

Oil and Gas Production

Energy Efficiency Opportunities and Utility Programs

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Speakers:

Neil Kolwey, SWEEP

Adam Selvin, CLEAResult

Mat Charney, CLEAResult



COLORADO
Energy Office

Energy Efficiency, Electrification, & Policy Assessment for Colorado's Oil and Gas Industry

The Colorado Energy Office contracted with SWEEP to determine:

- What are the opportunities for energy efficiency and electrification in this industry?
- What are utilities doing to promote energy efficiency and electrification?
- What state and local policies are requiring/encouraging more electrification technologies?

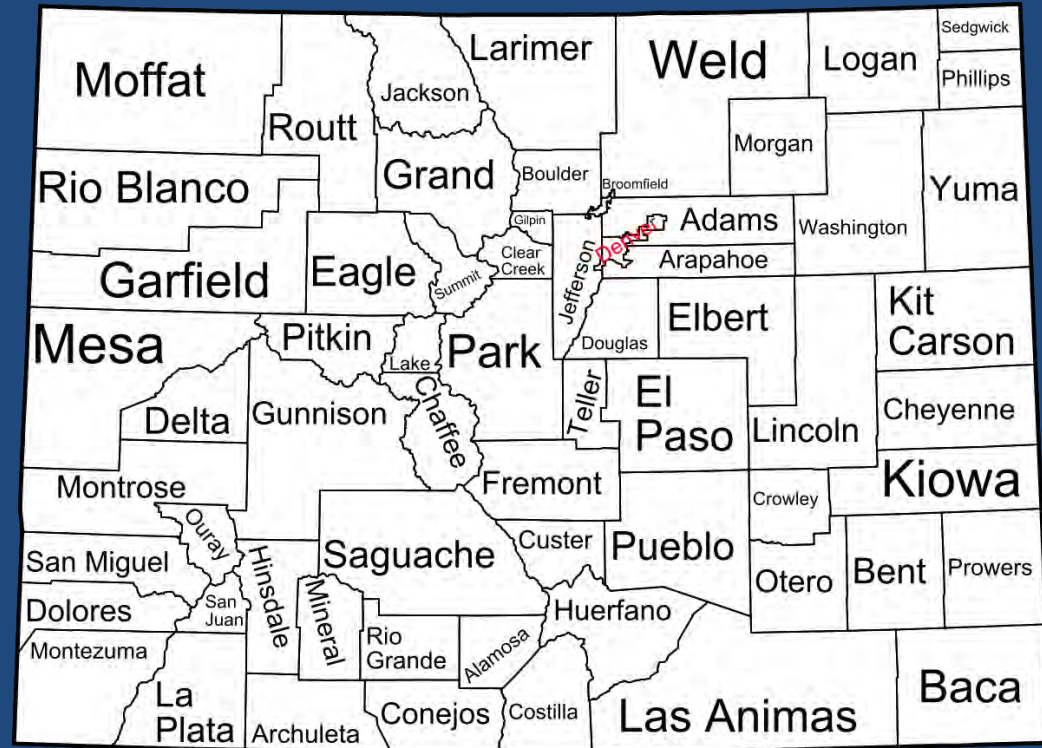


Overview of Presentations

- Neil – Summary of Colorado utility survey responses re: electrification and energy efficiency
- Adam – Utility EE programs to serve oil and gas industry
- Mat – Example of successful utility program, EE projects implemented and benefits

Colorado Oil and Gas Production

County	Total natural gas production in 2018 (mcf)	Total oil production in 2018 (bbl)
WELD	799,447,344	154,969,228
ADAMS	7,567,328	3,478,827
ARAPAHOE	4,762,348	2,320,015
GARFIELD	495,033,611	1,459,041
RIO BLANCO	51,267,348	3,770,077
MESA	61,683,821	164,889
LA PLATA	295,078,977	16,266
LAS ANIMAS	57,307,735	0



