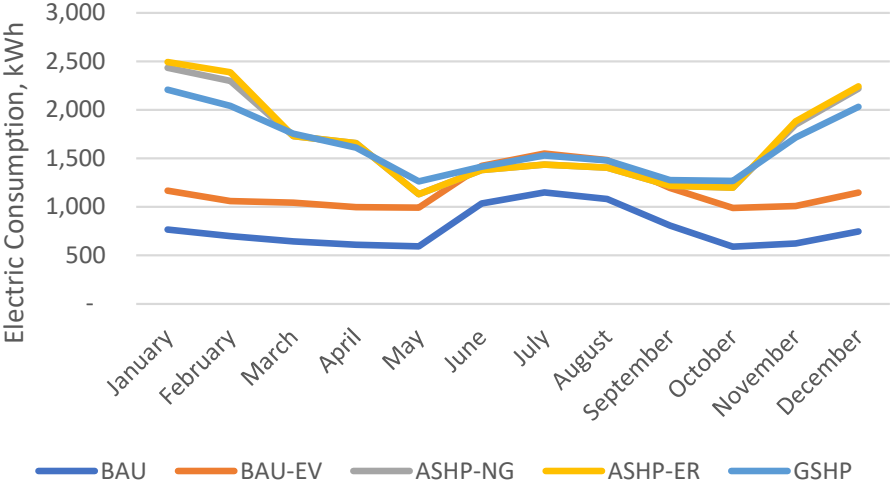
Gas Use

Monthly Natural Gas Consumption, BAU and ASHP-NG

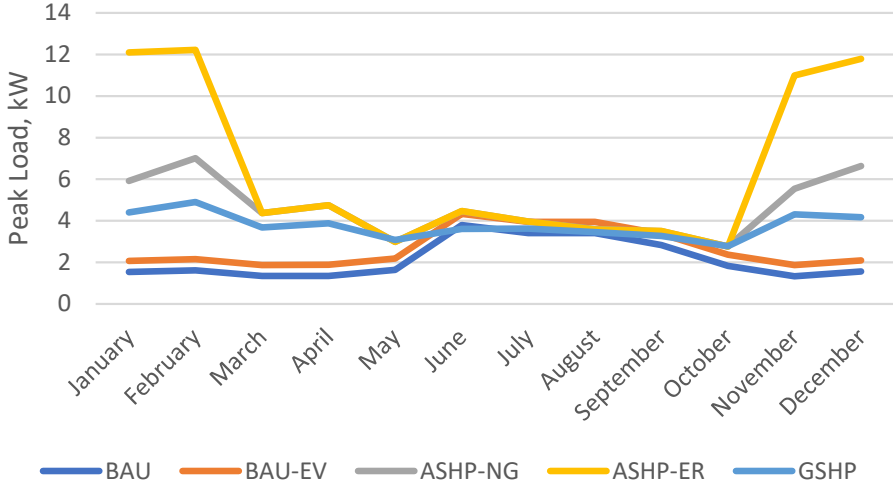


Electric Use

Monthly Electric Consumption by Home Type



Monthly Electric Peaks by Home Type



Connection Costs

Not all home types/concentration profiles shown here

BAU Home:

- Minimal Impact: \$2,095
- Concentrated Greenfield: \$12,046

ASHP-NG:

- Minimal Impact: \$2,084
- Concentrated Greenfield: \$15,175

ASHP-ER:

- Minimal Impact: \$817
- Concentrated Greenfield: \$18,735

Annual Customer Bills

Assume TMY3 weather and current rates

BAU: \$2,128

BAU-EV: \$2,756

ASHP-NG: \$2,888

ASHP-ER: \$2,783

GSHP: \$2,727

Revenue Requirements

When revenue exceeds revenue requirement, result is downward rate pressure

Home Type	Concentration Profile	Combined Revenue Per Home	Combined Revenue Requirement Per Home	Difference
BAU	MI	\$2,127.61	\$970.26	\$1,157.35
BAU	SA	\$2,127.61	\$1,139.51	\$988.10
BAU	CG	\$2,127.61	\$1,605.10	\$522.52
BAU-EV	MI	\$2,755.64	\$1,191.53	\$1,564.11
BAU-EV	SA	\$2,755.64	\$1,379.95	\$1,375.69
BAU-EV	CG	\$2,755.64	\$1,881.47	\$874.17
ASHP-NG	MI	\$2,888.10	\$1,084.27	\$1,803.83
ASHP-NG	SA	\$2,888.10	\$1,367.79	\$1,520.31
ASHP-NG	CG	\$2,888.10	\$1,923.72	\$964.38
ASHP-ER	MI	\$2,783.02	\$998.68	\$1,784.35
ASHP-ER	SA	\$2,783.02	\$1,432.33	\$1,350.70
ASHP-ER	CG	\$2,783.02	\$2,245.65	\$537.37
GSHP	MI	\$2,727.04	\$972.01	\$1,755.02
GSHP	SA	\$2,727.04	\$1,145.90	\$1,581.14
GSHP	CG	\$2,727.04	\$1,472.03	\$1,255.01



HEAT SAVERS MODE STUDY

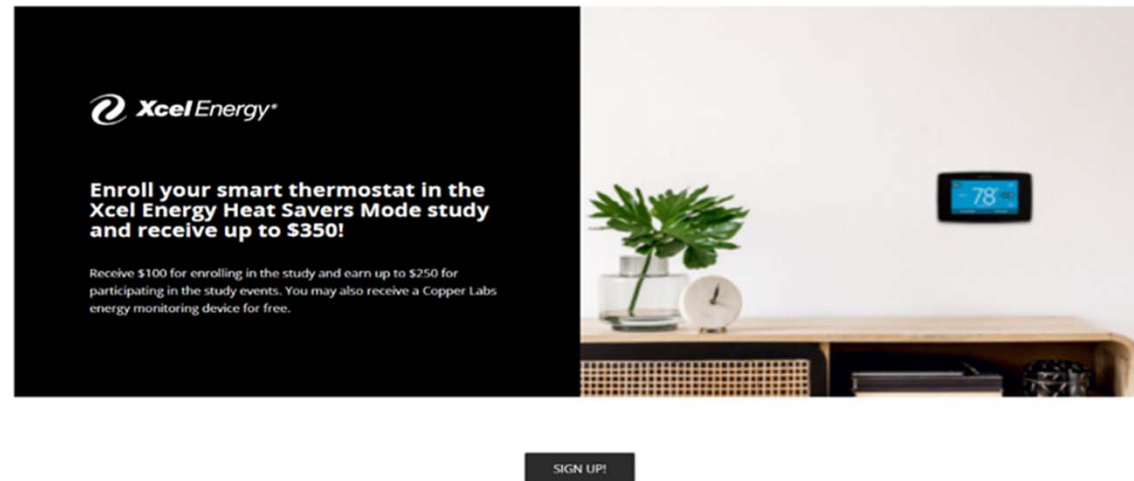
Ryan Bruers, Kevin Scott



Study Objective

- How much natural gas could homes save during an event?
- Create a program like AC Rewards for winter gas demand
- Use existing vendor to curtail usage during high demand periods
 - 6-9am
 - Coldest days

sen|si Connect
to Comfort



Xcel Energy

Enroll your smart thermostat in the Xcel Energy Heat Savers Mode study and receive up to \$350!

Receive \$100 for enrolling in the study and earn up to \$250 for participating in the study events. You may also receive a Copper Labs energy monitoring device for free.

SIGN UP!

The advertisement features a black background on the left with white text. On the right, there is a photograph of a smart thermostat mounted on a wall, displaying the number 78. Below the thermostat is a wooden console table with a potted plant and a clock.

Study Difficulties

- Struggles with low participation
- Metering problems
- Technology issues
- Multiple Thermostats
- Temperatures were warmer than normal



Standard Heat Savers Mode

This study option provides a \$50 participation incentive. You must participate in at least 50% of all control days to earn the incentive. You will also be eligible for either a free smart thermostat or a \$100 enrollment incentive.

