



An Energy Action Plan for Arapahoe County

July 2020



PARTNERS IN ENERGY
An Xcel Energy Community Collaboration

ACKNOWLEDGEMENTS

Thank you to the following individuals who contributed many hours of service to developing this Energy Action Plan.

The content of this plan is derived from a series of planning workshops hosted by Xcel Energy's Partners in Energy. Xcel Energy is the main electric and gas utility serving Arapahoe County Municipal Facilities. Partners in Energy is a two-year collaboration to develop and implement a community's energy goals. For more information about the planning workshops, see Appendix C: Xcel Energy's Partners in Energy Planning Process.

Arapahoe County Energy Action Team

Dawn Smith	Energy Program Manager, FFM
Lindsey Miller	Business Analyst, Open Spaces
Bernie Tuchinski	Building Services Manager, FFM
Michael Winkleblack	HVAC/R Supervisor, FFM
Randy Bonel	Building Automation Specialist, FFM
Laura Mazur	Strategy Analyst, Strategy & Performance
Matt Bixenman	Fairgrounds Site Manager, Open Spaces
Glen Poole	Operations Manager, Open Spaces
Kelsea Dombrovski	Planner II, Public Works
Cathleen Valencia	CIP Program Manager, Public Works
Leslye Taylor	Business Analyst II, Public Works
Robin Molliconi	Admin. Supervisor, Assessor
Tim Aston	CSU Extension Director, Community Resources
Dalton Jones	Manager of Facility Operations, FFM
Ken Morris	Deputy Director, FFM
Keith Jones	Facility Systems Manager, FFM
Chris Morgan	Admin. Services Division Manager, FFM
Lisa Fedak	Internal Communications Business Partner, Communication, & Admin. Services Specialist
Karen Thompsen	Paralegal, County Attorney
Sarah Vidars	CSU Extension Horticulture, Community Resources

Xcel Energy Partners in Energy Team

Becca Stock	Lead Community Co-Facilitator
Zach Taylor	Lead Community Co-Facilitator
Channing Evans	Communications Consultant
Michelle Beaudoin	Colorado Community Support (Residential)
Tom Henley	Colorado Community Relations Manager
David Hueser	Colorado Community Support (Commercial)
Susan Davis	Account Manager



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Arapahoe County Energy Action Plan

About this Plan

Arapahoe County and CSU Extension Staff have worked to develop this energy action plan to affirm the County's commitment to energy conservation and cost reduction within County facilities. Xcel Energy's Partners in Energy facilitated a series of workshops with the Energy Action Team, in the spring and summer of 2020, to develop this plan which outlines tangible steps the County will take to reach its energy efficiency goals. This plan also marks the first step toward an overarching sustainability plan for the County which will cover additional focuses such as water, waste, and transportation.

Our Vision & Goal

Vision: Improve County facilities' resource conservation through a workplace culture focused on sustainability and economics.

Goal: Decrease overall energy use of County buildings in 2022 by 6% below the County's 2019 baseline and foster a culture of sustainability in County operations.

Starting Point: 2019 Municipal Facility Snapshot



17 GWh annual
electricity use



43 facilities



\$1.9 million annual
energy charges



4 GWh annual
renewable generation



More than **1.5
million** square feet



510,000 therms
annual natural gas use



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Our Focus Areas

To move toward its goals, Arapahoe County’s Energy Action Team identified strategic initiatives and targets for three important focus areas. These focus areas and strategic initiatives are the working elements of the Energy Action Plan and will generate concrete actions and impacts.

Energy Efficiency

- ✓ Develop and use an opportunity matrix to prioritize energy efficiency projects to select and implement successful projects.
- ✓ Incorporate additional guidance on energy efficiency considerations into the County’s existing Design Specifications.
- ✓ Provide energy efficiency training for Open Space Staff.

Demand Management

- ✓ Provide training to technicians about what electricity demand is, how it is calculated, and how their actions can impact charged demand.
- ✓ Monitor for and address anomalous demand incidents.
- ✓ Develop and implement best practices for reducing typical building demand.
- ✓ Identify equipment upgrades that can decrease facility demand.

Employee Engagement

- ✓ Provide employee training on energy issues once per quarter.
- ✓ Organize friendly interdepartmental energy saving competitions quarterly.
- ✓ Celebrate energy and cost saving successes by sharing them quarterly with staff quarterly.
- ✓ Develop and share building dashboards twice a year to keep building occupants informed.

Our Team Targets



Decrease overall energy use in County buildings in 2021, by **5% below** the County’s 2019 baseline, through energy efficiency projects.



Reduce the electricity demand from all County facilities, by **6% below** the 2019 baseline, in 2021.



Engage 10% of Arapahoe County employees through energy outreach activities in 2021, with **15%** of those engaged taking an energy efficiency action.



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INTRODUCTION



Over the past two years Arapahoe County has been working to advance sustainability at the County through the Arapahoe County Sustainability Initiative. By partnering with Xcel Energy's Partners in Energy to develop this Energy Action Plan, we were able to establish goals and actionable strategies to improve the sustainability of the County's energy use as well as to develop avenues to document and communicate the success of this initiative.

Our Engagement & Outreach Process

The creation of this Energy Action Plan was a 6-month process (including data analysis) to characterize the energy use of Arapahoe County facilities, identify our energy-related goals, and develop actionable strategies to guide change toward our energy future. Starting in February 2020, the Energy Action Plan was driven by a series of two virtual planning workshops with a planning team comprised of an interdepartmental group of Arapahoe County Employees in collaboration with Xcel Energy's Partners in Energy. See Appendix C: Xcel Energy's Partners in Energy Planning Process for more information about the planning process and Xcel Energy Partners in Energy.



Why We Want An Energy Action Plan

In April 2018, the County Energy Program Manager formed the Arapahoe County Sustainability Initiative to lead efforts promoting awareness, encouragement, and education to County employees related to the following four utility categories 1) Indoor water use, 2) Landscape water, 3) Energy, and 4) Waste Diversion as shown in Figure 1. This initiative included recruiting volunteer ambassadors to encourage sustainability in these four areas through awareness, encouragement, and education. The ambassadors for 2020 are shown in the tables below. These ambassadors are responsible for sharing sustainability information with employees and organizing friendly employee competitions.



Figure 1: Arapahoe County Sustainability Initiative

This Energy Action Plan supports activities in the energy category by identifying actions the County can take to improve energy efficiency and promote awareness of energy use with County employees. The plan will build on the existing sustainability initiative framework, including quarterly employee communications and these sustainability ambassadors.

All
Dawn Smith Kelsea Dombrovski Board of County Commissioners

Energy
Leslye Taylor

Indoor Water
Lindsey Miller Lisa Knerr

Landscape Water
Andrew Estes Cathleen Valencia Dawna Roberts Lucinda Greene Molly Orkid-Larson

Waste Diversion
Erika Sorensen Karen Thompsen Lisa Knerr Molly Orkid-Larson Robin Mollconi Sandy Bottoms Theresa Johnson Beth Bonczek

WHERE WE ARE NOW



An integral part of the Partners in Energy planning process is reviewing historic energy data that informs our organization's energy baseline. Data from the County's EnergyCAP on annual energy use of all County facilities and data from Xcel Energy on participation counts and utility energy conservation program savings was used to present energy use and highlight priority buildings that should be focused on during implementation. A summary of County facility energy use from County energy tracking is outlined in Figure 2. A glossary of terms is available in Appendix D to assist with abbreviations and definitions.

For a for a comprehensive picture of Arapahoe County's baseline energy data and Demand Side Management (DSM) program participation, see Appendix B: Baseline Energy Analysis. Additional information used in target setting by focus area can be found in the respective sections.

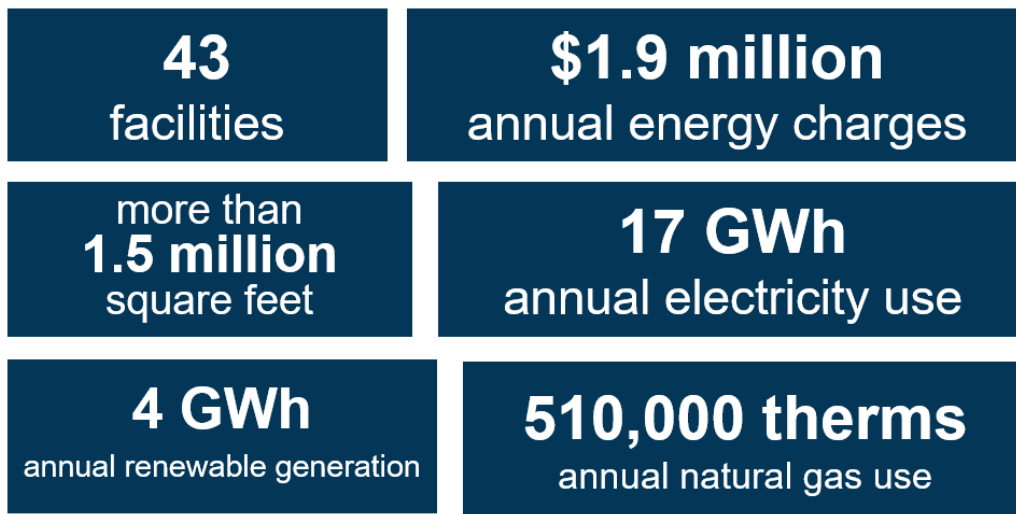


Figure 2: 2019 Municipal Facility Snapshot

WHERE WE ARE GOING



Energy Vision Statement

Through the Arapahoe County Sustainability Initiative, a County-wide sustainability vision statement was developed and approved by the County Board of County Commissioners. This statement helped guide the planning process.

Improve County facilities' resource conservation through a workplace culture focused on sustainability and economics.

Focus Areas

To achieve an organization-wide commitment to energy stewardship, the Energy Action Team identified the following focus areas around which to prioritize strategies and resources.

- **Energy Efficiency**: Reduce the overall electricity and natural gas use in buildings through equipment upgrades and employee training.
- **Demand Management**: Address the peak electricity demand in targeted facilities through controls, training, and equipment upgrade strategies.
- **Employee Engagement**: Leverage the sustainability initiative framework to share energy saving tips for employees to reduce their energy use at home and at work.

These focus areas were chosen to provide a holistic approach to energy stewardship from energy efficient buildings and equipment, to optimized building operation, to smart energy behaviors from County staff.

Goals

Based on opportunities identified during the planning process, the following short-term energy goal was identified:

Decrease overall energy use in County buildings in 2022 by 6% below the County's 2019 baseline and foster a culture of sustainability in county operations.

This goal combines the targets of the energy efficiency and employee engagement focus areas. We anticipate about 5% annual energy savings will come from energy efficiency efforts and 1% will come from behavior changes that will be the result of employee engagement strategies. While demand management strategies may have some energy efficiency benefits as well, the main impact of this focus area is cost reduction.

Strategy Summary

The strategies that will be used to reach this goal are summarized below. More details about each can be found in the corresponding focus area section.

Strategy	Lead Implementer
Energy Efficiency	
1) <u>Develop and Implement an Opportunity Matrix</u>	Dawn Smith
2) <u>Expand on Design Specifications to Include Energy Efficiency Related Guidance</u>	Keith Jones, Mike Winkleblack, and Dawn Smith
3) <u>Provide Energy Efficiency Training for Open Space Staff</u>	Matt Bixenman and Partners in Energy Implementation Team
Demand Management	
1) <u>Provide technician training</u>	Dawn Smith, Partners in Energy Implementation Team
2) <u>Monitor for and address anomalous demand incidents</u>	Dawn Smith and Randy Bonel
3) <u>Develop and implement best practices for reducing typical building demand</u>	Dawn Smith and Randy Bonel
4) <u>Identify priority equipment upgrades</u>	Dawn Smith
Employee Engagement	
1) <u>Provide employee training on energy issues once per quarter</u>	Laura Mazur, Lisa Fedak, and Tim Aston
2) <u>Employee energy competitions</u>	Dawn Smith, Laura Mazur, and Lisa Fedak
3) <u>Celebrate Successes</u>	Laura Mazur and Lisa Fedak
4) <u>Develop Building Dashboards</u>	Dawn Smith and Lisa Fedak

HOW WE ARE GOING TO GET THERE



Energy Efficiency

Strategies in this focus area target reducing total energy use of the facilities and might include installing more efficient equipment or turning off equipment when not in use.

Focus Area Baseline

To better understand the County's previous efforts in energy efficiency and inform the target setting process, total annual energy use (electricity and natural gas combined), was examined over the last 7 years and is shown in Figure 3. In this time, the County's energy use has declined by almost 15% even as new facilities have been added to its portfolio. This decrease in energy use has been dominated by improvement in electricity use reduction, which has been reduced by 20% over this time, while natural gas use has only decreased by 7%. To better understand the influences on energy use, the impact of weather on electricity and natural gas use was examined (see Appendix B: Baseline Energy Analysis for more details). It was found that natural gas use strongly correlated to weather, suggesting that most natural gas use was for space heating. This is expected in commercial spaces such as office building with limited process natural gas uses such as cooking or industrial uses. Electricity use, on the other hand, showed limited to no correlation to weather. This reflected electricity loads such as lighting, computers, and other plug loads that are not weather dependent, as well as the significant use of electric heating.