Colorado Utility Survey


County	Electric Utilities
WELD	United Power, Xcel Energy, Morgan County REA, Poudre Valley REA
ADAMS	Xcel, United Power, Morgan County
ARAPAHOE	Xcel
GARFIELD	Xcel, Grand Valley Power
RIO BLANCO	White River Power
MESA	Grand Valley Power
LA PLATA	La Plata Electric
LAS ANIMAS	San Isabel Electric

- **Survey Questions**
- Are most oil and gas production sites in your area grid-connected?
- Do you offer EE incentives/programs?
- Do you offer any incentives for electric compressors?



Grid-Connected?

- All 8 CO utilities surveyed said most of their oil and gas production sites were grid-connected;
- CDPHE survey (2019) of 5500 production sites in Colorado: only ~20% of sites connected to electricity grid



EE Programs and Incentives

- **Tri-State incentives:**
- Up to \$6800 for VSDs on fans and pumps (prescriptive)
- **Xcel Energy** programs/incentives:
- Prescriptive for VSDs on fans and pumps < 200 hp; Custom incentives for > 200 hp

Electric Compressor Incentives?





Energy Efficiency and Electrification Best Practices for Oil and Gas Production

Neil Kolwey,
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Energy Efficiency Programing in Oil & Gas

Adam Selvin- Market Approach Director Commercial and Industrial

Energy Efficiency Programing in Oil & Gas

- Designed to help decrease annual energy consumption by providing an incentive to invest in energy efficiency measures
 - Environmental benefits
 - Reduced greenhouse gas emissions
 - Economic benefits
 - Reduced operating costs make businesses more profitable
 - Utility benefits
 - Reduce or maintain the overall system electric demand reduces the need to invest in additional generation and transmission assets

Energy Efficiency Programing in Oil & Gas

- Consultative programing
 - Oil fields are expensive water processing systems
 - 95-99% water cut rates
 - Field operators don't speak energy
 - Many operators are held to energy cost metrics and need help controlling and reducing costs
 - Oil Fields are frequently changing and evolving leaving behind the opportunity to improve performance
 - System centralization, overall pumping efficiency
 - Trust is a critical project milestone



Energy Efficiency Programing in Oil & Gas

- Savings platforms
 - Prescriptive: Fast and simple measure rebates
 - Custom: Calculated incentives based on annual energy savings
 - Retro-commissioning: Incentives for improving a systems overall operating efficiency
 - Strategic Energy Management: Operationalize energy management



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Xcel Energy – NM Oil & Gas Campaign

Mat Charney – Program Manager

Xcel Energy Oil & Gas Campaign Engagement Strategy

- At the beginning of 2017 CLEAResult began a focused energy efficiency outreach program to Xcel Energy New Mexico customers.
 - Utilizing existing experience and expertise, specific Oil & Gas measures and opportunities were identified.
 - **Variable speed drives**
 - Over 200hp – Custom Analysis
 - Under 200hp- Prescriptive
 - Pump off controllers
 - High efficiency pumping system well conversions
 - Process optimization
 - Pipeline upsizing and optimization
 - Water shut-off
 - Optimizing motors, pumps and compressors
 - Pump replacements



Xcel Energy Oil & Gas Campaign Engagement Strategy

- **Drive Incentives: ~90% of program**
 - **Custom:**
 - Over 200hp requires custom analysis and pre-approval: **\$400/kW**
 - **Prescriptive:**
 - Under 200hp requires final invoices and field verification:



Motor hp	Prescriptive rebate levels
1	\$400
1.5	\$500
2	\$500
3	\$600
5	\$900
7.5	\$1,130
10	\$1,350
15	\$1,880
20	\$2,300
25	\$2,750
30	\$3,200
40	\$4,000
50	\$4,900
60	\$5,600
75	\$6,600
100	\$7,700
125	\$8,600
150	\$9,500
200	\$10,500
Larger than 200	Requires custom evaluation and preapproval