- Max Temp Offset: 4 F
- Max Event Duration: 3 hours
- Max # of Events: 10

UP TO \$150 TOTAL INCENTIVE [!\[\]\(fa6f3af6bfa46c5d4a2d362681095beb_img.jpg\)](#)



Advanced Heat Savers Mode

With this study option you can earn up to a \$250 participation incentive, based on the prorated percent of the control events you participate in. You will also be eligible for either a free smart thermostat or a \$100 enrollment incentive.

- Max Temp Offset: 4 F
- Max Event Duration: 6 hours
- Max # of Events: 15

UP TO \$350 TOTAL INCENTIVE [!\[\]\(d8ab143e904bfa3467271eec5af75a9b_img.jpg\)](#)

Lessons Learned & Next Steps

- Gas DR is evolving
- Communication is key
- Some potential to shift gas usage
- Extending study into 2022-2023 season



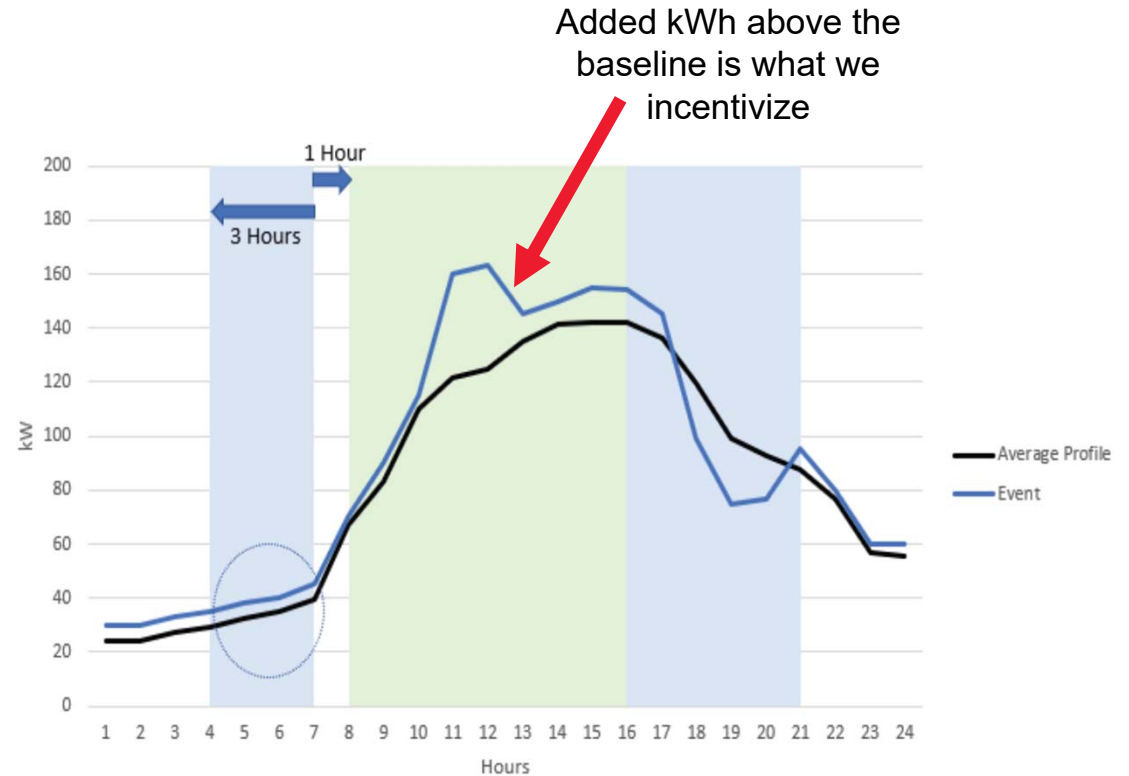
EXCESS SUPPLY PARTNERS

Kevin Scott



Excess Supply Partners - Overview

- Renewable curtailment occurs frequently in both CO & MN
- Curtailment occurs due to two primary reasons:
 - System Balancing
 - Transmission Congestion
- When curtailment occurs due to balancing, we have excess generation and not enough demand
- Ask customers to increase load at certain times
- Incentivize added kWh