Target
Decrease overall energy use of County buildings in 2021 by 5% below the County's 2019 baseline through energy efficiency projects.

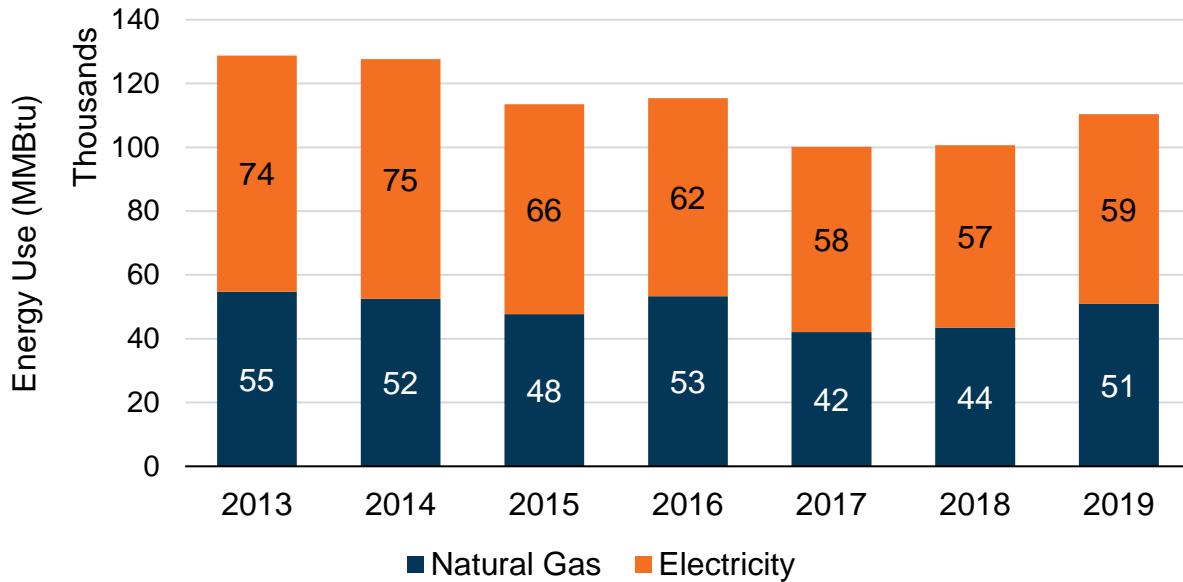


Figure 3: Total Energy Use at County Facilities 2013-2019

Figure 4 shows annual energy expense from 2013 to 2019. Over this time, energy expense was reduced by about 22%, with most of these savings coming from electricity costs. This is likely due to a combination of improvements in energy efficiency shown in Figure 3 and electricity peak demand reductions shown in Figure 6.

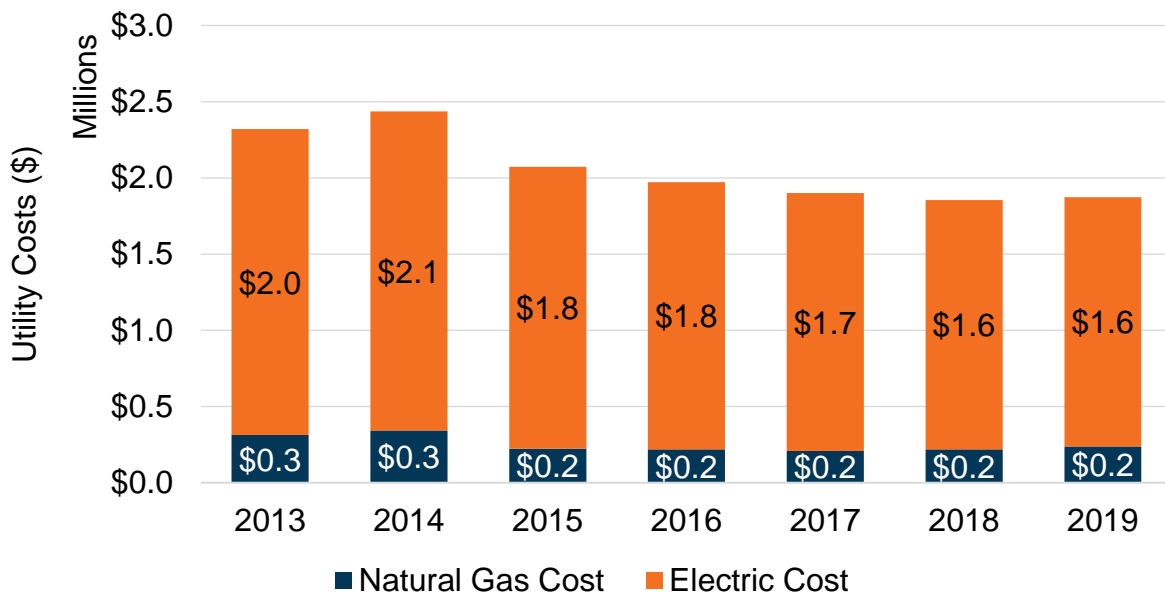


Figure 4: Annual Electricity and Natural Gas Costs for County Facilities

Focus Area Target

County stakeholders reviewed the energy use data trends, to set a target for energy efficiency improvements over the next two years. The main focus of this analysis was to look at the increase in energy use in 2019 to determine if it resulted from changes in operations that could be adjusted or if it was due to new building(s) being brought online. Several causes for this increase were determined:



1. The number of heating degree days- a measure of the amount of space heating required - increased by about 3.5% between 2018 and 2019, which likely accounts for much of the change in natural gas use.
2. The new facility accounted for less than 1% of the electricity use for the County in 2019, so it was likely not a significant contributor to the change in energy use.
3. About 3% of the increase in electricity use between 2018 and 2019 could be largely attributed to errors in Building automation system (BAS) programming that have been corrected.

Based on the above information, combined with four energy efficiency projects in process that are estimated to save the County about 350,000 kwh per year, stakeholders set a target that would challenge the County to reduce 2021 energy use to 5% below the 2019 baseline (through the strategies outlined in this plan). To achieve this target, the stakeholder group identified three strategies the group will focus on during implementation. A description and specific implementation details can be found below.

Strategy 1: Develop and Implement an Opportunity Prioritization Matrix

Develop a tracking spreadsheet to allow proposed energy efficiency projects to be screened based on project initial costs, Return on Investment (ROI), and co-benefits such as employee comfort and reduced time investment from maintenance personnel. The tracking spreadsheet will collect opportunities from all County buildings, across both Facilities and Fleet Management (FFM) and Open Spaces departments. The intent for this strategy is to help alleviate any budgeting or procedural challenges - that might get in the way of successful projects - through documenting benefits.

Desired Outcomes

Identify and implement cost-effective energy efficiency opportunities that result in annual energy savings of 5% below the 2019 baseline.

Resources/Communication Channels

Strategy lead will reach out to departments on a quarterly basis to identify new energy saving opportunities.

Roles and Responsibilities

- Strategy Lead/Co-Leads:
 - Dawn Smith
 - Maintain opportunity prioritization matrix with projects recommended by County staff.
- Supporting Parties:
 - Keith Jones
 - Support Energy Program Manager in project identification.
 - Help quantify benefits of HVAC-related opportunities.
 - Partners in Energy Implementation Team
 - Develop the structure of the prioritization matrix and work with the implementation team to fill in prioritization fields.
 - Quantify potential energy savings and co-benefits.
 - Identify and quantify potential Xcel Energy rebates the County can use to decrease project's first cost.

Timing	Action
Q4 2020	Develop spreadsheet and identify criteria needed to make project decisions (cost, ROI, others)
	Quantify and evaluate each opportunity listed
	Populate the tool with current list of opportunities
	Determine a process to keep opportunity list updated
Q1 2021	Begin to implement opportunities with quick wins
Q2 2021	Implement major projects and fill-ins (budget permitting)
Ongoing	Maintain long-range plan of efficiency projects

Potential Opportunities Include

1. Installing light-emitting diode (LED) lights
2. Identifying and addressing thermal comfort complaints
3. Installing ENERGY STAR Appliances
4. Heating, ventilation, and air conditioning (HVAC) and Lighting Re/Retro-commissioning

Strategy 2: Expand on Design Specifications to Include Energy Efficiency Related Guidance

Arapahoe County has an existing Design/Construction Standards document that facilities staff use to guide renovations and new construction projects. This strategy will focus on incorporating additional guidance on energy efficient options and practices for all energy-related building systems. This guidance will include recommendations about what efficiency targets should be specified and equipment options that allow equipment to

operate more efficiently. HVAC equipment is the primary target as HVAC upgrades are a priority for the County during fiscal year 2021 but this may expand to additional mechanical and electrical systems as appropriate.

Desired Outcomes

Incorporate edits into the existing Arapahoe County Facility Design document (to include energy efficiency best practices).

Resources/Communication Channels

- Facilities staff will be strategically engaged during the modification process.
- After the modifications are made, the revisions will be summarized so the new guidance can be adopted.

Roles and Responsibilities

- Strategy Lead/Co-Leads:
 - Keith Jones and Mike Winkleblack
 - Identify equipment and areas in Design Specifications where guidance on energy efficient options would be valuable.
 - Dawn Smith
 - Invite additional facility staff to propose additions to the Design Specifications document.
- Supporting Parties:
 - Partners in Energy Implementation Team
 - Identify areas of the existing document where additional guidance on energy efficiency best practices could be included and would be most impactful.
 - Facilitate a meeting with key mechanical and electrical staff to gather input on identified areas of opportunity.
 - Draft language and incorporate feedback into document.

Timing	Action
Q4 2020	Facilitate a meeting with key mechanical and electrical staff to gather input on identified areas of opportunity. Finalize additions for HVAC-related equipment.
2021	Complete process for remaining building systems with associated key personnel.

Strategy 3: Provide Energy Efficiency Training for Open Space Staff

The Open Space department relies on FFM for maintenance and HVAC support, while Open Space fairgrounds staff have support responsibilities for system operations during events. Open space staff do not have the proper knowledge base to operate the facilities in an energy-efficient and cost-effective manner. This strategy is intended to help open space staff feel more comfortable with how their buildings use energy and what steps they can take to help reduce the cost of operating these facilities. The training will focus

on operating Open Space buildings and facilities and will cover building controls best practices, as well as what electricity demand is, and actions staff can take to lessen the impact electric demand has on monthly bills.

Desired Outcomes

Identify and train Open Space event staff bi-annually on best practices for operating facilities in an energy-efficient and cost-effective manner.

Resources/Communication Channels

- Recorded training will be hosted on the Arapahoe Learns platform for staff to refer to and refresh, as needed.

Roles and Responsibilities

- Strategy Leads/Co-Lead:
 - Matt Bixenman
 - Identify staff who should attend.
 - Act as a contact to assist with organizing and planning the training.
 - Gather questions from attendees before the training.
 - Help develop training content.
 - Partners in Energy Implementation Team
 - Develop training materials and deliver the training.
 - Provide information about Xcel Energy programs and billing as needed.
- Supporting Party:
 - Dawn Smith
 - Help develop training materials and deliver the training.
 - Provide examples of common mistakes that can happen when hosting events.

Timing	Action
Q4 2020	Identify staff who should attend.
	Gather questions from attendees before the training.
Q1 2021	Host the training and publish the recording on the Arapahoe Learns video platform.
Q1 2022	Host the training and publish the recording on the Arapahoe Learns video platform.

Demand Management

Strategies in this focus area target controlling peak demand for electricity at larger facilities by staggering when large equipment is used. This saves the County money through lower electricity bills and reduces strain on the electrical grid by reducing the amount of electricity that must be generated at any one time.

Target
Reduce electricity peak demand from all County facilities by 6% below the 2019 baseline in 2021.

Focus Area Baseline

As shown in Figure 66, the total electrical demand over the last 7 years has been steadily decreasing. This success is the result of lighting retrofits and a concerted effort by facilities staff to identify the cause of electricity demand spikes and adjust the controls system appropriately. Some of these controls adjustments include morning warm-up to reduce reliance on electric heat and adjusting back-up chiller triggers for activation.