Xcel Energy Oil & Gas Campaign Engagement Strategy

- CLEARResult Engineers and Program Consultants worked closely with XCEL Energy Key Account Managers (KAM) to develop program strategies.
 - Developed program buy-in through education of potential energy efficiency projects and understanding of unique customer non-energy efficiency concerns.
 - Developed a 'Top 30' customer list.
 - Coordinated with each KAM and utilized existing CLEARResult customer contacts to identify decision makers and energy efficiency champions at targeted customers.
 - Set up meetings to understand unique business models, operating strategies, review programs and identify opportunities.
 - Coordinated field visits and data collection.
 - Prepared custom project analysis and developed 5-year Energy Efficiency Strategies to document potential projects and savings.
 - Joint Energy Efficiency Plans (JEEPs)
 - Identified and educated active trade allies to simplify equipment SPEC, quote and invoicing collection.

Xcel Oil & Gas Campaign Customers



- **Producers:**

- OXY
- XTO Energy
- Chevron
- Devon
- Conoco Phillips
- Apache
- COG
- EOG
- Marathon (BOP)
- Mack
- Devon
- Cimarex
- Mewbourne
- WPX Energy
- Matador
- Legacy Reserves
- Linn Operating
- Agave
- BTA Operating
- Harvard
- Targa
- Zoquillo



- **Mid-streams/Pipelines:**

- DCP Midstream
- Lucid
- Sendero
- Enterprise
- Matador
- NGL (Mesquite)
- Plains



- **Vendors:**

- EPIC
- TankLogixs
- Schlumberger
- Viking
- ABB
- Alpha Energy Solutions

Xcel Energy Oil & Gas Program- Customer kWh Savings

Sum of Customer kWh	2017	2018	2019	2020	Grand Total
NM - Custom Efficiency - Motors	2,043,612	284,859	1,379,473		3,707,944
NM - Motors and Drives – Prescriptive	2,738,473	9,199,661	9,731,620	4,953,225	26,622,979
Grand Total	4,782,085	9,484,520	11,111,093	4,953,225	30,330,923

- 22 customers received rebates
- 135 Projects
 - 490+ Prescriptive Drives
 - 6 Custom Drives (200-1650hp)

Xcel Oil & Gas Projects- Producer Examples

- Prescriptive VFDs
 - VRUs (Vapor Recovery Units)
 - 5hp – 150hp
 - Fluid Pumps (CTBs and SWDs)
 - 25hp – 200hp
 - Custom*
 - 4 - Jet Pump (Hydraulic) to ESP (Electric Submersible) 200hp
 - Savings per VFD: 84 kW
 - Rebate per VFD: \$33,600
 - SWD (Saltwater Disposal) injection pumps
 - Savings per VFD: 95 kW
 - Rebate per VFD: \$38,000
- *individual sites savings and rebate vary based on volume and flow

- Customer Example:
 - Installed 10 new CTBs in 2019
 - VFDs Per site:
 - 2- 150hp
 - 1- 75hp
 - 3- 7.5hp
 - Rebate per site:
 - \$28,990



Xcel Oil & Gas Projects- Midstream/Pipeline Examples

- Prescriptive VFDs
 - VRUs (Vapor Recovery Units)
 - 10-150hp
 - Fluid Pumps (SWDs)
 - 5-200hp

- Custom*
 - Acid Gas Compressors
 - 1650 hp
 - Savings- 159.2 kW
 - Rebate: \$63,660
 - *individual sites savings and rebate vary based on flow

- Customer Example:
 - Completed new Midstream in 2018
 - 6- 50hp
 - 5- 40hp
 - 18- 30hp
 - Rebate per site:
 - \$107,000



Poll Question

- Are there opportunities/will your utility work to get more production sites connected to the grid, when the economy starts to recover?
- Raise your hand if you would like to comment

Comments or Questions?




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