INCOME QUALIFIED BE PILOT

Kristin May | Strategic Segment Team Lead



Pilot Program

Launched in January 2022

- **Funds the full cost of heat pump technologies in our Income Qualified (IQ) portfolio**
 - Multifamily Weatherization
 - Non-Profit Energy Efficiency (NEEP)
 - Single-Family Weatherization
- **Studies post-installation bill impacts to identify best practices for minimizing energy burden**
- **Assesses various scenarios for heat pump installation**
 - Heat pumps with gas back up
 - Full system replacements
 - Heat pumps with electric resistance back up
 - Heat pumps with boiler back up

Installation Analysis

Quality Install

- Whole system quality installation verification
 - equipment placement
 - defrost cycles
 - sizing review
 - system charge
 - change over temps
 - control settings
- Intent to develop M&V processes for each project

Utility Data Analysis

- 12 months of pre
- 12 months of post
- Provide comparative analysis to show cost and energy consumption change by end uses
- Analysis on the effects of utility allowances for tax credited MF housing providers

Multifamily Project Pipeline LJM0

Location	Units	Existing Heating Type	Proposed Heating Type	Existing DHW Type	Proposed DHW Type	Fuel Source	Existing Cooling	CSG Credits
Boulder	6	Central Boiler	MSHP	NG Central boiler side arm	N/A	NG	No	Y
Windsor	37	Furnace	ASHP	Electric (individual)	N/A	NG	No	Y
Denver	6	Electric resistance	MSHP	Electric (individual)	N/A	Electric	No	Y
Denver	12	Furnace	ASHP	NG individual tanks	Electric resistance	NG	No	Y

2022 filed budget: \$416,000

2022 committed spend: \$556,558 (two projects)

Slide 39

LJM0

Add total costs (budget per program)

Add statement that says 4 MF projects will likely spend full budget in 2022 to show progress and context.

Lovelady, Jeremy M, 2022-11-08T19:36:36.429

Non-Profit Project Pipeline

Location	Existing Heating Type	Proposed Heating Type	Existing DHW Type	Proposed DHW Type	Fuel Source	Existing Cooling	CSG Credits
Denver	RTU	Dual Fuel RTUs	Gas	N/A	NG	Yes	Y
Alamosa	Furnace	ASHP	Gas	Gas (tankless)	NG	No	Y
Leadville	Electric Resistance	MSHP	Gas	Gas (Boiler w/side arm)	NG/Electric	No	Y
Littleton	Furnace	ASHP	Gas	n/a	NG	Yes	Y
Lakewood	Furnace	ASHP	Gas	n/a	NG	Yes	Y

2022 filed budget: \$106,000

2022 committed spend: \$52,376 (two projects)

Single-Family Project Pipeline

Location	Units	Existing Heating Type	Proposed Heating Type	Existing DHW Type	Proposed DHW Type	Fuel Source	Existing Cooling	CSG Credits
Rifle	1	Boiler	ASHP and MSHP (x2)	Gas	HPWH	NG	Window Unit / Rooftop Unit	Y
Summit County	1	Electric Resistance	MSHP (x2)	Electric	HPWH	Electric	No	Y
San Luis Valley	1	Furnace	ASHP	Gas	HPWH	NG	No	Y
Georgetown	1	Electric Resistance	MSHP (x2)	Electric	N/A	Electric	No	Y
Georgetown 2	1	Electric Resistance	MSHP (x2)	Electric	HPWH	Electric	No	Y
Alma	13	Electric Resistance	MSHP (X4)	Electric	HPWH	Electric	No	Y
Boulder	6	Boiler/Electric Resistance	MSHP	Propane/Electric	HPWH	Propane/Electric	No	Y

2022 filed budget: \$361,000

2022 expected spend: \$377,364

Pilot Program

- Plan to continue into 2023
- Increased emphasis on educating organizations and contractors
- Evaluate completed 2022 projects

Share your product ideas

www.xcelenergy.com/productideas



DSM Regulatory Contacts

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