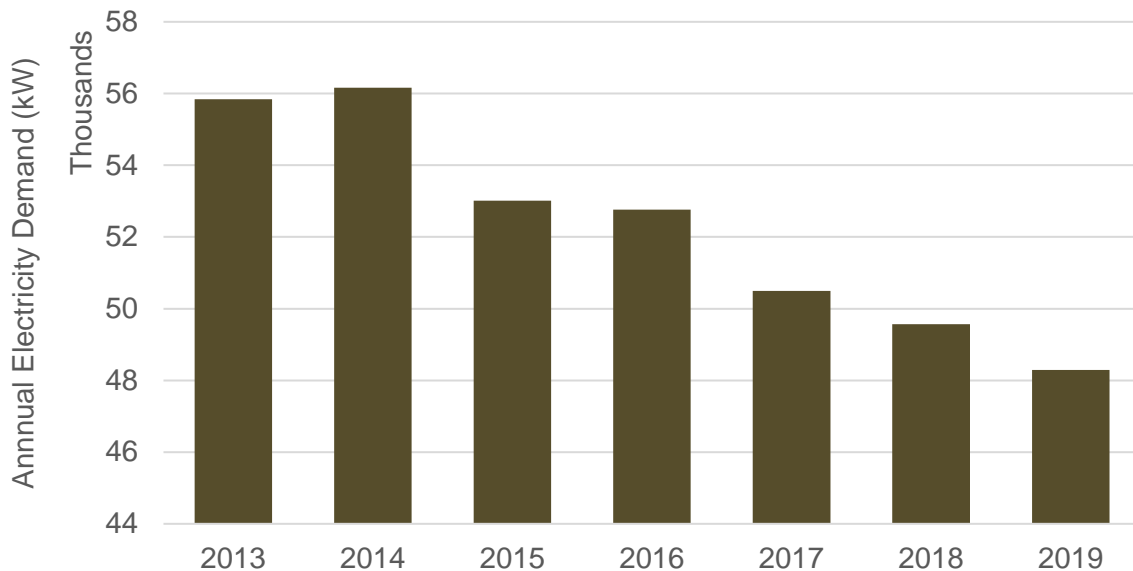


Figure 5: Total Annual Demand for County Facilities

The total annual demand was reviewed for each of the County facilities, to identify the most likely targets for demand reduction strategies. Based on this evaluation and input from the Energy Manager, 14 buildings were identified as top targets for energy demand reduction. They are shown in orange in Figure 67.

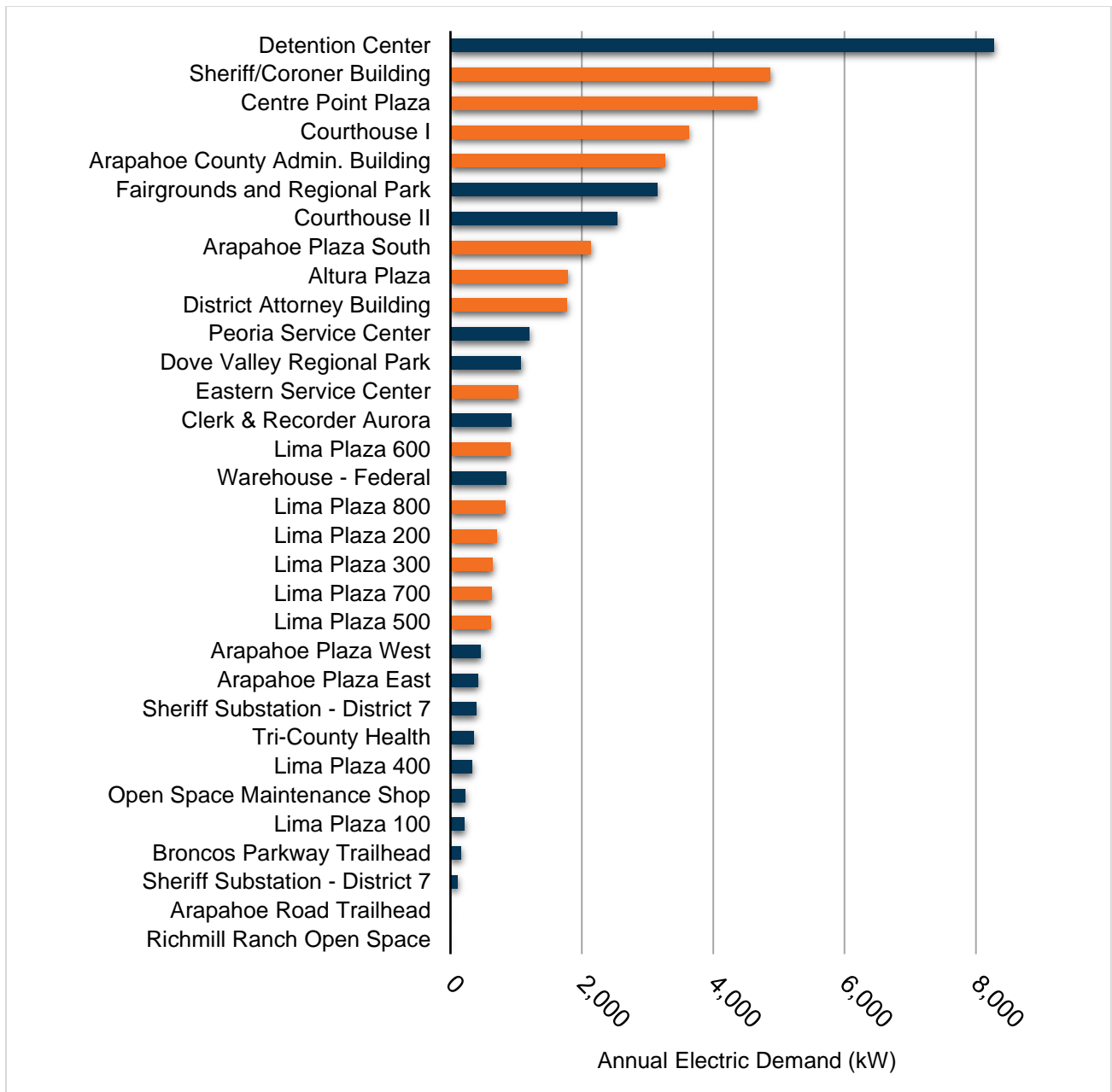


Figure 6: Annual Electricity Demand of Arapahoe County Facilities

Focus Area Target

The preliminary review of demand profiles, shown in Appendix B: Baseline Energy Analysis, suggests that annual electricity demand could be reduced by 10 kW per month at each facility. This would result in about a 5% reduction in electricity demand between 2019 and 2021. Based on this assessment, the stakeholders chose to set a goal that would stretch the County to find some additional savings - targeting a 6% demand reduction.

Strategy 1: Provide technician training.

Provide annual trainings to Arapahoe County maintenance, custodial, and HVAC technicians on what electricity demand is, how it is calculated, and how their actions can impact charged demand. This training will be repeated annually.



Desired Outcomes

Maintenance staff will understand how their typical job functions can influence the demand charges at the County and that understanding will empower them to take actions to reduce energy demand during both their daytime and nighttime activities.

Resources/Communication Channels

- The training will be a standalone meeting.
- A recording of the training will be available on Arapahoe Learns for staff who are not able to attend.

Roles and Responsibilities

- Strategy Lead/Co-Leads:
 - Dawn Smith
 - Coordinate scheduling training and identifying who should attend the training
 - Gather questions from attendees ahead of presentation
 - Partners in Energy Implementation Team
 - Develop training materials and deliver training.
- Supporting Parties:
 - Susan Davis
 - Provide information about Xcel Energy programs and billing as needed
 - Randy Bonel
 - Provide examples of how HVAC maintenance activities have adversely affected demand costs in the past.

Timing	Action
Q3 2020	Identify training audience
	Develop training materials
	Schedule training
Early Q4 2020	Deliver training
	Provide training materials to County for future trainings
Q3 2021	Schedule and deliver refresher training

Strategy 2: Monitor for and address anomalous demand incidents.

Implement BAS protocols to monitor building demand and notify Energy Manager of unusual spikes in electricity demand. The Energy Manager, and other relevant personnel, will then investigate the cause of the unusual spike and address the cause in not only in the offending building, but also other buildings that may have similar equipment or a similar controls system. This may include adjusting BAS programming and/or education of maintenance staff.

Desired Outcomes

Eliminate unusual energy use patterns that significantly increase building electricity demand charges in all County facilities.

Roles and Responsibilities

- Strategy Lead/Co-lead: Dawn/Randy
 - Dawn Smith
 - Lead investigation of root cause of energy demand spikes and identification of appropriate solution(s).
 - Document issue and identified solution for future reference, as needed, as well as ensure any adjustments to building programming are documented in building best practices developed through strategy 3.
 - Randy Bonel
 - Implement BAS programming to identify usual electricity demand spikes and notify Energy Manager.
 - Implement programming solutions in target building, as well as other buildings where the same problem may occur (as applicable).
- Supporting Parties:
 - Dalton Jones
 - Support investigation of the cause of energy demand spike and aid in identification of appropriate solution(s).
 - Partners in Energy Implementation Team
 - Support internal actions to address kW anomalies.

Timing	Action
Q3 2020	Program BAS to monitor for demand spikes and notify the Energy Manager.
Ongoing	Address anomalous demand spikes as they occur, with the goal of beginning the investigation within one week of demand spike occurrence

Strategy 3: Develop and implement best practices for reducing typical building demand.

Develop and continuously update a book of best practices for building controls and operations - to reduce typical energy demand in all County facilities.

Desired Outcome

Reduce total electricity demand and associated costs across all County facilities; and document adjustments so they become part of standard operation procedures.

Roles and Responsibilities

- Strategy Lead/Co-Leads: Dawn/Randy
 - Dawn Smith
 - Research best practices for building controls, leveraging peer-to-peer learning and other opportunities. This research may be focused on systems in a target facility.
 - Coordinate documentation of new best practices. These best practices should be applied in the target facility and other relevant facilities.
 - Randy Bonel
 - Document existing practices implemented across County facilities.
 - Coordinate implementation and documentation of new best practices.
- Supporting Parties:
 - Dalton Jones
 - Share best practices from past experiences as well as peer-to-peer or other learning opportunities.
 - Partners in Energy Implementation Team
 - Support internal actions to implement best practices for reducing building demand.

Timing	Action
Q3 2020	Document existing best practices
Q4 2020	Identify target building for demand review and large energy-using systems within the facility
Q1 2021	Review real time energy use to identify when demand is usually set. If data are available, review for summer, winter, and shoulder seasons separately
Q2 2021	Identify systems or sequences likely setting demand, and research opportunities to reduce total demand
Q3 2021	Implement identified opportunities in target facility and other relevant facilities
Q4 2021	Identify the next target facility

Priority Buildings Include

1. Sheriff/Coroner Building
2. Centre Point Plaza
3. Courthouse 1&2
4. Arapahoe County Admin. Building
5. Fairgrounds and Regional Park
6. Lima Campus 200, 300, 500, 600, 700, and 800

Strategy 4: Identify priority equipment upgrades.

Through investigations in Strategy 3, identify equipment upgrades that may be able to significantly decrease facility demand either through improved energy efficiency or improved equipment controls.

Desired Outcomes

Identify and implement equipment upgrades that will reduce building energy demand.

Roles and Responsibilities

- Strategy Lead/Co-Leads
 - Dawn Smith
 - Add identified equipment upgrades to the Opportunity Prioritization Matrix and note the potential impact on energy demand.
- Supporting Parties:
 - Partners in Energy Implementation Team
 - Support internal actions to identify priority equipment upgrades.

Timing	Action
Q3 2021	Record any equipment upgrades identified in Strategy 4 on the opportunity register
	Estimated potential demand cost savings

Strategy 1: Provide employee training on energy issues once per quarter.

Share information and best practices for reducing energy use through online energy trainings (e.g., webinars, lunch-and-learns), and newsletter articles. (See potential topics to cover for more detail).

Target Audience

- Arapahoe County’s 2,200 employees, including the Sheriff’s Office.
- State employees and Tri-county Health employees that occupy courthouses, Plaza West, and the Probation Buildings.

Desired Outcomes

- Completion of energy trainings hosted through Arapahoe Learns
- Increase in sustainability website clicks

Resources/Communication Channels

- Arapahoe Learns
- Quarterly Communication Meetings

Roles and Responsibilities

- Strategy Lead/Co-Leads:
 - Laura Mazur
 - Identify opportunities to share content through Arapahoe Learns
 - Track attendance and newsletter opens
 - Lisa Fedak
 - Help develop appropriate newsletter and sustainability page content
 - Tim Aston
 - Coordinate with sustainability leaders to identify topics of interest and prioritize for training.
 - Coordinate with Sarah Vidars to develop Sustainability page and other web content (e.g., videos)
- Supporting Parties:
 - Andy Cornell
 - Support identification of priorities and appropriate communication channels.
 - Partners in Energy Implementation Team
 - Support development of training and outreach materials.

Timing	Action
Q3 2020	Work with sustainability leaders to identify topics of interest.
	Schedule webinars, and identify opportunities through Arapahoe Learns
Q4 2020	Develop content
	Hold webinar, including a call to action
	Provide mechanism for feedback

Potential Topics Include

1. Approachable and easy changes employees can make at their desk or in common spaces
2. Success stories from inside the County (e.g., Human Services changed X, Y, and Z and it saved this much energy and money)
3. Educate employees about how commercial HVAC systems differ from home-heating/cooling - is not constantly "on" but ventilation is
4. Improve employee awareness of ways to improve personal comfort levels without adjustment to HVAC system settings (e.g., don't sit directly in sunlight, under air diffuser, near exterior walls)
5. Reduce extra personal equipment (e.g., personal fridges and microwaves, electric blankets)
6. Comparison to home/personal consumption
7. Understanding your home energy bill and how to keep energy costs low.

Strategy 2: Employee energy competitions.

Organize friendly interdepartmental competitions quarterly based on the topic(s) presented in Strategy 1.

Target Audience

Arapahoe County's 2,200 employees, including the Sheriff's Office.

Desired Outcomes

Arapahoe County staff take actions to reduce their energy use and work together to building a culture of sustainability.



Resources/Communication Channels

- DIY energy audits (checking out load readers, thermometers, etc.)
 - "How-to" checklist for DIY energy audits
- Incentives (conservation kits)

Roles and Responsibilities

- Strategy Lead/Co-Leads:
 - Dawn Smith
 - Identify desired energy actions that will provide the structure for the competitions.
 - Lisa Fedak
 - Lead employee outreach and communication
 - Laura Mazur
 - Work with Dawn to identify appropriate metrics and tracking for the competition.

- Supporting Parties
 - Tim Aston
 - Support competition activities as needed.
 - Partners in Energy Implementation team
 - Assist in the development of co-branded materials required for competition.

Timing	Action
Q1 2021	Develop competition in conjunction with materials for webinar in Strategy 1
	Coordinate team leaders for each department
Q2 2021	Share competition details
	Monitor progress
Q3 2021	Share results via Strategy 3

Potential Competitions Include

- Personal appliances competition (e.g., mini-fridges, coffee makers) with the following awards:
 - Highest percentage of offices without any appliances
 - Biggest change in percentage of offices without any appliances
- Take efficiency home competition - with the following awards:
 - Percentage of employees who took an energy efficiency action at home (e.g., changed light bulbs, installed weather stripping, participated in Home Energy Squad)

Strategy 3: Celebrate Successes.

Leverage quarterly communications pieces to share outcomes and successes in all focus areas.

Target Audience

Arapahoe County’s 2,200 employees, including the Sheriff’s Office.

Desired Outcomes

Develop engaging content for communications pieces and gather meaningful employee feedback without survey fatigue.

Resources/Communication Channels

- Communications survey using a centralized survey mechanism such as: survey gizmo, survey monkey, Qualtrics (campus uses)
- Quarterly Communications Meeting
- AC Weekly
- Sustainability Page
- Piggyback on current opportunities
- Drivers to existing pages
 - Newsletter

- Short videos for “blog posts” on website

Roles and Responsibilities

- Strategy Lead/Co-Leads:
 - Laura Mazur
 - Develop feedback loop and metrics.
 - Lisa Fedak
 - Design communication templates.
- Supporting Parties
 - Chris Morgan
 - Create centralized survey mechanism.
 - Sarah Vidars
 - Build a sustainability library for CSU Extension and share with County staff, as appropriate.

Timing	Action
Q1 2021	Develop communications piece template
Q2 2021	Gather content from strategy leads
Q3 2021	Develop and share communications piece
	Use preferred feedback channels to provide an avenue for feedback/discussion, to build culture of sustainability

Strategy 4: Develop Building Dashboards.

Building dashboards are short reports on building energy use and cost that are provided to Department Leaders. For this reason, the content of the building dashboard will be designed so staff less familiar with energy terminology can interpret and appreciate the dashboards. The building dashboards are intended to keep departments informed about energy use and cost on a bi-annual basis. By keeping staff informed, the occupants are empowered and encouraged to adopt energy efficiency best practices and identify any additional actions they or the County could take to keep energy costs low. To keep dashboards approachable to all staff, they will make use of visual aids, interpretative notes, definitions, and equivalent calculations.

Target Audience

Department Leaders

Desired Outcomes

Develop and distribute building dashboards for all County facilities that are regularly occupied by staff.

Resources/Communication Channels

- Sustainability Page
- Email distribution to Department Leaders

Roles and Responsibilities

- Strategy Lead/Co-Leads:
 - Dawn Smith
 - Co-create the layout of the building dashboards.
 - Obtain energy data by building to update dashboards bi-annually.
 - Lisa Fedak
 - Co-create the layout of the building dashboards, with an eye toward non-technical audience.
 - Determine the best ways to distribute and market building dashboards so they are valuable to and read by staff.
- Supporting Parties
 - Partners in Energy Implementation Team
 - Assist in the development of building dashboard format and contents.
 - Populate dashboards with any data provided by Xcel Energy.

Timing	Action
Q4 2020	Develop and finalize dashboard template
Q1 2021	Distribute first round of dashboards to Department Leaders with year-end results
Q3 2021	Distribute second round of dashboards to Department Leaders with mid-year results
Q4 2021	Update dashboard layout based on feedback from staff to increase readership

HOW WE STAY ON COURSE



This Energy Action Plan is a living document. Goals and strategies will be assessed and refined as needed, based on data and County staff capacity. The cycle of continuous improvement is illustrated in Figure 8 and each step is described in more detail below.

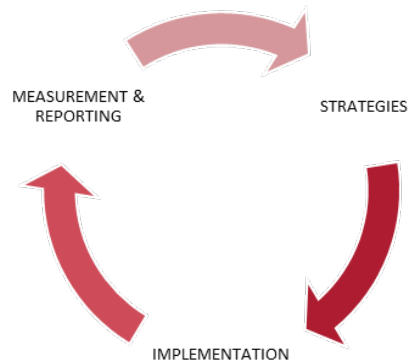


Figure 8. Actions and Tracking

1. **Strategies:** Through the planning process, the stakeholder group identified strategies to allow the County to meet its energy goals.
2. **Implementation:** The energy action team will work to complete the strategies outlined in this plan over the next 18 months.
3. **Measurement & Reporting:** At the end of the implementation period, the team will review the County's progress compared to the stated goals and report the successes and any areas of opportunity with County staff.
4. **Strategies:** Based on the findings of the measurement & reporting phase, the County staff will revise the strategies as needed.

Support from the Partners in Energy staff is described below.

Data and Reporting

Partners in Energy will provide bi-annual progress reports with metrics of success and overall progress toward goals, based on energy data from EnergyCAP and for Xcel Energy rebates and programs. These reports will be available publicly and shared with both the County staff and the Energy Action Team.

Project Management and Tracking

Partners in Energy will host regular project management check-in calls with staff to ensure we stay on course to achieve our strategies.

If necessary, an implementation check-in meeting with the Energy Action Team can be convened to assess progress toward goals and to discuss strategy refinement.

Energy Action Team Commitment

The energy action team and the Partners in Energy action team will work together to implement the strategies outlined in this plan. Details of this commitment are outlined in the implementation MOU. A draft of this agreement is provided in Appendix E: Implementation Memorandum of Understanding. Individual energy action team member provided the following actions that they would take to ensure the plan's success.

To help Arapahoe County reach its sustainable energy vision I will...



APPENDIX A: IMPLEMENTATION WORK PLAN



Opportunity Prioritization Matrix

Figure 9 is a snapshot of the matrix that will be used to help track and prioritize energy efficiency projects as described in Strategy 1: Develop and Implement an Opportunity Prioritization Matrix in the energy efficiency focus area.

Opportunity	Type (HVAC, Building Envelope, Lighting, Appliances, Office Equipment, etc.)	Building	Occupant Comfort and Health Benefits	Additional Benefits	Installed Cost	Operational Cost	Estimated Cost Savings (e.g. utility costs, O&M Savings)
Install LED lights	Lighting	Peoria Shops					
Identify and address thermal comfort complaints	HVAC, building envelope	All					
Install ENERGY STAR Appliances	Appliances, Office Equipment	All					
Install larger HEX gas burners - 2 of 4 RTUs	HVAC	Centerpoint					
Install LED lights	Lighting	Federal Warehouse					
Install LED lights	Lighting	Altura Plaza					
Upgrade RTUs to high efficiency units	HVAC	Detention Center					
Re/Retro-commissioning	HVAC	All					

Figure 9: Snapshot of the Opportunity Prioritization Matrix

Building Dashboards

Energy use trends dashboards are available for download from EnergyCAP as show in in Figure 10. These dashboards are likely too technical for distribution to non-technical employees could be used to provide the data necessary to populate the dashboards developed in Strategy 4: Develop Building Dashboards.

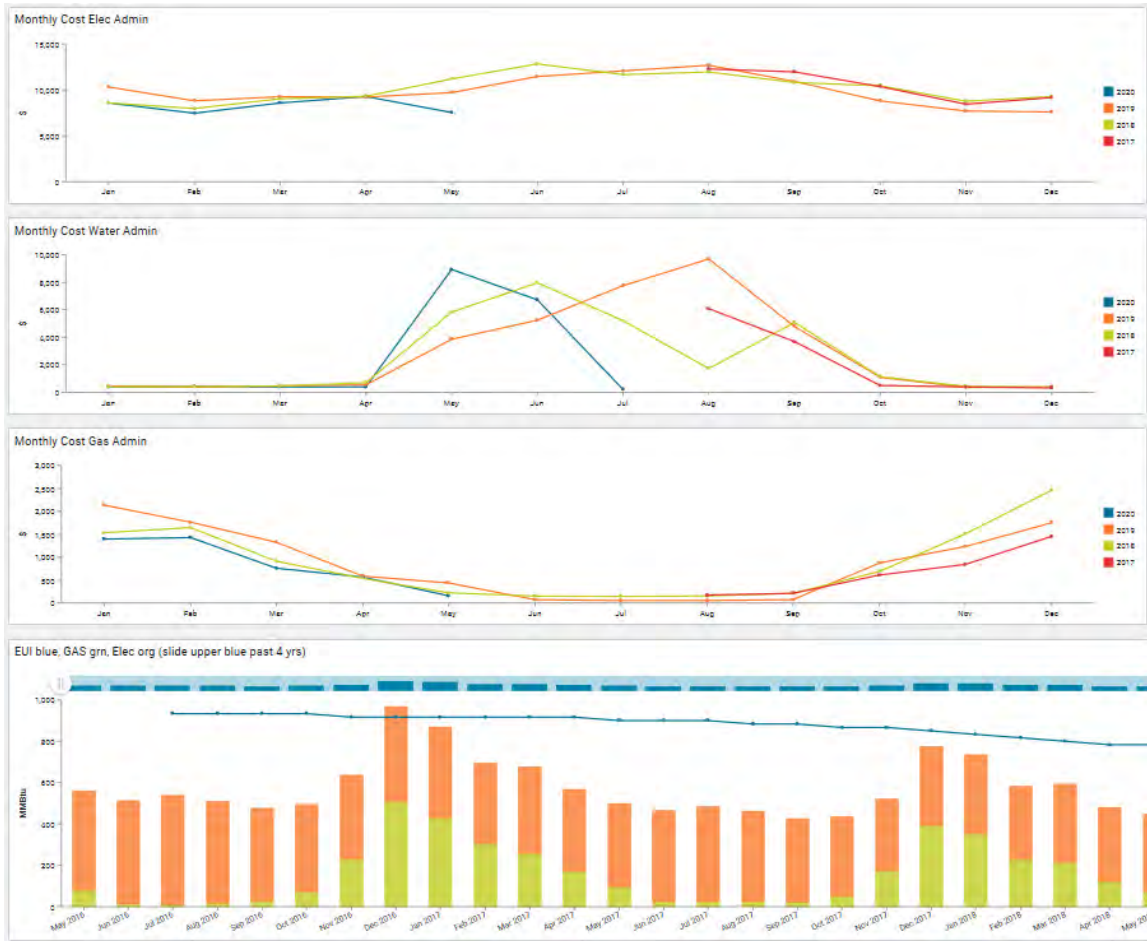


Figure 10: Example content for building dashboards pulled from EnergyCAP

APPENDIX B: BASELINE ENERGY ANALYSIS



Weather Normalization Analysis and Trends

Figure 11 demonstrates the lack of a clear relationship between Electric use and climate. If this graph showed a strong linear relationship, the conclusion would be that cooling/AC is the main driver of electric use. However, since that is not the case, no such claim can be made.

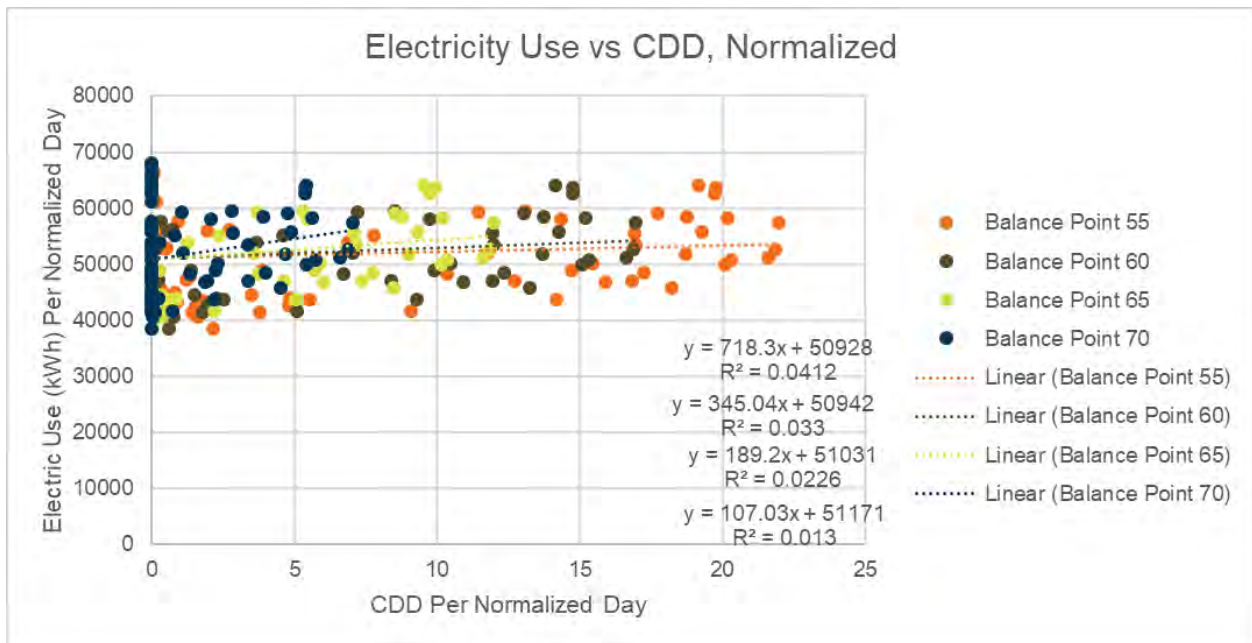


Figure 11. Electricity Use and Cooling Degree Day (CDD) Comparison with varying balance points, normalized by number of days in each month

Figure 12 is similar to Figure 11, except it shows Total Degree Days instead of Cooling Degree Days. There is a stronger correlation between electric use and climate here, but still relatively low.

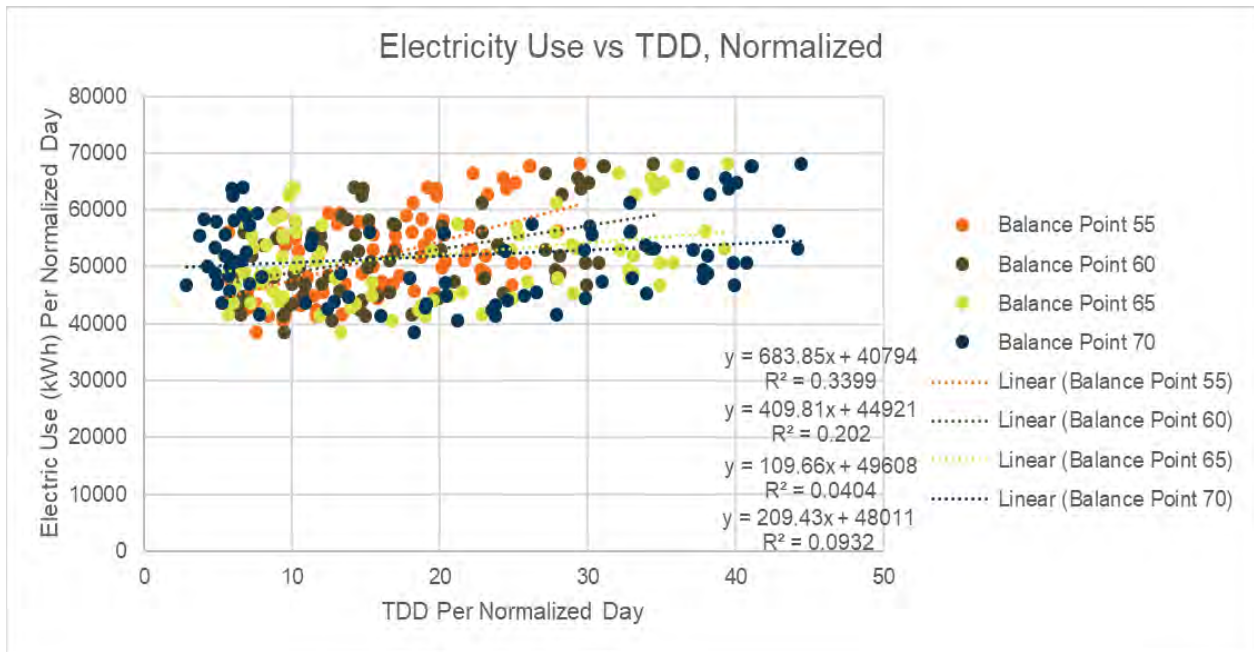


Figure 12. Monthly Electricity Use and Total Degree Day Comparison with varying balance points, normalized by number of days in each month

Figure 13 plots Monthly Electric Use over the past seven years, along with CDD over the same time. The axes are edited to exaggerate the peaks. This figure demonstrates that for every peak in CDDs in the summer, there is also a corresponding peak in electricity usage. There is also a peak in electricity usage during each winter, which does not correspond to CDD peaks. This is likely the reason Figure 112 does not show a strong trend, and Figure 12 has a stronger but still weak trend. One possible reason for this behavior is the presence of heating that is electric rather than natural gas.

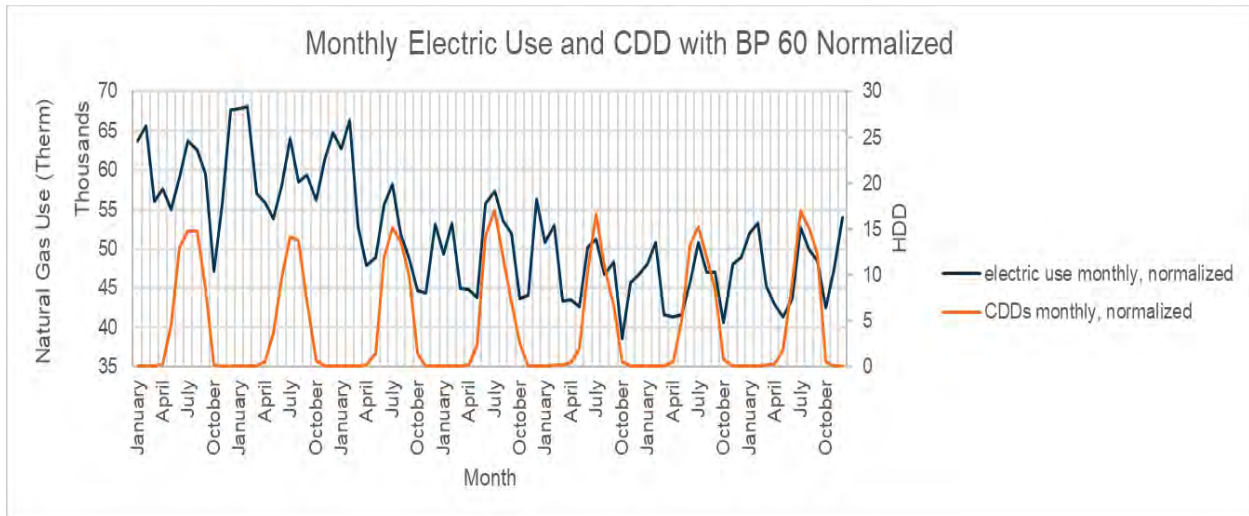


Figure 13. Monthly Electricity Use and Cooling Degree Days normalized by number of days in each month.

Figure 14 shows Natural Gas use correlation to climate via heating degree days (HDDs), at the balance point (BP) of 60. Balance points 55, 65, and 70 were also tested, with almost identical results. This shows an extremely strong correlation of natural gas use with weather, which indicates that the main driver of natural gas use is heating.

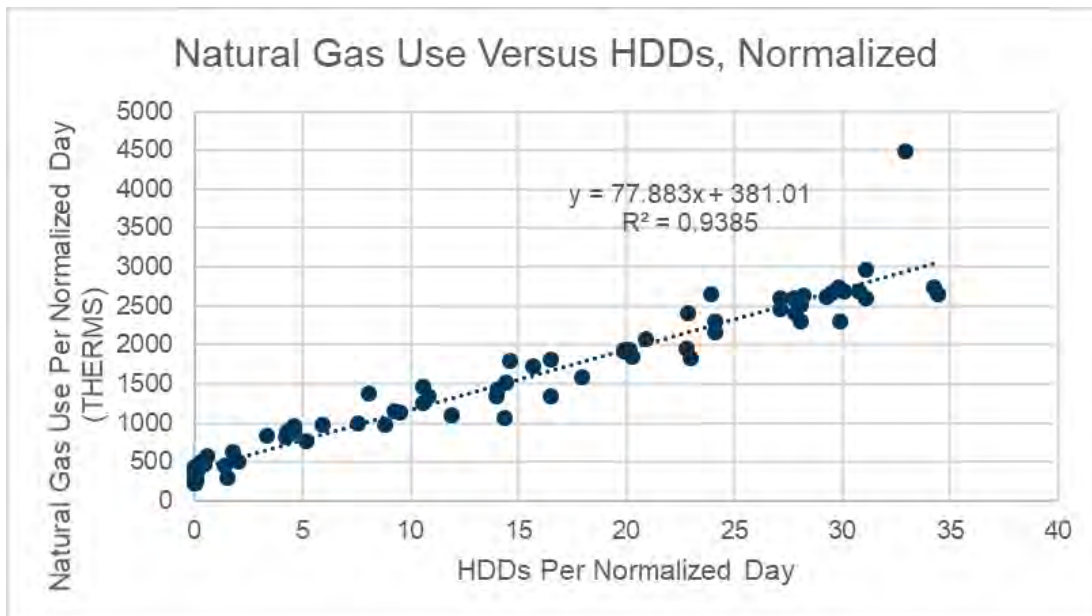


Figure 14. Natural Gas Use Versus HDDs, normalized by number of days in each month, with a balance point of 60.

Figure 15 has manipulated vertical axes to help further show how well Natural Gas use and Heating Degree Days are correlated.

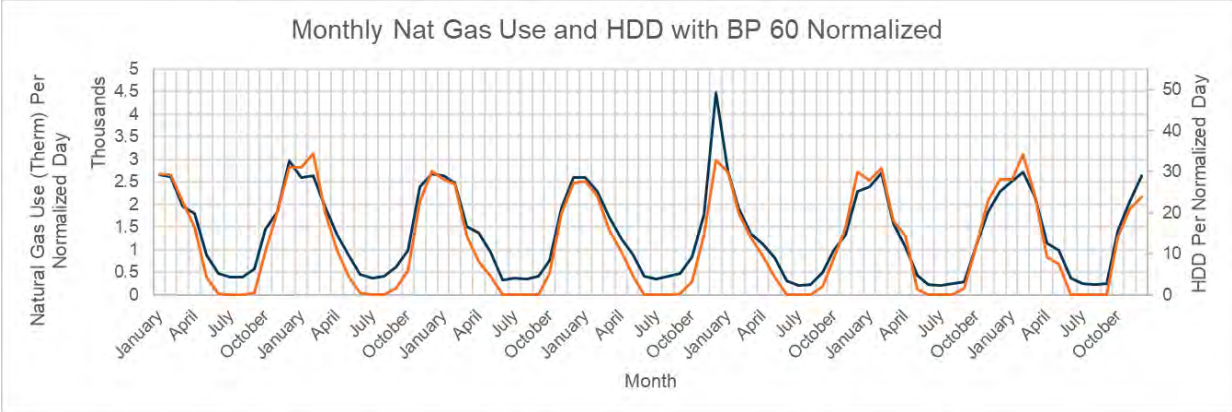


Figure 15. Monthly Natural Gas Use and Heating Degree Days with a Balance Point of 60, normalized by number of days in each month.

Energy Costs

Energy cost per square foot by building is shown in Figure 16 and may help target energy efficiency measures to facilities with greater cost per area. This data could be used to help identify targeted energy efficiency or demand management opportunities.

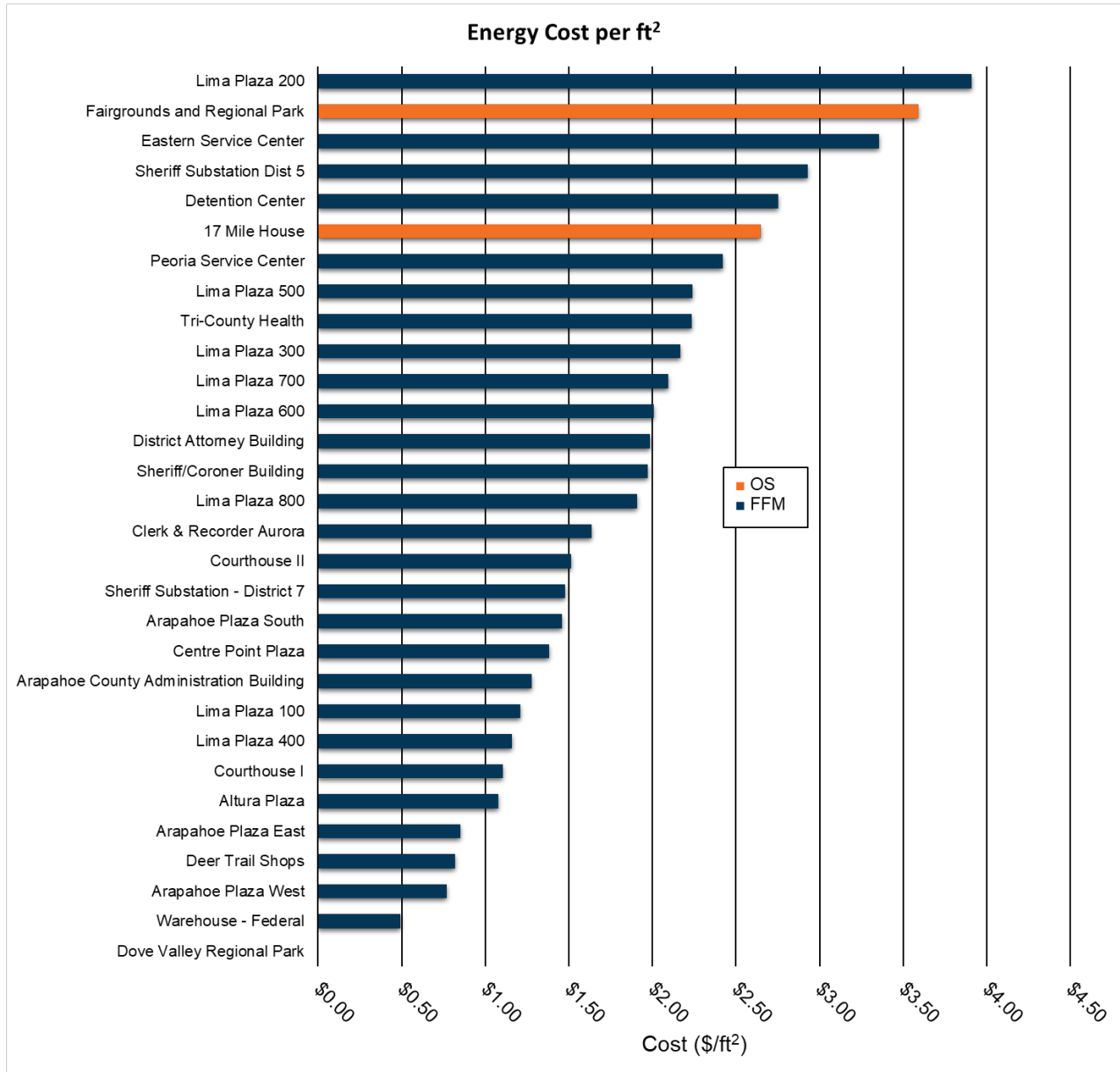


Figure 16. Energy Use Cost in 2019 Per Building.

Program Participation and Savings

The following tables show total participation and savings, over the last 4 years, related to Xcel Energy demand-side management (DSM) efficiency programs. The County has a policy to pursue rebates whenever available, but participation rates have decreased over the last couple of years. Throughout the planning process we will be sure to connect projects to rebates wherever possible.

Table 1. DSM Program Participation

DSM Program	2016	2017	2018	2019
Cooling	1	-	-	-
Energy Efficient Buildings	2	-	-	-
Lighting – Small Business	1	1	-	1
Lighting Efficiency	9	1	-	-
Motor & Drive Efficiency	3	1	-	-
Total (projects)	16	3	0	1

Table 2. DSM Program Electricity Savings (kWh)

DSM Program	2016	2017	2018	2019
Cooling	60,609	-	-	-
Energy Efficient Buildings	62,760	-	-	-
Lighting – Small Business	988	382	-	369
Lighting Efficiency	241,696	3,116	-	-
Motor & Drive Efficiency	35,937	45,839	-	-
Total (kWh)	401,990	49,337	0	369

Table 3. DSM Program Natural Gas Savings (therms)

DSM Program	2016	2017	2018	2019
Cooling	-	-	-	-
Energy Efficient Buildings	330	-	-	-
Lighting – Small Business	-	-	-	-
Lighting Efficiency	-	-	-	-
Motor & Drive Efficiency	-	-	-	-
Total (therms)	330	0	0	0

Electricity Demand Trend Analysis

Below, energy use profiles for target buildings are shown - with demand peaks that could likely be mitigated through controls or training highlighted in **yellow** and likely opportunities listed by building.

Center Point

- Remote terminal unit (RTU) controls
- Electric reheating

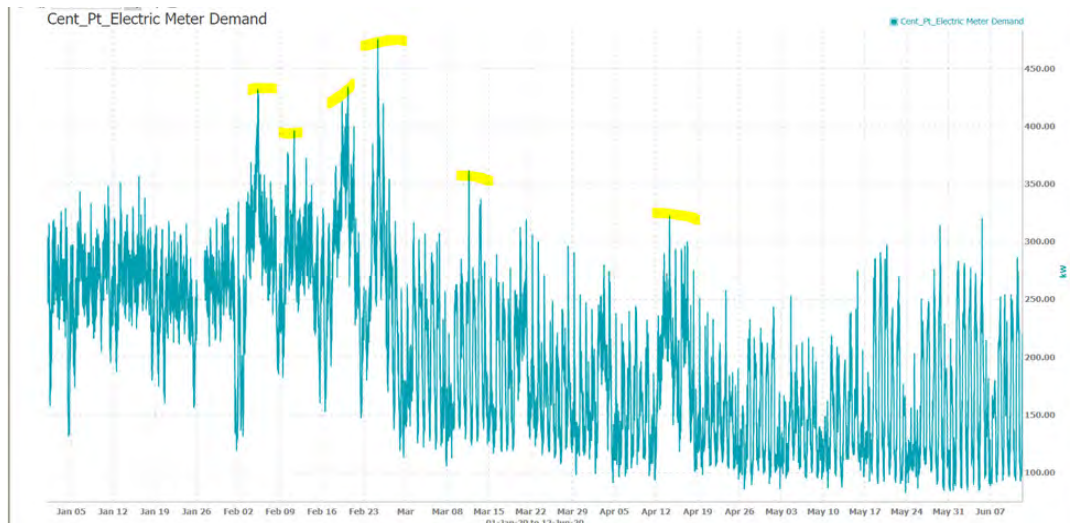


Figure 17: Center Point Energy Use Profile

Courthouse 1

- Confirm occupancy schedule
- Review settings for two large air handling units (AHUs)
- Optimize chiller controls chiller

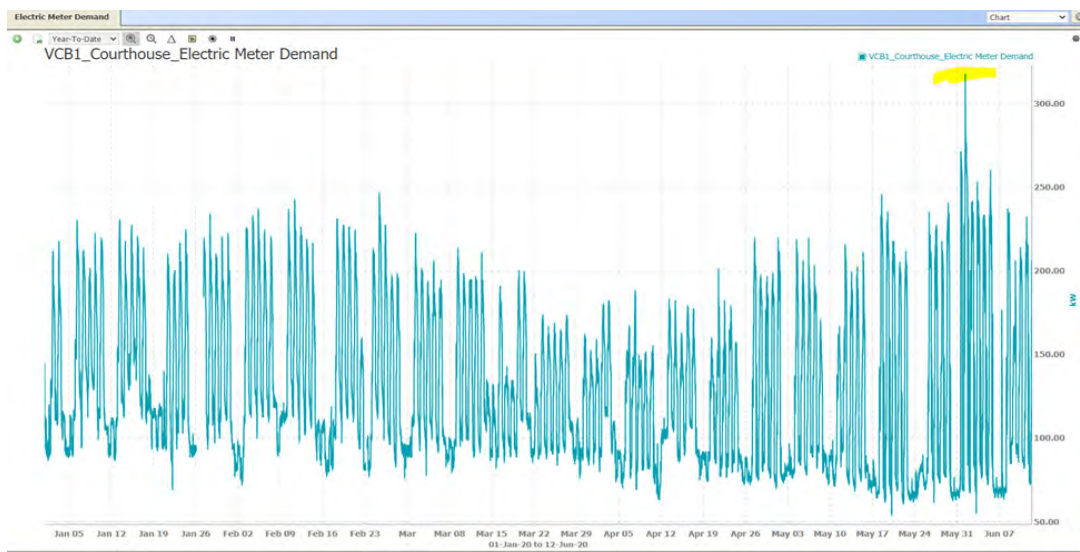


Figure 18: Courthouse 1 Energy Use Profile

Arapahoe Plaza South

- Review strategies for addressing chiller compressor spikes.

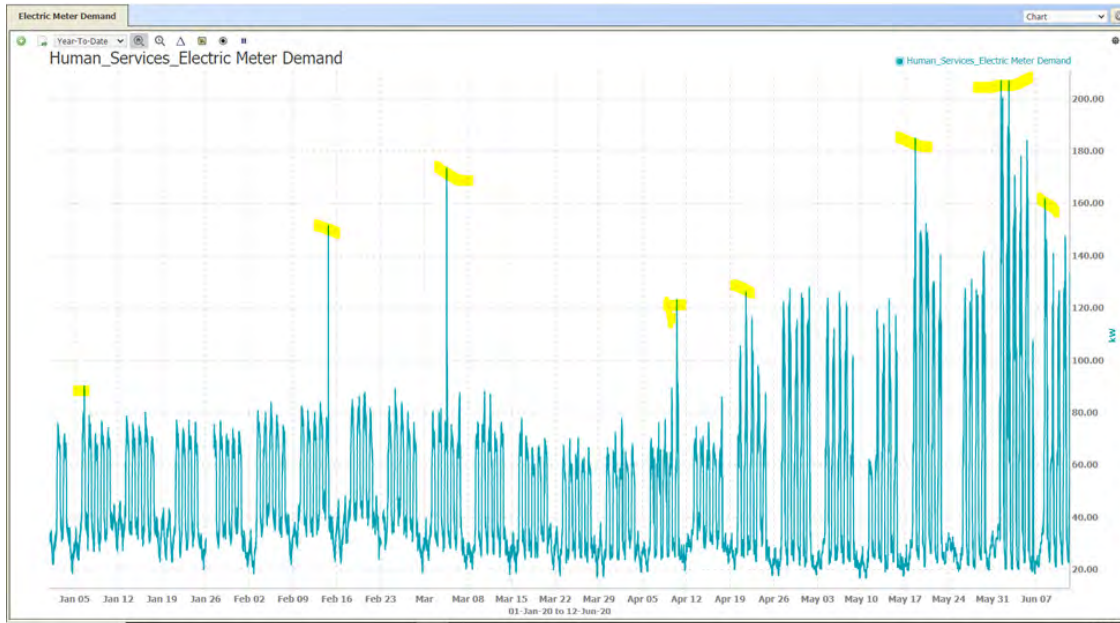


Figure 19: Arapahoe Plaza South Energy Use Profile

Sheriff & Coroners Building

- Adjust heating controls to reduce electric reheating
- RTU operation optimization
- Is there an opportunity to replace computer room air conditioning (CRAC) units?

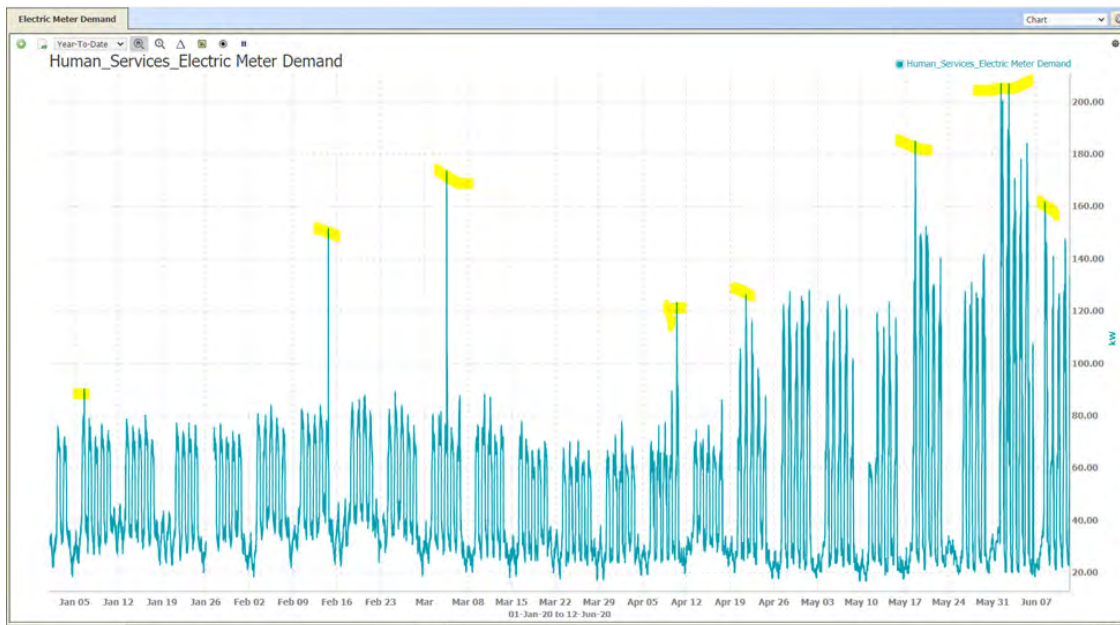


Figure 20: Sheriff & Coroners Building Energy Use Profile

Altura Plaza

- Address morning occupied peaks in winter by improving boiler heat injection serving water to air heat pumps.
- Summer peaks occur early afternoon on weekday, so there are likely cooling controls opportunities.

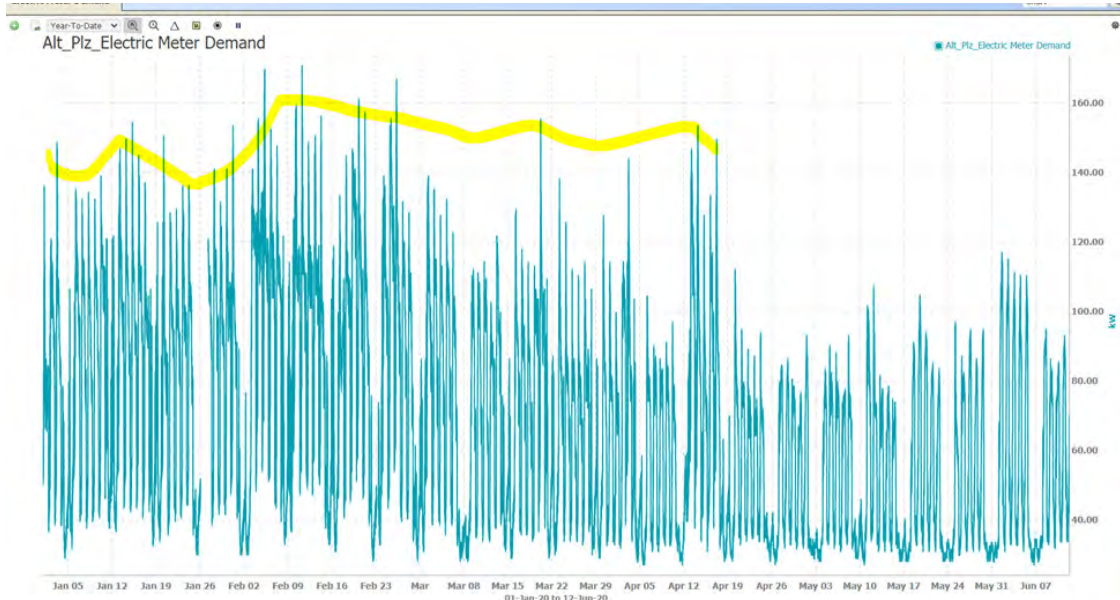


Figure 21: Altura Plaza Energy Use Profile

Administration Buildings

- Adjust chiller controls.

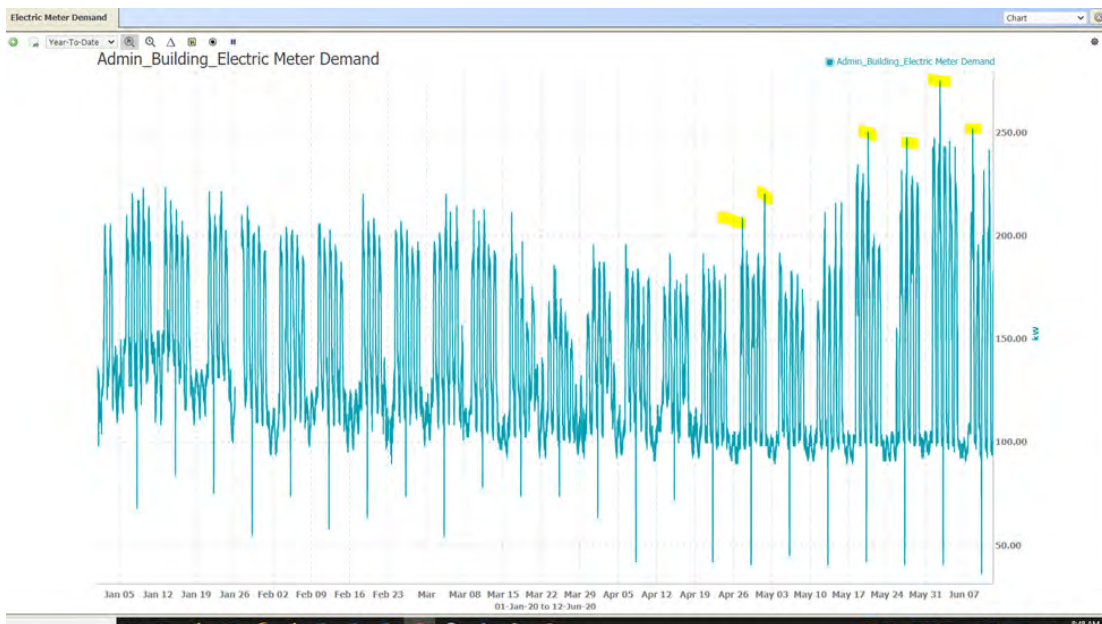


Figure 22: Admin Building Energy Use Profile

Eastern Service Center

- Standalone electric heat should be wired to direct digital control (DDC)
- Examine opportunities to control Road & Bridge vehicle chargers.
- Schedule water well tower pump



Figure 23: Eastern Service Center Energy Use Profile

District Attorney Building

- Check occupied schedule
- Adjust controls on air-cooled chiller.

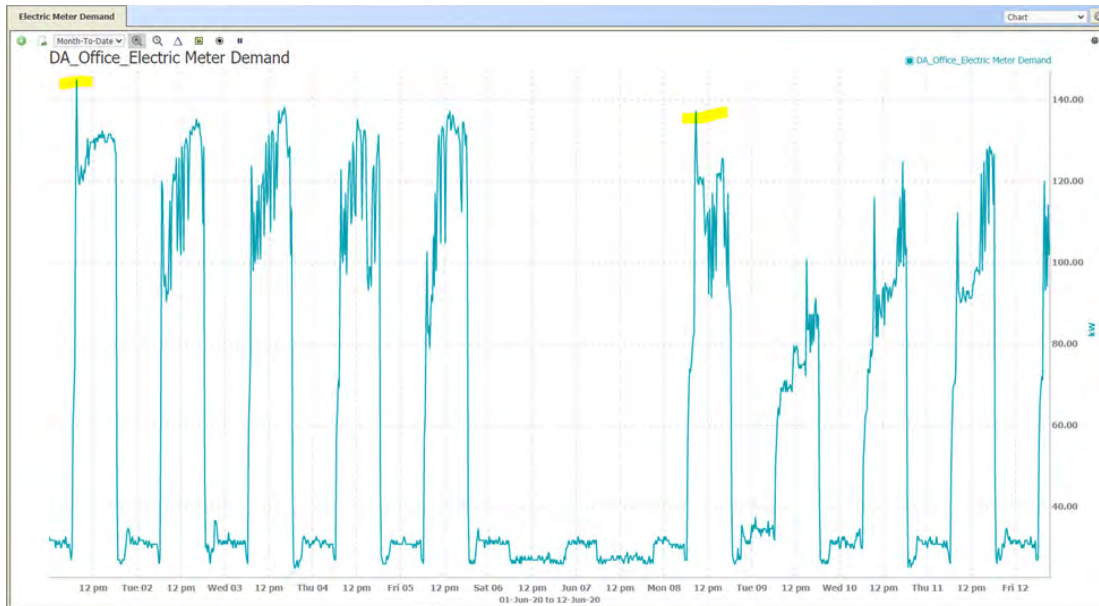


Figure 24: District Attorney Building Energy Use Profile

Fairgrounds

- Opportunities TBD

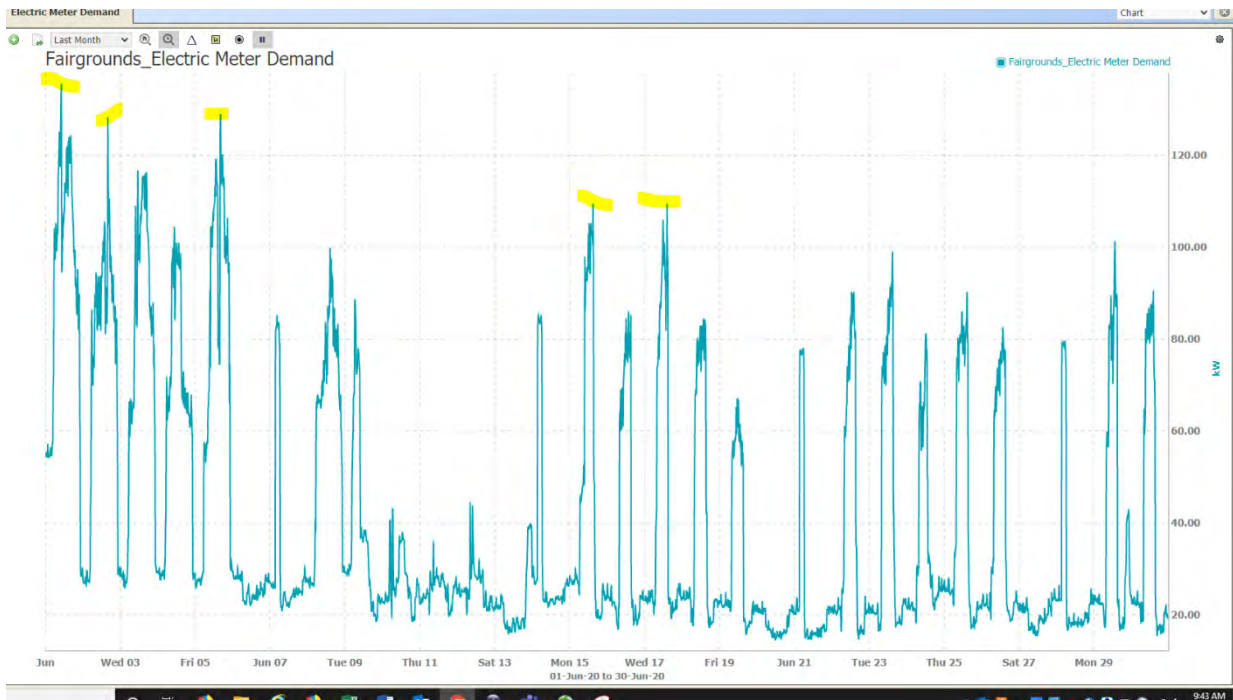


Figure 25: Fairgrounds Building Energy Use Profile

APPENDIX C: XCEL ENERGY'S PARTNERS IN ENERGY PLANNING PROCESS



About Xcel Energy's Partners in Energy

Xcel Energy is an electric and natural gas utility that provides the energy to power millions of homes and businesses across eight Western and Midwestern states. Each community Xcel Energy serves has its own unique priorities and vision for its energy future. The energy landscape is dynamically changing, with communities leading the way in setting energy and sustainability goals. To continue to innovatively support their communities, Xcel Energy launched Partners in Energy in the summer of 2014 as a collaborative resource with tailored services to complement each community's vision. The program offerings, shown in Figure 27, include support to develop an energy action plan or electric vehicle plan, tools to help implement the plan and deliver results, and resources designed to help each community stay informed and achieve their outlined goals.



Figure 26: Partners in Energy Process for Success

Plan Development Process

The content of this plan is derived from a series of planning workshops that started with a kick-off meeting in February of 2020. This meeting between Arapahoe County staff and Xcel Energy community facilitators was used to understand Arapahoe County's unique energy needs and priorities as well as to establish the framework for the planning process. Based on Arapahoe County's needs, the County participated in an accelerated planning process consisting of two stakeholder workshops over a 6-month period. The first of the workshops was held virtually in April 2020 and was used to develop a shared understanding of Arapahoe County's energy use, gather stakeholder feedback on the County's desired energy future, and identify the appropriate focus areas for this planning process. Between Workshop 1 and Workshop 2, stakeholders completed an online survey to gather input about potential energy strategies. The Partners in Energy facilitators gathered this feedback and consolidated it into draft energy strategies to be reviewed by focus area working groups in Workshop 2. Through input from the breakout groups in Workshop 2, the strategies were finalized and key milestones along with needed resources and lead implementers were identified (as outlined in this plan).

Plan Implementation

Partners in Energy provides 18 months of support for implementation of the strategies outlined in this energy action plan. Services offered through the Partners in Energy team are shown in Figure 28 and are designed to help the Arapahoe County energy team develop the

tools and processes needed to meet short terms goals outlined in this plan and build the foundation for long-term success. Periodically during the implementation phase, Partners in Energy staff will review the County's energy use data to evaluate success of energy strategies. This will allow the County to evaluate the impact of each strategy, share successes with County staff, and reevaluate strategies that are less impactful then planned. This begins the process of continual review and revisions that will ensure this plan continues to be impactful and guide the County's energy initiatives.



Figure 27: Resources from Xcel Energy for Implementation

APPENDIX D: GLOSSARY OF TERMS



Community Data Mapping: A baseline analysis of energy data in a geospatial (map) format across the community.

Demand Side Management (DSM): Modification of consumer demand for energy through various methods, including education and financial incentives. DSM aims to encourage consumers to decrease energy consumption, especially during peak hours or to shift time of energy use to off-peak periods, such as nighttime and weekend.

Direct Installation: Free energy-saving equipment installed by Xcel Energy or other organization, for program participants, that produces immediate energy savings.

Energy Burden: Percentage of gross household income spent on energy costs.

Greenhouse Gases (GHG): Gases in the atmosphere that absorb and emit radiation and significantly contribute to climate change. The primary greenhouse gases in the earth's atmosphere are water vapor, carbon dioxide, methane, nitrous oxide, and ozone.

Grid Decarbonization: The current planned reduction in the carbon intensity of electricity provided by electric utilities through the addition of low- or no-carbon energy sources to the electricity grid.

Kilowatt-hour (kWh): A unit of electricity consumption.

Million British Thermal Units (MMBtu): A unit of energy consumption that allows both electricity and natural gas consumption to be combined.

Metric Tons of Carbon Dioxide Equivalent (MTCO_{2e}): A unit of measure for greenhouse gas emissions. The unit "CO_{2e}" represents an amount of a greenhouse gas whose atmospheric impact has been standardized to that of one unit mass of carbon dioxide (CO₂), based on the global warming potential (GWP) of the gas.

Megawatt (MW): A unit of electric power equal to 1 million watts.

Premise: A unique identifier for the location of electricity or natural gas service. In most cases it is a facility location. There can be multiple premises per building, and multiple premises per individual debtor.

Renewable Energy Certificate (REC): For every megawatt-hour of clean, renewable electricity generation, a renewable energy certificate (REC) is created. A REC embodies all the environmental attributes of the generation and can be tracked and traded separately from the underlying electricity. Also known as a Renewable Energy Credit.

Resilience: The ability to prepare for and adapt to changing conditions and withstand and recover rapidly from disruptions. Resilience includes the ability to withstand and recover from deliberate attacks, accidents, or naturally occurring threats or incidents.

Recommissioning: An energy efficiency service focused on identifying ways that existing building systems can be tuned up to run as efficiently as possible.

Solar Garden: Shared solar array with grid-connected subscribers who receive bill credits for their subscriptions.

Solar Photovoltaic (PV): Solar cells/panels that convert sunlight into electricity (convert light, or photons, into electricity, or voltage).

Subscription: An agreement to purchase a certain amount of something in regular intervals.

Therm (thm): A unit of natural gas consumption.

Trade Partner: Trade Partners, also known as Trade Allies or Business Trade Partners, are vendors and contractors who work with business and residential customers servicing, installing, and providing consulting services regarding the equipment associated with utility rebate programs. Their support for utility programs can range from providing equipment and assisting with rebate paperwork, to receiving rebates for equipment sold.

APPENDIX E: IMPLEMENTATION MEMORANDUM OF UNDERSTANDING

Memorandum of Understanding Phase 2 – Plan Implementation

Dawn Smith
Arapahoe County
5334 S. Prince Street
Littleton, CO 80120-1136

The intent of this Memorandum of Understanding is to recognize the achievement of Arapahoe County in developing an Energy Action Plan. Xcel Energy, through its Partners in Energy offering, has supported the development of this Energy Action Plan. This document outlines how Arapahoe County and Xcel Energy will continue to work together to implement this Energy Action Plan. The term of this joint support, as defined in this document, will extend from August 1, 2020 through March 31, 2022.

Partners in Energy

Xcel Energy will support Arapahoe County in achieving the goals of its Energy Action Plan in the following ways. Please note that hour estimates include those provided through our Partners in Energy team from Brendle Group and do not include support provided by Xcel Energy internal program staff.

Focus Area 1: Energy Efficiency

- **Strategy 1: Develop and Implement an Opportunity Prioritization Matrix.** Support funded by Xcel Energy for this strategy is not to exceed 16 hours for:
 - Develop the structure of the prioritization matrix and work with the implementation team to fill in prioritization fields.
 - Quantify potential energy savings and co-benefits.
 - Identify and quantify potential rebates the County can use to decrease project's first cost.
- **Strategy 2: Expand on Design Specifications to Include Energy Efficiency-Related Guidance.** Support funded by Xcel Energy for this strategy is not to exceed 14 hours for:
 - Identify areas of the existing document where additional guidance on energy efficiency best practices could be included and would be most impactful.
 - Facilitate a meeting with key mechanical and electrical staff to discuss recommendations.
 - Draft language and incorporate feedback into document.
- **Strategy 3: Provide Energy Efficiency Training for Open Space Staff.** Support funded by Xcel Energy for this strategy is not to exceed 10 hours for:
 - Develop training materials and deliver training.
 - Provide information about Xcel Energy programs and billing as needed.

Focus Area 2: Demand Management

- **Strategy 1: Provide technician training.** Support funded by Xcel Energy for this strategy is not to exceed 16 hours for:
 - Develop training materials and deliver training.
 - Provide information about Xcel Energy programs and billing as needed.
- **Strategy 2: Monitor for and address anomalous demand incidents.** Support funded by Xcel Energy for this strategy is not to exceed 4 hours for:
 - Support internal actions to address kW anomalies.
- **Strategy 3: Develop and implement best practices for reducing typical building demand.** Support funded by Xcel Energy for this strategy is not to exceed 4 hours for:
 - Support internal actions to implement best practices for reducing building demand.
- **Strategy 4: Identify priority equipment upgrades.** Support funded by Xcel Energy for this strategy is not to exceed 4 hours for:
 - Support internal actions to identify priority equipment upgrades for reducing building demand.

Focus Area 3: Employee Engagement

- **Strategy 1: Provide employee training on energy issues once per quarter.** Support funded by Xcel Energy for this strategy is not to exceed 21 hours for:
 - Support development of training and outreach materials.
- **Strategy 2: Employee energy competitions.** Support funded by Xcel Energy for this strategy is not to exceed 14 hours for with about \$200 for employee prizes:
 - Assist in the development of co-branded materials required for competition.
- **Strategy 3: Celebrate Successes.** Support funded by Xcel Energy for this strategy is not to exceed 6 hours for:
 - Support internal celebration actions.
- **Strategy 4: Develop Building Dashboards.** Support funded by Xcel Energy for this strategy is not to exceed 16 hours for:
 - Assist in the development of building dashboard format and contents.
 - Populate dashboards with any data provided by Xcel Energy.

Project Management

- Facilitate regular check-in meetings, lead implementation tracking and reporting, help coordinate implementation kick-off activities. Support funded by Xcel Energy for project management is not to exceed 60 hours.

Arapahoe County

Arapahoe County commits to supporting the Energy Action Plan to the best of its ability by:

- Achieving the energy savings impacts outlined in the energy action plan and shown in the table below:

Arapahoe County Conservation Goals

	Electricity Savings (in kWh)	Natural Gas Savings (in therms)
Baseline Historic Energy Savings (Avg. 2016-2019)	112,924	83
Incremental Plan Energy Savings (8/1/20-1/31/22)	1,467,444	1,215
Total Plan Energy Savings (baseline + plan energy savings)	1,580,368	1,297

- Performing the coordination, tracking, and outreach duties as outlined in the Energy Action Plan that include but are not limited to the following:

Focus Area 1: Energy Efficiency

- **Strategy 1: Develop and Implement an Opportunity Prioritization Matrix.**
 - Maintain opportunity prioritization matrix with projects recommended by staff.
 - Support Energy Program Manager in project identification.
 - Help quantify benefits of HVAC-related opportunities.
- **Strategy 2: Expand on Design Specifications to Include Energy Efficiency Related Guidance.**
 - Identify equipment and areas in the Design Specifications where guidance on energy efficient options would be valuable.
 - Invite additional facility staff to propose additions to the Design Specifications document.
- **Strategy 3: Provide Energy Efficiency Training for Open Space Staff.**
 - Help develop training content and deliver training.
 - Identify Open Space staff who should attend.
 - Act as a contact to assist with organizing and planning the training.
 - Gather questions from attendees before the training.
 - Provide examples of common mistakes that can happen when hosting events.

Focus Area 2: Demand Management

- **Strategy 1: Provide technician training.**
 - Coordinate scheduling training and identifying attendees
 - Gather questions from attendees ahead of presentation
 - Provide examples of how HVAC maintenance activities have adversely affected demand costs in the past.

- **Strategy 2: Monitor for and address anomalous demand incidents.**
 - Lead investigation of root cause of energy demand spike and identifying solution.
 - Document issue and identified solution for future reference, as needed, as well as ensure any adjustments to building programming are documented in building best practices developed as part of Strategy 3.
 - Implement building automation systems (BAS) programming to identify usual electricity demand spikes and notify Energy Manager.
 - Implement programming solutions in target building as well as other buildings where the same problem may occur, as applicable.

- **Strategy 3: Develop and implement best practices for reducing typical building demand.**
 - Research and share best practices for building controls, leveraging peer-to-peer learning and other opportunities.
 - Document existing practices implemented across County facilities.
 - Coordinate documentation of new best practices. These best practices should be applied in the target facility and all other relevant facilities.
 - Coordinate implementation and documentation of new best practices.

- **Strategy 4: Identify priority equipment upgrades.**
 - Add equipment upgrades to the Opportunity Prioritization Matrix developed in the energy efficiency focus area and note the potential impact on electrical demand.

Focus Area 3: Employee Engagement

- **Strategy 1: Provide employee training on energy issues once per quarter.**
 - Identify opportunities to share content through Arapahoe Learns
 - Track attendance and newsletter opens
 - Help develop appropriate newsletter and sustainability page content
 - Coordinate with sustainability leaders to identify topics of interest and prioritize for training.
 - Develop Sustainability page and other social media/web content (i.e., videos).
 - Support identification of priorities and appropriate communication channels.

- **Strategy 2: Employee energy competitions.**
 - Identify desired energy actions that will provide the structure for the competitions.
 - Lead employee outreach and communication
 - Identify appropriate metrics and tracking for the competition.

- **Strategy 3: Celebrate Successes.**
 - Develop feedback loop and metrics.
 - Design communication templates.
 - Create centralized survey mechanism
 - Build a sustainability library for CSU Extension and share with County staff, as appropriate.

- **Strategy 4: Develop Building Dashboards.**
 - Co-create the layout of the building dashboards.
 - Obtain energy data, by building, to update dashboards bi-annually.
 - Co-create the layout of the building dashboards, with an eye toward non-technical audience.
 - Determine the best ways to distribute and market building dashboards so they are valuable and are read by staff.

Project Management

- Participate in coordination and tracking of scheduled check-ins, activities, and events
- Provide Xcel Energy an opportunity to review marketing materials to assure accuracy when they incorporate the Xcel Energy logo or reference any of Xcel Energy's products or services
- Share the plan document, supporting work documents, collateral, and implementation results from the Energy Action Plan with the public. The experience, successes, and lessons learned from this community will inform others looking at similar or expanded initiatives
- Share progress about upcoming sustainability planning as it relates to activities outlined in the Energy Action Plan

Single Points of Contact

All communications pertaining to this agreement shall be directed to Dawn Smith on behalf of Arapahoe County and Tami Gunderzik on behalf of Xcel Energy.

Legal Applicability and Waiver

This is a voluntary agreement and not intended to be legally binding for either party. This Memorandum of Understanding has no impact, nor does it alter or modify any existing Franchise Agreement or other existing agreements between Xcel Energy and Arapahoe County. Parties agree that this Memorandum of Understanding is to memorialize the intent of the Parties regarding Partners in Energy but does not create a legal agreement between the Parties. It is agreed by the Parties that nothing in this Memorandum of Understanding will be deemed or construed as creating a joint venture, trust, partnership, or any other legal relationship among the Parties. This Memorandum of Understanding is for the benefit of the Parties and does not create third party rights. Nothing in this Memorandum of Understanding constitutes a waiver of Arapahoe County ordinances, Arapahoe County regulatory jurisdiction, or Colorado's utility regulatory jurisdiction.

Xcel Energy is excited about this opportunity to support Arapahoe County in advancing its goals. The resources outlined above and provided through Partners in Energy are provided as a part of our commitment to the communities we serve and Xcel Energy's support of energy efficiency and renewable energy as important resources to meet your future energy needs.

For Arapahoe County:

For Xcel Energy:

Signature:

Signature:

Name:

Name:

Title:

Title:

Date:

Date:
