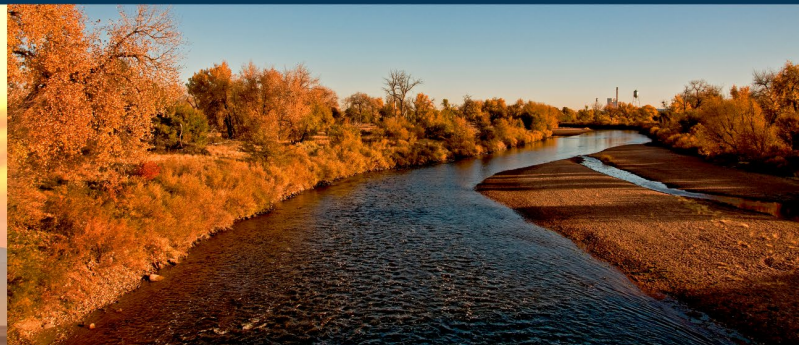




# A Facilities Energy Action Plan for Adams County

July 2023



**PARTNERS IN ENERGY**  
An Xcel Energy Community Collaboration

# ACKNOWLEDGEMENTS

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

The content of this plan is derived from a series of work sessions hosted by Xcel Energy's Partners in Energy. Xcel Energy is an electric and gas utility serving Adams County. Partners in Energy is a two-year collaboration to develop and implement the County's energy goals.

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This Energy Action Plan was funded by and developed in collaboration with Xcel Energy's Partners in Energy. Partners in Energy shall not be responsible for any content, analysis, or results if Adams County has made modifications to the plan.

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# TABLE OF CONTENTS

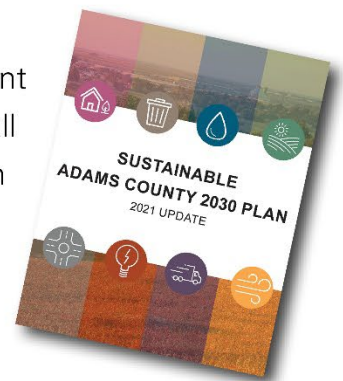
- Acknowledgements ..... i
- Executive Summary ..... iii
- Introduction ..... 1
  - Adams County Sustainability Plan Scope ..... 1
  - County Facilities Energy Goals & Strategies ..... 2
  - Building on Existing Momentum ..... 3
  - Why Partners in Energy ..... 3
- Where We Are Now ..... 4
  - Facilities Background ..... 4
  - Facilities Energy Use Baseline and Benchmarking ..... 6
  - Utility Renewable Energy Baseline ..... 11
  - Facilities Renewable Energy Baseline ..... 14
- Where We Are Now ..... 16
  - County Facilities Energy Goals & Strategies ..... 16
- Strategy Work Plans ..... 18
  - Strategy & Work Plan Breakdown ..... 18
  - Project Funding ..... 19
  - Project Prioritization & Implementation ..... 23
  - Renewable Procurement ..... 29
  - Energy Action Plan Impact ..... 36
- How We Stay On Course ..... 37
  - Data and Reporting ..... 37
  - Project Management and Tracking ..... 37
  - Energy Action Team Commitment ..... 37
- Appendix A: Xcel Energy’s Partners in Energy Planning Process ..... 38
  - About Xcel Energy’s Partners in Energy ..... 38
  - Plan Development Process ..... 38
  - Plan Implementation ..... 39
- Appendix B: Preliminary Solar Screening ..... 40
- Appendix C: Glossary of Terms ..... 41

# Adams County Facilities Energy Action Plan



## Adams County Sustainability Plan

Sustainable Adams County 2030 is a plan that established the County's commitment to its vision of being the most innovative and inclusive county in America for all families and businesses. It set the stage for the County to tackle issues such as energy efficiency and renewable energy, waste reduction, water quality and quantity, transportation options, food access, and sustainable neighborhoods while ensuring County operations were leading the way for the community.



## County Facilities

Adams County facilities outlined two energy specific goals with associated targets and strategies in the Sustainable Adams County 2030 plan. County facilities' energy efforts focus on energy use, energy conservation, and energy sources in county operated facilities. Facilities and Fleet Management are responsible for the construction, operation, and maintenance of County facilities and balances the need to maintain comfort in buildings with the need for conserving resources.



**35** Facilities  
Evaluated



**1,928,387** Square  
Footage of Buildings



**4** Utility Providers  
*United Power, Xcel Energy, CORE Electric  
Cooperative, and Morgan County REA*



**18,766,518 kWh**  
2022 Electricity Usage



**717,292 therms**  
2022 Natural Gas Usage



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## Goals & 2019 Baseline

**Goal 1: Incorporate energy efficiency and new energy technologies and building practices in new facilities and retrofit eligible existing facilities.**

**Strategy 1.1: Continue upgrading the County facility energy system.**

*Continue upgrading existing buildings energy systems to more efficient systems, building on past successes. Upgrades may include LED lighting, occupancy sensors, or upgrading HVAC systems.*

Relevant Tracking Metrics				
Metric	2019 Baseline	2022 Value	2030 Target	2030 Result
 Electricity Use Intensity	8.79 kWh/ft <sup>2</sup>	9.73 kWh/ft <sup>2</sup>	7.74 kWh/ft <sup>2</sup> *	15% reduction
 Natural Gas Use Intensity	0.36 therms/ft <sup>2</sup>	0.37 therms/ft <sup>2</sup>	0.32 therms/ft <sup>2</sup> **	15% reduction

\* Estimated savings of 20% between identified equipment upgrades (15%) and controls optimization (5%) from 2022 levels.  
 \*\* Estimated savings of 15% between identified equipment upgrades (10%) and controls optimization (5%) from 2022 levels.



**Goal 2: Increase use and procurement of renewable energy for County facilities.**

**Strategy 2.1: Identify locations for renewable energy installations on County property.**

*Conduct a solar siting study of County facilities and land to identify potential locations to install solar, including a former shooting range and landfill clean-up site. Explore the feasibility of large-scale renewable projects to achieve net-zero electricity.*

**Strategy 2.2: Advocate for and pursue renewable energy procurement options with utilities.**

*Explore renewable procurement options through utilities and advocate for increased availability of procurement options.*

Relevant Tracking Metrics				
Metric	2019 Baseline	2022 Value	2030 Target	2030 Result
 % renewable energy supply	24%	37%	50%	100%
 # of facilities with on-site solar	0	0	5	5



# INTRODUCTION

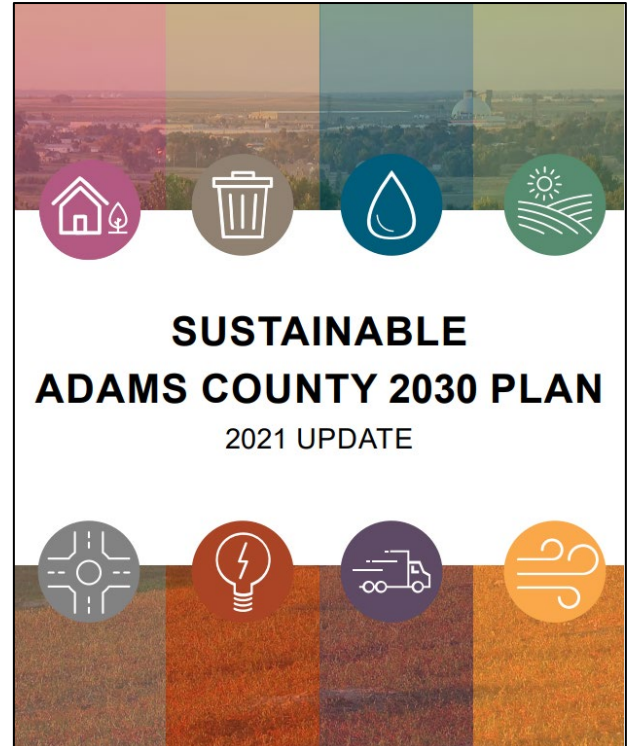


## Adams County Sustainability Plan Scope

Sustainable Adams County 2030 is a plan that established the County's commitment to its vision of being the most innovative and inclusive county in America for all families and businesses. It set the stage for the County to tackle issues such as energy efficiency and renewable energy, waste reduction, water quality and quantity, transportation options, food access, and sustainable neighborhoods while ensuring County operations were leading the way for the community.

The plan is an essential component to Adams County achieving its vision, mission, and goals and focuses on more measurable and actionable strategies while aligning with industry best practices, market trends, and State of Colorado climate action goals. Implementation success is a key consideration, and all goals and strategies include clearly defined metrics, roles, and action steps.

In the sustainability plan, Adams County facilities outlined two energy specific goals with associated targets and strategies. The goals and strategies evaluated as part of the Partners in Energy process are listed below.



## County Facilities Energy Goals & Strategies

This Energy Action Plan supports the following goals and strategies identified in the Sustainable Adams County 2030 document.

### Goal 1: Incorporate energy efficiency and new energy technologies and building practices in new facilities and retrofit eligible existing facilities.

#### Strategy 1.1: Continue upgrading the County facility energy system.

*Continue upgrading existing buildings' energy systems to more efficient systems, building on past successes. Upgrades may include LED lighting, occupancy sensors, or upgrading HVAC systems.*

Relevant Tracking Metrics		
Metric	2019 Baseline	2030 Target
Electricity Use Intensity	8.79 kWh/ft <sup>2</sup>	15% reduction
Natural Gas Use Intensity	0.36 therms/ft <sup>2</sup>	15% reduction
Number of existing facilities with energy efficiency retrofits		Tracking only

### Goal 2: Increase the use and procurement of renewable energy for County facilities.

#### Strategy 2.1: Identify locations for renewable energy installations on County property.

*Conduct a solar siting study of County facilities and land to identify potential locations to install solar, including a former shooting range and landfill clean-up site. Explore the feasibility of large-scale renewable projects to achieve net-zero electricity.*

#### Strategy 2.2: Advocate for and pursue renewable energy procurement options with utilities.

*Explore renewable procurement options through utilities and advocate for increased availability of procurement options.*

Relevant Tracking Metrics		
Metric	2019 Baseline	2030 Target
% renewable energy supply	24%	50%
# of facilities with on-site solar	0	5

## **Building on Existing Momentum**

County facilities' energy efforts focus on energy use, energy conservation, and energy sources in County operated facilities. Facilities and Fleet Management are responsible for the construction, operation, and maintenance of County facilities and balance the need to maintain comfort in buildings with the need for conserving resources. Over the past several years, Adams County has invested in energy efficiency upgrades, demonstrating significant energy use reductions across facilities. Some of the greatest successes have included upgrades to heating, ventilation, and air conditioning (HVAC) systems such as an investment in evaporative cooling at the Adams County Government Center. This remains an opportunity for the County to lead by example, while reducing operational costs, through continued energy efficiency upgrades to existing facilities.

## **Why Partners in Energy**

Xcel Energy launched Partners in Energy in the summer of 2014 as a collaborative resource with tailored services to support communities in advancing their unique energy priorities. Partners in Energy provides professional facilitation, data analysis, and project management services to communities served by Xcel Energy at no cost to communities. As such, this program was identified in the Sustainable Adams County 2030 plan to support implementation.

Members of the Facilities and Fleet Management department, along with other key Adams County stakeholders formed the Energy Action Team for this plan and met with Partners in Energy facilitators over 6 months to develop the following comprehensive internal-facing work plan that details the action steps, recommendations, and methodologies necessary to activate the energy goals identified in the County's overall sustainability plan.

During the 18-month implementation period, Partners in Energy will support the execution of the initiatives outlined in this document. This support may include data analysis, connecting the county with Xcel Energy programs as appropriate, and additional coordination meetings with relevant stakeholders.



# WHERE WE ARE NOW



An integral part of the Partners in Energy process is reviewing historic energy data that informs the baseline. We utilized data available in the County’s EnergyCAP system to evaluate specific facility energy use. For this plan, 35 facilities were evaluated and are supported by four different utility providers including United Power, Xcel Energy, CORE Electric Cooperative, and Morgan County REA. The percentage of facility load supported by each utility is listed in Table 1.

Additionally, this variation in utility providers impacts the energy source fuel mix provided to county facilities, as each utility has a varying amount of renewable energy supply on their electricity grid. In 2022, renewable energy was estimated to account for 37% of the County’s total energy use.

Table 1: Percentage of load supported by utility providers for Adams County Facilities

Utility Provider	Electric Service	Natural Gas Service
Xcel Energy	27%	100%
United Power	72%	
CORE Electric Cooperative	1%	
Morgan County Electric	0%	
<b>TOTAL</b>	<b>100%</b>	<b>100%</b>

## Facilities Background

The analysis examined both County facilities and County-owned lands to understand energy efficiency and renewable energy opportunities. Facilities reviewed for energy efficiency and renewable energy opportunities are listed in Table 2. County-owned lands reviewed for renewable energy potential are listed in Table 3.

Table 2: Adams County Facilities including location, energy provider, and area

<b>Location Name</b>	<b>City</b>	<b>Utility Provider</b>	<b>Building Area (sq. ft.)</b>
<b>Byers Blade Station</b>	Byers	CORE Electric Cooperative	0
<b>Parks - Lift Station</b>	Brighton	Xcel Energy (gas only)	0
<b>Parks - Pump</b>	Brighton	United Power	0
<b>Parks - Pump House Lights</b>	Brighton	United Power	0
<b>Detention Facility (Jail)</b>	Brighton	United Power	342,107
<b>Government Center (GC)</b>	Brighton	United Power	324,000
<b>Riverdale Animal Shelter (RAS)</b>	Brighton	United Power	43,000
<b>Human Services Center</b>	Westminster	Xcel Energy	315,000
<b>Service Center (SVC CTR)</b>	Commerce City	Xcel Energy	100,000
<b>Justice Center (JC)</b>	Brighton	United Power	304,768
<b>Opportunity Center</b>	Henderson	Xcel Energy	28,000
<b>District Attorneys Building (DA)</b>	Brighton	United Power	65,000
<b>Coroner/Probation Office</b>	Brighton	United Power	28,360
<b>Public Works</b>	Commerce City	Xcel Energy	38,500
<b>Parks - Dome (PKS-Dome)</b>	Brighton	United Power	20,000
<b>Western Service Center (WSC)</b>	Westminster	Xcel Energy	55,000
<b>Fleet Building</b>	Commerce City	Xcel Energy	42,525
<b>Strasburg Public Works Shops (Strasburg)</b>	Strasburg	CORE Electric Cooperative	9,800
<b>Flatrock Training Facility (Flatrock)</b>	Commerce City	United Power	40,000
<b>Parks - Admin (PKS-Adm Bldg)</b>	Brighton	United Power	25,000
<b>Parks - South Parks Shop (PKS-South Parks Shop)</b>	Thornton	Xcel Energy	6,544
<b>Parks - Maint Shop (PKS-Maint Shop)</b>	Brighton	United Power	10,800
<b>Honnen Building (Honnen)</b>	Commerce City	Xcel Energy	16,000
<b>Facilities Management Storage (Storage-Maint)</b>	Brighton	United Power	16,000
<b>Parks - Exhibit Hall (PKS-Exhib)</b>	Brighton	Xcel Energy (gas only)	27,500
<b>Aurora Work Force Center (Aurora WBC)</b>	Aurora	Xcel Energy	10,039
<b>Parks - Sale Barn (PKS-Sale Barn)</b>	Brighton	Xcel Energy (gas only)	5,250

Location Name	City	Utility Provider	Building Area (sq. ft.)
<b>Aurora Motor Vehicle (Aurora MV)</b>	Aurora	Xcel Energy	4,688
<b>Parks - Al Lesser (PKS-Al Lesser)</b>	Brighton	Xcel Energy (gas only)	17,250
<b>Westminster Motor Vehicle &amp; Elections (Westy MV)</b>	Westminster	Xcel Energy	7,890
<b>Parks - Red Cross (PKS-Red Cross)</b>	Brighton	United Power	2,627
<b>Motor Vehicle Warehouse (Warehouse CC)</b>	Commerce City	Xcel Energy	11,800
<b>Bennett Motor Vehicle</b>	Bennett	Xcel Energy	3,000
<b>Whittier Public Works</b>	Hudson	United Power	4,000
<b>Leader Blade Station</b>	Beyers	Morgan County Electric	3,939
<b>Total</b>			<b>1,928,387</b>

Table 3: County-owned land with the nearest electrical infrastructure

Property Name	Land size (acres)	Nearest Transmission Line Owner
<b>Thornton on Riverdale Rd.</b>	205.9	Public Service Co of Colorado
<b>Denver along Broadway</b>	5.0	Public Service Co of Colorado
<b>Bennett along Hwy 79</b>	11.4	Intermountain Rural Electric
<b>Barr Lake</b>	302.7	Public Service Co of Colorado
<b>CASP North</b>	316.2	Public Service Co of Colorado
<b>CASP West</b>	164.0	Public Service Co of Colorado
<b>DIA North</b>	398.9	Northern WASCO County PUD
<b>Total</b>	<b>1,404.1</b>	

## Facilities Energy Use Baseline and Benchmarking

To review progress towards **Goal 1: Incorporate energy efficiency and new energy technologies and building practices in new facilities and retrofit eligible existing facilities** the energy use intensity (EUI) for current facilities was reviewed and compared to the 2019 baseline.

Metric	EUI Metrics		
	2019 Baseline	2022 Value	2030 Target
<b>Electricity Use Intensity</b>	8.79 kWh/ft <sup>2</sup>	9.73 kWh/ft <sup>2</sup>	15% reduction
<b>Natural Gas Use Intensity</b>	0.36 therms/ft <sup>2</sup>	0.37 therms/ft <sup>2</sup>	15% reduction

The change in electricity use intensity through 2022 is shown in Table 4. The overall electricity energy use intensity of County facilities increased by 11% between 2019 and 2022. There was an increase in cooling degree days, a measurement of the amount of building air conditioning needed, of 20% between 2019 and 2022 was likely a contributing factor. It is recommended that the County will need to accelerate their electricity efficiency efforts to get back on track toward meeting their 2030 target.

Table 4: Electricity use intensity by building

Location Name	2019 Baseline Electricity EUI (kwh/sq. ft.)	2022 Electricity EUI (kwh/sq. ft.)	Percent Change in Electricity EUI from Baseline
Detention Facility (Jail)	10.62	10.86	2%
Government Center (GC)	9.66	10.60	10%
Riverdale Animal Shelter (RAS)	0.00	35.72	0%
Human Services Center	4.83	5.24	8%
Service Center (SVC CTR)	15.14	15.09	0%
Justice Center (JC)	8.17	7.98	-2%
Opportunity Center	15.64	15.07	-4%
District Attorneys Building (DA)	9.46	9.28	-2%
Coroner/Probation Office	14.57	17.63	21%
Public Works	11.35	5.68	-50%
Parks - Dome (PKS-Dome)	37.86	35.79	-5%
Western Service Center (WSC)	13.08	12.88	-2%
Fleet Building	0.00	5.44	New building
Strasburg Public Works Shops (Strasburg)	21.15	18.56	-12%
Flatrock Training Facility (Flatrock)	5.76	5.73	-1%
Parks - Admin (PKS-Adm Bldg)	5.90	5.62	-5%
Parks - South Parks Shop (PKS- South Parks Shop)	8.18	8.66	6%
Parks - Maint Shop (PKS-Maint Shop)	10.61	7.44	-30%
Honnen Building (Honnen)	8.29	6.99	-16%
Facilities Management Storage (Storage-Maint)	3.52	4.15	18%
Animal Shelter (AS)	5.96	0.00	Building removed
Parks - Exhibit Hall (PKS-Exhib)		Gas Only Facility	
Aurora Work Force Center (Aurora WBC)	7.71	6.71	-13%
Parks - Sale Barn (PKS-Sale Barn)		Gas Only Facility	

Location Name	2019 Baseline Electricity EUI (kwh/sq. ft.)	2022 Electricity EUI (kwh/sq. ft.)	Percent Change in Electricity EUI from Baseline
Human Service Building (HSB)	0.91	0.00	Building removed
Aurora Motor Vehicle (Aurora MV)	11.53	10.55	-9%
Parks - Al Lesser (PKS-Al Lesser)	Gas Only Facility		
Westminster Motor Vehicle & Elections (Westy MV)	0.60	0.63	5%
Parks - Red Cross (PKS-Red Cross)	4.79	4.68	-2%
Motor Vehicle Warehouse (Warehouse CC)	0.17	0.61	262%
Bennett Motor Vehicle	5.08	5.60	10%
Whittier Public Works	7.95	7.15	-10%
Leader Blade Station	4.34	5.25	21%
<b>Weighted Average</b>	<b>8.79</b>	<b>9.73</b>	<b>11%</b>

The energy use intensity of natural gas by building is shown in Table 5. Natural gas increased by 4% in County facilities despite an 8% decrease in heating degree days, a measurement of the amount of space heating needed in a year. The high energy use at the new animal shelter building is one of the contributing factors to this increase. Again, the County will need to accelerate their energy efficiency efforts around natural gas to achieve their 2030 target.

Table 5: Natural gas use intensity by building

Location Name	2019 Baseline Natural Gas EUI (therm/sq. ft.)	2022 Natural Gas EUI (therm/sq. ft.)	Percent Change in Natural Gas EUI from Baseline
Detention Facility (Jail)	0.88	0.81	-8%
Government Center (GC)	0.21	0.24	15%
Riverdale Animal Shelter (RAS)	0.00	2.01	New Building
Human Services Center	0.17	0.16	-5%
Service Center (SVC CTR)	0.34	0.50	47%
Justice Center (JC)	0.02	0.02	-9%
Opportunity Center	0.96	0.81	-15%
District Attorneys Building (DA)	0.20	0.19	-3%
Coroner/Probation Office	0.66	0.54	-19%
Public Works	0.69	0.63	-9%

Location Name	2019 Baseline Natural Gas EUI (therm/sq. ft.)	2022 Natural Gas EUI (therm/sq. ft.)	Percent Change in Natural Gas EUI from Baseline
Parks - Dome (PKS-Dome)	0.32	0.34	4%
Western Service Center (WSC)	Electric Only Facility		
Fleet Building	0.00	0.28	New Building
Strasburg Public Works Shops (Strasburg)	0.95	1.06	12%
Flatrock Training Facility (Flatrock)	0.15	0.14	-4%
Parks - Admin (PKS-Adm Bldg)	0.33	0.32	-2%
Parks - South Parks Shop (PKS- South Parks Shop)	1.55	1.28	-18%
Parks - Maint Shop (PKS-Maint Shop)	0.89	0.69	-23%
Honnen Building (Honnen)	0.39	0.35	-9%
Facilities Management Storage (Storage-Maint)	0.49	0.40	-19%
Animal Shelter (AS)	1.27	0.00	Building Removed
Parks - Exhibit Hall (PKS-Exhib)	0.43	0.31	-28%
Aurora Work Force Center (Aurora WBC)	0.34	0.24	-28%
Parks - Sale Barn (PKS-Sale Barn)	0.92	0.86	-6%
Human Service Building (HSB)	0.10	0.00	Building Removed
Aurora Motor Vehicle (Aurora MV)	0.23	0.35	53%
Parks - AI Lesser (PKS-AI Lesser)	0.29	0.19	-34%
Westminster Motor Vehicle & Elections (Westy MV)	0.49	0.35	-29%
Parks - Red Cross (PKS-Red Cross)	0.77	0.74	-4%
Motor Vehicle Warehouse (Warehouse CC)	0.17	0.13	-26%
Bennett Motor Vehicle	0.32	0.35	7%
Whittier Public Works	Electric Only Facility		
Leader Blade Station	Electric Only Facility		
<b>Weighted Average</b>	<b>0.36</b>	<b>0.37</b>	<b>4%</b>

Analysis completed for the County highlighted a portfolio-wide increase in EUI when comparing 2022 to the 2019 baseline. Based on the analysis, 12 buildings were identified as priorities for energy efficiency projects. These facilities, noted in Figure 1

account for 90% of the County’s energy use and the average combined EUI for 2022 exceeds the average benchmark for a similar facility type.

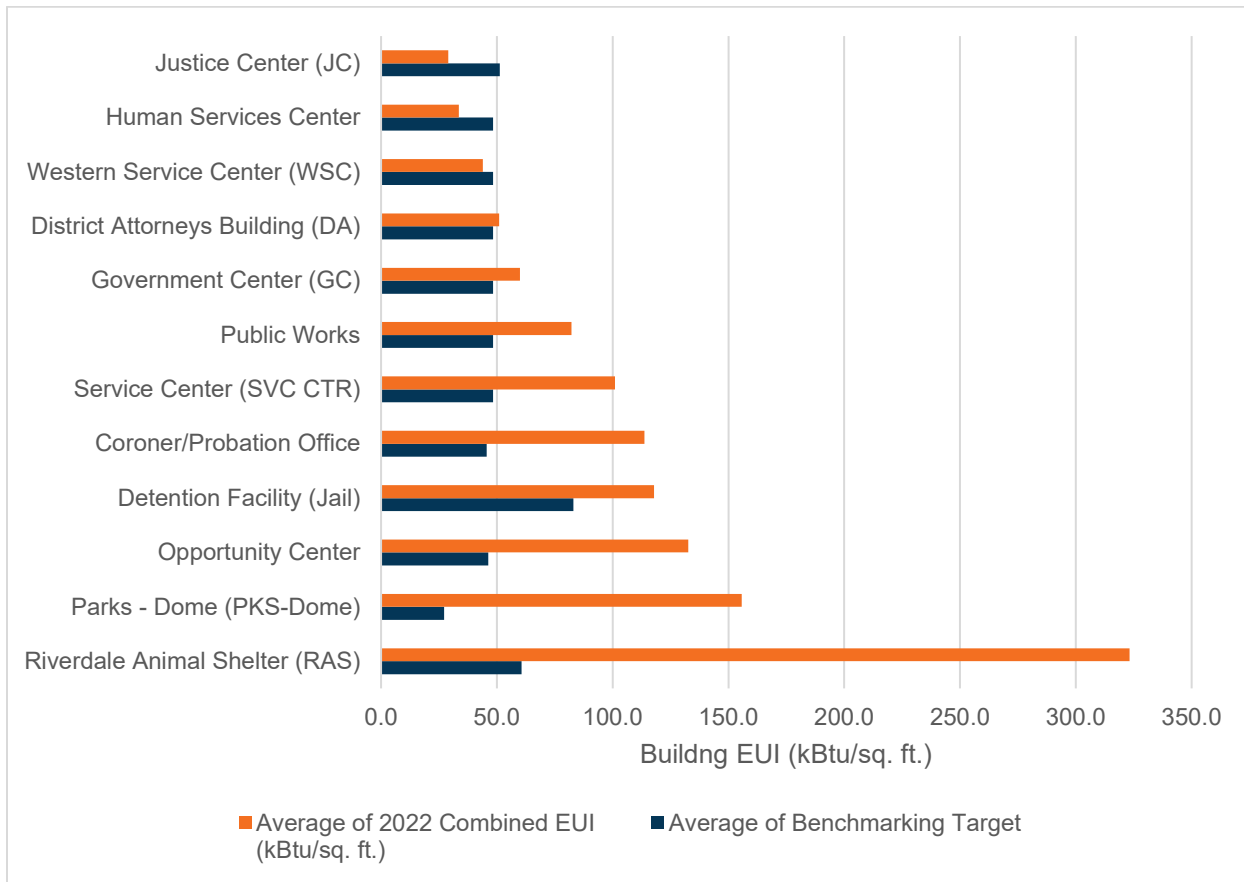


Figure 1: 2022 Combined EUI for County Facilities compared to expected EUI from similar building types

In addition, the tables below show the top 5 facilities representing the highest EUI, electricity use, and natural gas use. Riverdale Animal Shelter has been highlighted because it is the only building to appear on all 3 lists and has been prioritized for energy efficiency improvements.

Buildings with the highest EUI (Top 5 kBtu/sq. ft.)	
<b>Riverdale Animal Shelter</b>	<b>323</b>
Strasburg Public Works Shop	169
South Parks Shop	157
Dome	155
Opportunity Center	132

<b>Highest Electricity Use (Top 5 million kWh)</b>	
Detention Facility	3.7
Government Center	3.4
Justice Center	2.4
Human Services Center	1.7
<b>Riverdale Animal Shelter</b>	<b>1.5</b>

<b>Highest Natural Gas Use (Top 5 thousand therms)</b>	
Detention Facility	276
<b>Riverdale Animal Shelter</b>	<b>87</b>
Government Center	77
Service Center	50
Human Service Center	49

The County currently maintains a 5-year replacement plan that identified 86 valid projects and ranged in cost between \$10,000 to \$5 million. The types of projects covered in this plan include updates such as boiler/chiller, cooling tower, HVAC, lighting, and others (roofs, sidewalks, etc.). The Energy Action Team reviewed the current project list, how the projects are budgeted, and the best implementation approaches needed to complete the work. In addition, the team discussed policy development for ongoing recommissioning or retro-commissioning, building consolidation opportunities, preventative maintenance practices, communication challenges with facility users, and guidelines for equipment replacements.

## Utility Renewable Energy Baseline

### Xcel Energy

Xcel Energy is committed to reducing GHG emissions associated with electricity usage by 80% from 2005 levels by 2030 and delivering 100% carbon-free electricity by 2050 (**Figure 2**). Recent filings with the Colorado Public Utilities Commission show that emission reductions could be even higher than projected (Xcel Energy, 2021). Xcel Energy is achieving these decarbonization goals while maintaining service reliability by transitioning away from coal resources; adding wind, solar and storage resources; investing in new transmission infrastructure; and supporting generation that can be called upon as electricity demand changes.



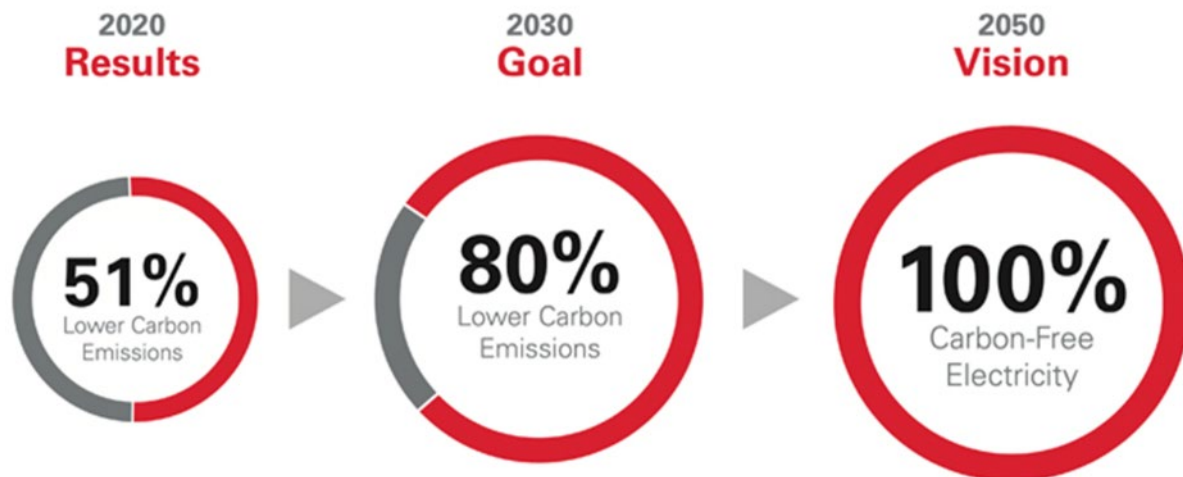


Figure 2: Xcel Energy Carbon Free Commitments (Xcel Energy, 2019)

All Xcel Energy electricity customers benefit from the grid decarbonization efforts through the Certified Renewable Percentage (CRP) program. The CRP program certifies a value that represents the percentage of electricity supplies for which renewable energy credits (RECs) were retired on behalf of all customers. All electricity customers can claim this percentage of electricity as coming from renewable energy sources without any additional action or cost.

Thanks to the CRP program, Xcel Energy’s portion of Adams County’s electricity supply has increased from 22% renewable electricity in 2019 to 38% in 2022 (**Figure 3**). In 2030, 62% of Xcel Energy’s supply is projected to be certified as renewable through the CRP program.

### Certified Renewable Percentage Forecast

2019	2020	2021	2022	2023	2024
22%	31%	35%	38%	44%	48%
2025	2026	2027	2028	2029	2030
52%	55%	58%	60%	62%	62%

\*Forecast beyond 2025 is less certain

Figure 3: Xcel Energy’s Certified Renewable Percentage Forecast for Colorado (Xcel Energy, 2020)

### Other Utility Provider Commitments

United Power is currently in the process of withdrawing from their power supplier, Tri-State Generation and Transmission Association. The exit is scheduled for May 1, 2024. United Power has yet to define their future clean energy commitments following the

departure from Tri-State but has pledged to define a plan that supports greenhouse gas reductions in accordance with state and local laws (United Power, 2023). In 2022, United Power’s power supply was 36% renewable (Kesler, 2022).

CORE (formerly Intermountain Rural Electric Association) provides electricity to over 300,000 customers in Colorado and has committed to exceeding the state’s goal of reducing carbon emissions by 80% by 2030 (CORE, 2023). In 2021, the grid-supplied power provided by CORE was classified as 25% renewable (CORE, 2023). Morgan County REA’s renewable commitments were not provided. A summary of the 2022 renewable portfolio percentages and 2030 planned supply mixes is captured in Table 6.

Table 6: Utility grid decarbonization efforts

Utility	2022 Renewable %	2030 Planned Renewable %
<b>Xcel Energy</b>	40%	62%
<b>United Power</b>	36%	70%
<b>CORE</b>	30%	70%
<b>Morgan County REA</b>	N/A	N/A

### Voluntary Renewable Program Participation

Xcel Energy currently offers five voluntary renewable electricity programs that customers can subscribe to in fulfillment of their renewable electricity goals. Three of the programs (WindsorSource®, Renewable\*Connect®, and Net Energy Metering) allow subscribing customers to claim a renewable electricity benefit by having Xcel Energy retire RECs on behalf of the subscribing customers. Subscribing to these programs allows customers to sum the CRP value with their subscription values, to represent their total renewable electricity supplies. For the remaining two programs (Solar\*Rewards® and Solar\*Rewards Community®), Xcel Energy pays an incentive to subscribing customers in exchange for Xcel Energy retaining the renewable electricity benefit<sup>3</sup>. Subscriptions to these programs contribute to the CRP program and are not additive above and beyond the CRP value.

United Power currently offers two voluntary renewable electricity programs that Adams County could participate in to fulfill their goals. These two programs are Net Energy Metering and Green Power Partners and provide customer ownership of the RECs allowing customers the option to claim the renewable electricity benefit. These and other programs may change or evolve as United Power exits Tri-State. It is recommended that Adams County continue to monitor program options and availability to continue to make progress toward their 2030 target.

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<sup>3</sup> Solar\*Rewards and Solar\*Rewards Community help Xcel Energy satisfy a regulatory requirement in Colorado to acquire some portion of renewable electricity from distributed generation resources.

## Facilities Renewable Energy Baseline

To review progress towards **Goal 2: Increase use and procurement of renewable energy for County facilities**, any current renewable resources and opportunities for renewable development were evaluated. Adams County does not currently have any renewable energy generation at county facilities other than large-scale solar installations at the Colorado Air and Space Port that are owned and operated by a 3<sup>rd</sup> party and therefore do not contribute to the county’s sustainability goals addressed in this report.

A preliminary review of County-owned facilities and land was completed to identify and prioritize potential locations for on-site installations. The review utilized guidance from the National Renewable Energy Laboratory to prioritize site selections (**Figure 4**). In addition, other considerations related to the benefits and barriers associated with ground mounted vs. rooftop-mount solar installations were discussed (**Table 7**).

Option Number	Option Name
0	Energy Efficiency and Energy Demand Reduction
1	Use Renewable Energy in the Built Environment & on Unusable Brownfield Sites
2a	Use Renewable Energy on Community Greenfield Sites (A Greenfield site is a site that has not been previously developed or built on, and which could support open space, habitat or agriculture)
2b	Use Renewable Energy Generated Off-site, On-site
3	Purchase New Off-site RECs <sup>3</sup>

Figure 4: Net Zero Community recommendations and prioritization methodology

Table 7: Solar Mounting Considerations

Ground Mount	Roof Mount
Can the land be used for another purpose?	What is the age and quality of the roof?
How close is the electrical transmission?	Access and clearance for mechanical equipment.
Much larger generation potential changes agreement with the utility.	Generation closer matched to building use.
Better for meeting renewable energy percent goal.	Can provide opportunities for building resiliency.

Based on this analysis, the priority land opportunities identified were the County’s landfill site and locations at the Colorado Air and Space Port (CASP). It is recommended that the County engage a third-party vendor to do a formal site feasibility

analysis and contact the appropriate utility to understand installation and program requirements. Details on these locations as well as other greenfield opportunities evaluated utilizing county-provided land use reports are noted in **Appendix B: Preliminary Solar Screening**.

In addition, 12 facilities were analyzed to understand the available solar potential and recommend potential installation locations. These locations represented the highest electricity users among the County buildings and were prioritized as the solar generation would be used to offset current electrical use. The top 5 prioritized facilities for on-site installation were the Human Services Center, Services Center, Public Works, Fleet Building, and Government Center. Details on these locations as well as other evaluated facilities are noted in **Appendix B: Preliminary Solar Screening**. Again, it is recommended that the County engage a third-party vendor to do a formal site feasibility analysis and contact the appropriate utility to understand installation and program requirements.

In 2019, the County received 24% of their electricity from renewable resources based on grid-supplied utility power, and in 2022, that percentage increased to 37%. An analysis of individual utility future commitments to a cleaner energy supply mix showed that the County’s grid-supplied electricity will be supported by 68% renewable resources by 2030. This far exceeds the County’s renewable target of 50% by 2030.

<b>Renewable Metrics</b>			
<b>Metric</b>	<b>2019 Baseline</b>	<b>2022 Value</b>	<b>2030 Target</b>
<b>% renewable energy supply</b>	24%	37%	50%
<b># of facilities with on-site solar</b>	0	0	5

# WHERE WE ARE NOW



## County Facilities Energy Goals & Strategies

The County has started to work on the following goals and strategies identified in the Sustainable Adams County 2030 document. The information below summarizes the current progress made to the relevant metrics.

**Goal 1: Incorporate energy efficiency and new energy technologies and building practices in new facilities and retrofit eligible existing facilities.**

**Strategy 1.1: Continue upgrading the County facility energy system.**

*Continue upgrading existing buildings energy systems to more efficient systems, building on past successes. Upgrades may include LED lighting, occupancy sensors, or upgrading HVAC systems.*

Metric	Relevant Tracking Metrics		
	2019 Baseline	2022 Value	2030 Target
Electricity Use Intensity	8.79 kWh/ft <sup>2</sup>	9.73 kWh/ft <sup>2</sup>	15% reduction
Natural Gas Use Intensity	0.36 therms/ft <sup>2</sup>	0.37 therms/ft <sup>2</sup>	15% reduction
Number of existing facilities with energy efficiency retrofits			Tracking only

**Goal 2: Increase the use and procurement of renewable energy for County facilities.**

**Strategy 2.1: Identify locations for renewable energy installations on County property.**

*Conduct a solar siting study of County facilities and land to identify potential locations to install solar, including a former shooting range and landfill clean-up site. Explore the feasibility of large-scale renewable projects to achieve net-zero electricity.*

**Strategy 2.2: Advocate for and pursue renewable energy procurement options with utilities.**

*Explore renewable procurement options through utilities and advocate for increased availability of procurement options.*

Metric	Relevant Tracking Metrics		
	2019 Baseline	2022 Value	2030 Target
% renewable energy supply	24%	37%	50%
# of facilities with on-site solar	0	0	5

Detailed work plans and the analyses used to support meeting these goals are listed under the **STRATEGY WORK PLANS** section of this plan.

# STRATEGY WORK PLANS



This section contains the detailed work plans developed after evaluating the County's energy goals and associated strategies. These work plans add more detail to those included in the Sustainable Adams 2030 Plan, and outline key implementation steps, responsible parties, timelines, and communication requirements, as well as budget and resource needs critical to ensure the County achieves their energy goals.

## Strategy & Work Plan Breakdown

**Goal 1: Incorporate energy efficiency and new energy technologies and building practices in new facilities and retrofit eligible existing facilities.**

**Strategy 1.1: Continue upgrading the County facility energy system**

- 1.1A: Establish a new budgeting mechanism to support facilities' sustainability efforts
- 1.1B: Review options for grant funding
- 1.1C: Complete County 5-Year

**Goal 2: Increase the use and procurement of renewable energy for County facilities.**

**Strategy 2.1: Identify locations for renewable energy installations on County property**

- 2.1A: Connect with United Power on
- 2.1B: Pursue at CASP
- 2.1C: Integrate PV opportunities into master planning

**Strategy 2.2: Advocate for and pursue renewable energy procurement options with utilities**

- 2.2A: Develop and finalize a County Facilities roadmap to achieve 100% carbon free or renewable electricity by 2030

**Project Funding**

The first step to incorporating energy efficiency best practices and new technologies into the County facilities is to secure adequate annual funding to pay for future upgrades and improvements. The Energy Action Team reviewed the current processes for incorporating identified energy improvement projects into the annual budget process discussed funding concerns, and reviewed the potential for establishing an innovative or alternative funding mechanism that would support ongoing facilities upgrades and maintenance.

Based on this discussion, two work plans (**1.1A: Establish a new budgeting mechanism to support facilities’ sustainability efforts** and **1.1B: Review options for grant funding**) were developed to capture the actions necessary to create a new ongoing annual sustainability implementation budget item line for the County, as well as collaborating with Finance to continually review available grant and incentive funding as an opportunity to support energy efficiency or renewable energy measures.



**1.1A: Establish a new budgeting mechanism to support facilities’ sustainability efforts**

Description & Context		
<p><b>What is this strategy?</b></p> <ul style="list-style-type: none"> <li>▪ Establish an ongoing annual sustainability implementation budget to pay for energy efficiency facility upgrades and renewable energy additions.</li> </ul>		
Metrics of Success		
<ul style="list-style-type: none"> <li>▪ New sustainability implementation budget established for 2024</li> </ul>		
Stakeholders		
Dept. Contact:	Role:	Responsibility:
Fleet & Facilities, Ameer Faquir	Strategy Lead	Coordinate strategy actions and ensure the timeline is met
Finance, Mark Kluth	CIP Financial Administrator	Work with Fleet & Facilities to inform budget amount and develop the account structure. Create sustainability implementation budget line item.





### 1.1A: Establish a new budgeting mechanism to support facilities' sustainability efforts

Fleet & Facilities, Ameer Faquir	Budgeting	Work with the Planning, Manager and Construction Division for Facilities and Fleet Management (FFM) and the Manger of Business Services Division for FFM to estimate annual totals to inform the requested amount
Facilities & Finance Team; Ameer & Mark	Presentation to Board	Present the idea for an annual sustainability implementation budget to the Board
County Manager's Office	Finalize recommendation to the Board	Guide the presentation and prep the Board for the ask
Board of County Commissioners	Final Approval	Approve the sustainability implementation budget along with the full county budget
Partners in Energy	Support Presentation Materials	Assist with the development of materials in support of the recommendation

#### Key Implementation Steps and Timeline

Action Steps		Timeline
1.	Create a preliminary list of prioritized energy efficiency projects to inform the requested budget amount.	May-August 2023
2.	Develop a preliminary budget amount and the associated support documentation (ex. business cases, presentation).	May-August 2023
3.	Include the sustainability implementation budget in the total annual budget request and get approval.	Dec 2023
4.	Set up the account criteria and structure.	Dec 2023
5.	Launch budget mechanism and develop associated reporting requirements.	Q1 2024
6.	Develop methods for tracking expenses and the key performance indicators (KPIs) associated with the project business cases.	Q1/Q2 2024

#### Communications Plan

Message	Contacts	Forum
Notify accounting/finance of new account	Mark Kluth	Email



### 1.1A: Establish a new budgeting mechanism to support facilities' sustainability efforts

Train Fleet & Facilities staff about the creation of a new account and how it should be used	Ameer Faquir	Meeting
<b>Budgeting &amp; Reporting Requirements</b>		
<ul style="list-style-type: none"> <li>• New account can cover capital and maintenance projects</li> <li>• Annual reporting will be required on account spending and the associated impact</li> <li>• Annual forecasting to determine if additional budget requests will be needed during budget deliberations (start with a flat amount and ask for additional if needed)</li> </ul>		
<b>Resource Needs</b>		
<ul style="list-style-type: none"> <li>▪ No additional expense is required to develop or enact this strategy</li> <li>▪ No new FTEs to develop or enact this strategy</li> <li>▪ Staff time needed and medium effort expected</li> </ul>		
<b>Other Considerations</b>		
N/A		



### 1.1B: Review options for grant funding

<b>Description &amp; Context</b>		
<b>What is this strategy?</b>		
<ul style="list-style-type: none"> <li>▪ Review the Energy Efficiency &amp; Conservation Block Grant (EECBG) funding as an opportunity to fund energy efficiency or renewable energy measures.</li> <li>▪ Consider other grant opportunities as they become available.</li> </ul>		
<b>Metrics of Success</b>		
<ul style="list-style-type: none"> <li>▪ Determine if the County will pursue EECBG funding and apply as appropriate.</li> <li>▪ Identify additional grant opportunities available (e.g., Infrastructure Investment and Jobs Act funding)</li> </ul>		
<b>Stakeholders</b>		
<b>Dept. Contact:</b>	<b>Role:</b>	<b>Responsibility:</b>
Fleet & Facilities, Ameer Faquir	Strategy Lead	Coordinate review and application
Finance, Mark Kluth	CIP Financial Administrator	Coordinate with accounting and facilities



## 1.1B: Review options for grant funding

Grant Committee	Accounting	Lead review and recommendations of grant applications
Partners in Energy	Research	Notify County of available funding/incentive opportunities and any associated research
<b>Key Implementation Steps and Timeline</b>		
<b>Action Steps</b>		<b>Timeline</b>
1.	Review grant requirements and decide if the county will apply	Jun 2023
2.	Determine the best application methodology (formula grant or vouchers); outline the use of the funds based on the type	Oct 2023
3.	Complete pre-application steps & build the application with supporting documentation	Dec 2023
4.	Verify accounting for federal funds, invoicing, and internal audit requirements are established and comply with federal grant management requirements	2024
5.	Apply by the appropriate deadline	TBD
6.	Build a project list associated with grant funding	TBD
7.	Maintain monitoring and reporting requirements as stated in the federal grant	TBD
8.	Continue to monitor available funding opportunities	Ongoing
<b>Communications Plan</b>		
<b>Message</b>	<b>Contacts</b>	<b>Forum</b>
Decision on whether the County will be pursuing the grant	Grant Committee	Email
Decide how grant funding will be used based on the committee's decision	Ameer Faquir	Meeting
<b>Budgeting &amp; Reporting Requirements</b>		
<ul style="list-style-type: none"> <li>Federal grant management requirements</li> </ul>		
<b>Resource Needs</b>		



## 1.1B: Review options for grant funding

- No additional funding is required to develop or enact this strategy
- Current FTEs will be required to develop the grant application, set up appropriate accounting systems, and monitor/maintain reporting requirements

### Other Considerations

#### References:

- [EECBG Webinar](#)
- [EECBG Program Formula Funding Application Hub](#)
- Stay up to date on the EECBG Program, read FAQs, and more on the [EECBG Program website](#).
- Eligible Entities can stay connected to DOE by submitting responses to this [Optional Information Collection Form](#).

#### Reminders:

- All eligible entities must submit their Pre-Award Information Sheet by April 28, 2023. Find the form on the [EECBG Program Application Hub](#).
- Local governments will have until January 31, 2024 to submit.

## Project Prioritization & Implementation

The second step to incorporating energy efficiency best practices and new technologies into the County facilities included reviewing the current facilities' progress toward the 2030 EUI reduction target, reviewing the likely impact of a State of Colorado benchmarking ordinance, and determining the best avenue for implementing energy efficiency projects.

Based on the analysis completed and discussion with the Energy Action Team around the County's current maintenance and improvement plans, three work plans (**1.1C: Complete County 5-Year upgrade plan, 1.1D: Continue controls review program and document impacts, and 1.1E: Develop a County employee sustainability communication program**) were developed to advance improved efficiency and communication at the County Facilities.



## 1.1C: Complete County 5-Year upgrade plan

### Description & Context

#### What is this strategy?

- Complete the projects identified in the County's 5-year upgrade plan to improve energy efficiency in existing buildings.



## 1.1C: Complete County 5-Year upgrade plan

Metrics of Success		
<ul style="list-style-type: none"> <li>▪ Decreased county-wide EUI</li> </ul>		
Stakeholders		
Dept, Contact:	Role:	Responsibility:
Fleet & Facilities, Ameer Faquir	Strategy Lead	Coordinate all project implementation
Fleet & Facilities, Ameer Faquir	Procurement Coordination	Coordinate procurement of external contracts
Planning, Manager of Design and Construction Division for Facilities and Fleet (FFM), Cyndi Stringham  Manager of Business Services Division for FFM, Tanya Ford	Facilities Project Lead	Track project implementation and impact
Partners in Energy	Analysis Support	Continued energy use analysis & Xcel Energy resource coordination
Key Implementation Steps and Timeline		
Action Steps		Annual Timeline
1.	Review the list of planned projects and implementation approaches. Place budget requests as needed.	May/June
2.	Develop RFP for externally contracted projects.	Jan/Feb
3.	Select a contractor.	March/April
4.	Assign staff for internally implemented projects.	March/April
5.	Verify project completion, installation per specifications, and controls are operating appropriately.	As completed
6.	Check project impact against business case calculations.	Nov/Dec
Communications Plan		
Message	Contacts	Forum



### 1.1C: Complete County 5-Year upgrade plan

Assign internally implemented projects to Fleet & Facilities staff.	Ameer Faquir	Meeting
Share RFP requirements with procurement for release.	Ameer Faquir	Email
<b>Budgeting &amp; Reporting Requirements</b>		
<ul style="list-style-type: none"> <li>Primarily funded through existing facilities or sustainability implementation budgets.</li> <li>Document energy savings estimates and verify the impact of projects when using a sustainability implementation budget.</li> </ul>		
<b>Resource Needs</b>		
<ul style="list-style-type: none"> <li>Sustainability implementation budget.</li> <li>Staff time to implement in-house projects and coordinate contractors for externally contracted projects.</li> </ul>		
<b>Other Considerations</b>		
<p>See the spreadsheet for the recommended implementation strategy for each project type for the year 1 projects. This assignment can be reevaluated at the end of year 1 based on implementation success or challenges.</p> <p>Overall preferences for time &amp; material contracts with oversight by County staff to ensure that staff are comfortable with operations and can control set points.</p> <p>Project management staff could support the development of RFPs and oversight of contracts if new construction demands are reduced.</p> <p>This work plan could also support strategy <b>1.4: Develop sustainable, resilient, and health-focused design and operations guidelines</b> and <b>1.5: Pilot building electrification in new buildings</b> in the Sustainable Adams County 2030 plan.</p>		



### 1.1D: Continue controls review program and document impacts

<b>Description &amp; Context</b>
<p><b>What is this strategy?</b></p> <ul style="list-style-type: none"> <li>Review HVAC and lighting controls for buildings with higher-than-expected energy use. Document findings and any adjustments made.</li> </ul>
<b>Metrics of Success</b>
<ul style="list-style-type: none"> <li>Decreased county-wide EUI</li> </ul>



## 1.1D: Continue controls review program and document impacts

Stakeholders		
Dept, Contact:	Role:	Responsibility:
Fleet & Facilities, Howard Hampton	Strategy Lead	Identify buildings for review and oversee controls review.
Fleet & Facilities, Ameer Faquir	Impact Communication	Share the impact of the program as part of the overall sustainability program communication.
Partners in Energy	Analysis Support	Identify potential targets for review. Support tool/resource development to communicate progress toward targets.
Key Implementation Steps and Timeline		
Action Steps		Annual Timeline
1.	Identify buildings with higher energy use than expected.	Q2 2023
2.	Create a prioritized list for controls review with buildings that meet the state benchmarking requirements, those with higher overall energy use, and buildings with comfort issues given priority.	Q4 2023
3.	Complete controls review, document findings, and estimate the impact of adjustments.	Ongoing
4.	Coordinate communications of control settings to building occupants as needed.	Ongoing
Communications Plan		
Message	Contacts	Forum
Share the impact of the program with leadership.	Ameer Faquir	Regular sustainability program updates
Communicate control adjustments to building occupants as needed.	Howard Hampton	Email
Budgeting & Reporting Requirements		
<ul style="list-style-type: none"> <li>No funding requirements unless damaged equipment or control failures are identified that require replacement.</li> </ul>		



## 1.1D: Continue controls review program and document impacts

Resource Needs
<ul style="list-style-type: none"> <li>Staff time to identify priority buildings, complete controls review, and document findings.</li> </ul>
Other Considerations
<p>These efforts should be coordinated with 1.1E to ensure that buildings occupants support energy saving measures.</p> <p>Priority buildings may include:</p> <ol style="list-style-type: none"> <li>Animal Shelter</li> <li>Dome</li> <li>Opportunity Center</li> </ol> <p>This work plan could also support strategy <b>1.4: Develop sustainable, resilient, and health-focused design and operations guidelines</b> in the Sustainable Adams County 2030 plan.</p>



## 1.1E: Develop a County employee sustainability communication program

Description & Context		
<p><b>What is this strategy?</b></p> <ul style="list-style-type: none"> <li>Develop a program to share the upgrades and adjustments being made to county buildings to improve sustainability and how building occupants can support these efforts.</li> </ul>		
Metrics of Success		
<ul style="list-style-type: none"> <li>Decreased county-wide EUI</li> </ul>		
Stakeholders		
Dept, Contact:	Role:	Responsibility:
Green Team, Juliana Archuleta	Strategy Lead	Oversee the development and delivery of a sustainability outreach and education program.
Fleet & Facilities, Ameer Faquir	Facilities expertise and direction	Provide subject matter expertise to help inform the content in the outreach and education program.





## 1.1E: Develop a County employee sustainability communication program

Partners in Energy		Outreach Support	Assist in the development of a sustainability outreach and education program.
Key Implementation Steps and Timeline			
Action Steps			Annual Timeline
1.	Meet with Green Team to understand broader engagement efforts. Determine how other sustainability efforts are being communicated.		Q4 2023
2.	Identify the target audience(s).		Q1 2024
3.	Develop the key messages and requests of the communication piece(s) including energy use trends of each building and how occupant behavior influences energy use.		Q2/Q3 2024
4.	Share with the target audience. Consider pairing timing with a capital improvement upgrade or along with the sustainability plan annual update.		Q3/Q4 2024
Communications Plan			
Message		Contacts	Forum
Building energy use trends and what you can do to support energy saving efforts.		Building occupants	TBD
This is how building operations policy affects our sustainability goals.		County Commissioners	Annual sustainability report
Budgeting & Reporting Requirements			
<ul style="list-style-type: none"> <li>None</li> </ul>			
Resource Needs			
<ul style="list-style-type: none"> <li>10-20 hours to develop and distribute communications piece</li> <li>No capital costs.</li> </ul>			
Other Considerations			
<p>Is there an opportunity to give Building Energy Standards – Appendix A – building use policy more weight?</p> <p>This work plan also supports strategy <b>1.3: Train employees on energy-efficient practices</b> in the Sustainable Adams County 2030 plan.</p>			

## Renewable Procurement

The Energy Action team discussed the accomplishment of the two renewable energy metrics defined in the Sustainable Adams County 2030 plan and reviewed opportunities to create new stretch goals around 100% carbon-free or 100% renewable electricity by 2030. The County will need to determine how they would like to both define and meet this potential stretch goal in the future. The renewable work session resulted in four work plans (**2.1A: Connect with United Power on landfill solar opportunity, 2.1B: Pursue at CASP, 2.1C: Integrate PV opportunities into master planning, and 2.2A: Develop and a County Facilities to 100% or by 2030**). These work plans capture the actions necessary for the County to both meet their sustainability metrics, as well as lay the groundwork for additional renewable opportunities.



### 2.1A: Connect with United Power on landfill solar opportunity

Description & Context		
<b>What is this strategy?</b> <ul style="list-style-type: none"> <li>Construct renewable energy resources on the Adams County landfill site to promote local energy generation as well as showcase development opportunities and reuse of undesired lands.</li> </ul>		
Metrics of Success		
<ul style="list-style-type: none"> <li>Developed site feasibility and interconnection plan with United Power for potential renewable resources at Adams County landfill</li> </ul>		
Stakeholders		
Dept, Contact:	Role:	Responsibility:
Fleet & Facilities, Ameer Faquir	Strategy Lead	Oversee the development of the Adams County landfill renewable site approach.
Project Management, Cyndi Stringham	Research & project management	Provide project support and research into the Re-Powering EPA program.
United Power	Support	Clarify utility requirements for siting and interconnection.
Key Implementation Steps and Timeline		
Action Steps		Annual Timeline
1.	Connect with the United Power account manager to learn more about the utility's plans and resource interests in the future.	Q4 2023



## 2.1A: Connect with United Power on landfill solar opportunity

2.	Explore resources available to the County for the <a href="#">RE-Powering (EPA) program</a>	Q1/Q2 2024
3.	Submit a budget request for a feasibility study for renewable resources at the landfill site. Capitalize on any available federal resources.	Q3 2024
4.	Complete feasibility study and coordinate with United Power on sizing and interconnection based on the roadmap to 100% carbon-free electricity.	Q4 2024
<b>Key Implementation Steps and Timeline</b>		
<b>Action Steps</b>		<b>Annual Timeline</b>
5.	Submit a budget request for renewable installation based on the outcomes of the feasibility study.	Q2 2025
6.	Work with procurement to select third-party vendors to design and construct renewable projects. Research contract arrangements available to determine the best option for County.	Q3 2025
7.	Complete final design and receive the approvals for the project.	Q4 2025
8.	Install renewable resources at landfill site.	Q1/Q2 2026
<b>Communications Plan</b>		
<b>Message</b>	<b>Contacts</b>	<b>Forum</b>
Maintain ongoing dialogue with the United Power account manager to learn more about transition impacts.	Ameer Faquir	Email
Share RFP requirements with procurement.	Ameer Faquir	Email
Assign internally implemented projects to Fleet & Facilities staff.	Ameer Faquir	Meeting
<b>Budgeting &amp; Reporting Requirements</b>		
<ul style="list-style-type: none"> <li>Funded through capital improvements budget for new renewable installations.</li> <li>Report potential ROI for renewable installations to County Commissioners.</li> </ul>		
<b>Resource Needs</b>		
<ul style="list-style-type: none"> <li>Staff time to identify needs, research the EPA program, review feasibility analysis results, and document decisions.</li> <li>Capital costs for new construction, O&amp;M for program subscriptions.</li> </ul>		
<b>Other Considerations</b>		
None		



## 2.1B: Pursue solar installation at CASP

Description & Context		
<b>What is this strategy?</b> <ul style="list-style-type: none"> <li>Construct a large solar installation at CASP to support the county’s 100% carbon-free or renewable energy goals.</li> </ul>		
Metrics of Success		
<ul style="list-style-type: none"> <li>Developed site feasibility and interconnection plan with Xcel Energy for potential renewable resources at Colorado Air and Space Port.</li> </ul>		
Stakeholders		
Dept, Contact:	Role:	Responsibility:
Fleet & Facilities, Ameer Faquir	Strategy co-lead	Coordinate feasibility study and implementation.
CASP, Jeff Kloska	Strategy co-lead	
Xcel Energy, Joe Limone	Support	Coordinate discussions with Xcel Energy on grid connections.
Key Implementation Steps and Timeline		
Action Steps		Annual Timeline
1.	Submit a budget request for a feasibility study for large solar on the CASP site (Figure 5).	Q3 2023
2.	Complete feasibility study and size based on the roadmap to 100% carbon-free or renewable electricity.	Q4 2023 – Q1 2024
3.	Put in the budget request for solar installation based on the outcomes of the feasibility study. May also include a larger ESCO in coordination with the 5-year plan.	Q2/Q3 2024
4.	Install solar array.	Q3/Q4 2024
Communications Plan		
Message	Contacts	Forum
Required system performance and necessary FAA guidelines.	Feasibility Study Contractor	RFP or project kick-off meeting
Solar array installation and how it impacts the county’s sustainability goals.	Community	Annual sustainability report



## 2.1B: Pursue solar installation at CASP

### Budgeting & Reporting Requirements

- Budget requests are required likely for both the feasibility study and the capital costs for installation.

### Resource Needs

- 20 hours to coordinate feasibility study.
- 40 hours to coordinate array installation.
- Array installation capital costs are expected to be between \$1.7 and \$1.9 per Watt DC (National Renewable Energy Laboratory, 2022). With an estimated system size of 85 MW, the cost would likely be between \$145 and \$165 million with a simple payback estimated between 10 to 12 years.

### Other Considerations

FAA guidelines will need to be followed when developing the solar array due to its proximity to the runway.



Figure 5: CASP land potential for solar installation



## 2.1C: Integrate solar PV opportunities into facilities' master planning

Description & Context		
<p><b>What is this strategy?</b></p> <ul style="list-style-type: none"> <li>Integrate solar opportunities identified through this planning process (Appendix B: Preliminary Solar Screening) into the facilities master plan to time with major renovations or other planned work. This should include guidance for new construction solar opportunities.</li> </ul>		
Metrics of Success		
<ul style="list-style-type: none"> <li>5 on-site installations completed by 2030</li> </ul>		
Stakeholders		
Dept, Contact:	Role:	Responsibility:
Fleet & Facilities, Ameer Faquir	Strategy Leads	Integrate key solar opportunities into the master plan
United Power & Xcel Energy	Support	Clarify utility requirements for siting and interconnection.
Key Implementation Steps and Timeline		
Action Steps		Annual Timeline
1.	Finalize the top 5 siting locations.	Q4 2023
2.	Integrate locations into the master plan.	Q1 2024
3.	Submit budget requests for short-term projects.	Q3 2024
4.	Install first solar PV opportunities.	Q4 2024
Communications Plan		
Message	Contacts	Forum
Communicate the solar plan to commissioners.	Ameer Faquir	Presentations
Share plans and success stories with building staff.	Ameer Faquir	Email
Budgeting & Reporting Requirements		



### 2.1C: Integrate solar PV opportunities into facilities' master planning

- Funded through capital projects or bundled in an EPC contract depending on the implementation of the 5-year plan.
- Report potential ROI for renewable installations to County Commissioners.

#### Resource Needs

- Depending on the mechanism for installation. Array installation capital costs are expected to be between \$1.6 and \$1.7 per Watt DC (National Renewable Energy Laboratory, 2022).

#### Other Considerations

Align installations with other construction projects. Consider connections to Sustainable Design Guidelines for new construction.



### 2.2A: Develop and finalize a County Facilities roadmap to achieve 100% carbon free or renewable electricity by 2030

#### Description & Context

##### What is this strategy?

- Develop a program to transition County Facilities' electric usage to either 100% carbon-free or 100% renewable electricity by 2030.

#### Metrics of Success

- 100% carbon-free or 100% renewable electricity supply by 2030

#### Stakeholders

Dept, Contact:	Role:	Responsibility:
Fleet & Facilities, Ameer Faquir	Strategy Lead	Oversee the completion and delivery of the roadmap to authorizing authorities.
Adams County Renewable Team	County expertise and direction	Review and inform the carbon-free roadmap and make decisions about specific project and program selections, funding, and implementation in conjunction with the County's leadership team.



**2.2A: Develop and finalize a County Facilities roadmap to achieve 100% carbon free or renewable electricity by 2030**

Fleet & Facilities, Ameer Faquir	Facilities expertise and direction	Work with procurement, designers, and renewable system installers to construct and integrate systems into buildings.
Partners in Energy	Analysis Support	Responsible for providing updates on program offerings and advising on enrollment amounts and timing. Notify County about funding opportunities and continue to track progress toward goals.

**Key Implementation Steps and Timeline**

Action Steps		Annual Timeline
1.	Select and prioritize preferred sites for renewable feasibility analysis. Engage with third-party vendors to evaluate selected County buildings and land.	Q4 2023
2.	Complete siting, sizing, and funding analysis for selected onsite resources.	Q1 2024
3	Based on the results of feasibility analysis and other available programs, develop an approach and final siting recommendations for County Facilities to achieve 100% carbon-free or renewable electricity by 2030.	Q2/Q3 2024
4.	Develop final budgets and incorporate them into appropriate budget cycles.	Q3 2024
5.	Present a 100% carbon-free or renewable electricity roadmap to authorizing authorities and receive approval.	Q4 2024
6.	Begin procuring vendor services as needed to design and construct renewable projects.	Q1 2025

**Communications Plan**

Message	Contacts	Forum
Communicate County carbon-free energy commitment both internally and externally.	County staff & public	Communication channels
Share RFP requirements with procurement for release.	Ameer Faquir	Email





## 2.2A: Develop and finalize a County Facilities roadmap to achieve 100% carbon free or renewable electricity by 2030

Assign internally implemented projects to Fleet & Facilities staff.	Ameer Faquir	Meeting
<b>Budgeting &amp; Reporting Requirements</b>		
<ul style="list-style-type: none"> <li>Primarily funded through capital improvements budget for new renewable installations and O&amp;M for ongoing annual renewable program subscriptions</li> <li>Report potential ROI for renewable installations to County Commissioners</li> </ul>		
<b>Resource Needs</b>		
<ul style="list-style-type: none"> <li>Staff time to identify priority sites, review feasibility analysis results, and document decisions.</li> <li>Capital costs for new construction, O&amp;M for program subscriptions</li> </ul>		
<b>Other Considerations</b>		
N/A		

### Energy Action Plan Impact

The combined targets and strategies outlined in this plan will result in the following impacts shown in the table below.

Metric	2019 Baseline	2030 Result
Energy Use Intensity (Electric)	8.79 kWh/ft <sup>2</sup>	7.74 kWh/ft <sup>2</sup> <sup>4</sup>
Energy Use Intensity (Natural Gas)	0.36 therms/ft <sup>2</sup>	0.32 therms/ft <sup>2</sup> <sup>5</sup>
% renewable energy supply	24%	100%
Number of facilities or land with on-site solar	0	5

<sup>4</sup> Estimated savings of 20% between identified equipment upgrades (15%) and controls optimization (5%) from 2022 levels.

<sup>5</sup> Estimated savings of 15% between identified equipment upgrades (10%) and controls optimization (5%) from 2022 levels.

## HOW WE STAY ON COURSE



This Plan is a living document. The implementation phase of Partners in Energy is designed to continue supporting Adams County Facilities in implementing the strategies and achieving the goals outlined in this plan.

### **Data and Reporting**

Partners in Energy will provide data analysis and reporting support to demonstrate strategy implementation progress, overall progress towards goals, gaps in achieving goals, and any updated assumptions or information that needs to be incorporated into the energy efficiency and renewable electricity roadmaps. This information will be shared with the Adams County Facilities Team.

### **Project Management and Tracking**

Partners in Energy will coordinate ongoing monthly coordination calls with Adams County throughout the implementation phase. Depending on the County's preferences, the coordination calls can be structured so all participants and topics are included in one meeting or can be divided up according to the focus area.

### **Energy Action Team Commitment**

Adams County Facilities will dedicate adequate staff time to ensure the successful implementation of this Plan through the following roles: PM team, implementation leads, and implementation support staff. Adams County staff will also advise Partners in Energy representatives and other members of the implementation teams about funding availability through the annual operating and capital budget, in addition to other funding sources that may include donations, grants, and other sources.

# APPENDIX A: 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 that powers millions of homes and businesses across eight Western and Midwestern states. Each community Xcel Energy serves has its 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 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.

## Plan Development Process

The content of this plan is derived from a series of work sessions held virtually with a team committed to representing the facilities' energy priorities and implementing plan strategies.

A kickoff meeting was held in January 2023 to provide an overview of the planning process and help identify the County's preliminary priorities, to inform plan development. During this kickoff meeting, the roles and responsibilities of the team were confirmed. The planning team included Partners in Energy facilitators, Xcel Energy representatives, and Adams County representatives.

Work Session 1 was held in March 2023. During Work Session 1, stakeholders discussed Adams County’s current budgeting and accounting process and reviewed the potential for developing a funding mechanism that would support continuing energy efficiency improvements. The team used this information to develop two work plans focused on creating an ongoing annual sustainability implementation budget in 2024 and outlining options for continued review and pursuit of grant funding opportunities.

During Work Session 2, the team focused on determining the best avenue for implementing key energy efficiency projects and prioritized options to meet their 2030 EUI reduction target. Based on the analysis completed before the work session, the team developed three work plans focused on completing the projects identified in the County’s 5-year upgrade plan, reviewing HVAC and lighting controls for buildings with higher-than-expected energy use, and developing a communication program to share the upgrades and adjustments being made to County buildings.

In Work Session 3, the team reviewed and discussed potential locations for renewable energy installations on County property and identified other alternatives necessary to meet the County’s renewable targets. The results of this work session included four work plans highlighting actions needed to develop and finalize a County Facilities Roadmap to achieve 100% carbon-free or renewable by 2030, construct renewable energy resources on the Adams County landfill site, construct a large solar installation at CASP, and integrating solar PV opportunities into the County’s master planning processes.

### Plan Implementation

Partners in Energy provides 18 months of implementation support. This support is designed to supplement both technical analysis and support available through Xcel Energy’s other offerings. Services offered through the Partners in Energy team are shown in Figure 2.

Throughout the plan, strategies that will be supported by Partners in Energy staff are identified.



Figure 6: Resources from Xcel Energy for Implementation

# **APPENDIX B: PRELIMINARY SOLAR SCREENING**

# COLORADO AIR AND SPACE PORT

- **System Size:** 4 MWdc
- **Estimated generation:** 6.4 million kWh per year (about 1/3 of County's total electricity use)
- **Utility:** Xcel Energy
- **Notes:**
  - Lots of land available for additional generation.



# ADAMS COUNTY LANDFILL

- **System Size:** 6.7 MWdc
- **Estimated generation:** 10.7 million kWh per year (about 57% of County's total electricity use)
- **Utility:** United Power
- **Notes:**
  - On hold due to United Power's exit from Tri-State



# HUMAN SERVICES CENTER

- **System Size:** 328 kWdc
- **Estimated generation:** 30% of building use
- **Utility:** Xcel Energy
- **Notes:**
  - Other potential rooftop opportunities depending on mechanical equipment.





# SERVICES CENTER

- **System Size:** 313 kWdc
- **Estimated generation:** 31% of building use
- **Utility:** Xcel Energy



## PUBLIC WORKS

- **System Size:** 84 kWdc
- **Estimated generation:** 61% of building use
- **Utility:** Xcel Energy
- **Notes:**
  - Potential for ground mounted system in conjunction with fleet services based on use of the lot.



# FLEET BUILDING

- **System Size:** 123 kWdc
- **Estimated generation:** 85% of building use
- **Utility:** Xcel Energy
- **Notes:**
  - Could combine with public works for a larger ground mount system.



# GOVERNMENT CENTER

- **System Size:** 716 kWdc
- **Estimated generation:** 32% of building use
- **Utility:** United Power
- **Notes:**
  - Potential for additional smaller rooftop systems.
  - Lots of surrounding land for ground-mount systems based on ownership.



# WESTERN SERVICE CENTER

- **System Size:** 58 kWdc
- **Estimated generation:** 12% of building use
- **Utility:** Xcel Energy
- **Notes:**
  - There is a field to the north that could be a good location for ground mount solar if it is county owned.



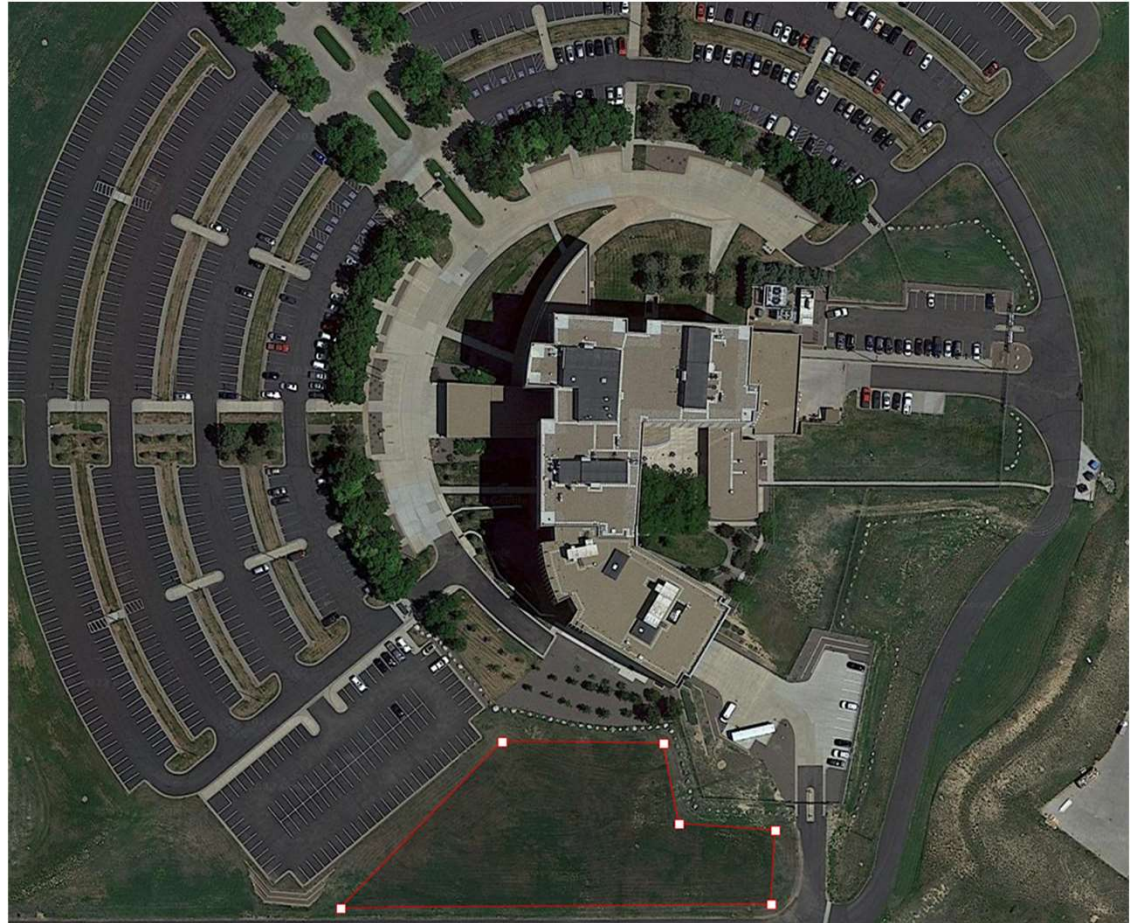
# GOVERNMENT CENTER

- **System Size:** 916 kWdc
- **Estimated generation:** 90% of building use
- **Utility:** United Power
- **Notes:**
  - Consider completing energy efficiency work on this building before sizing solar



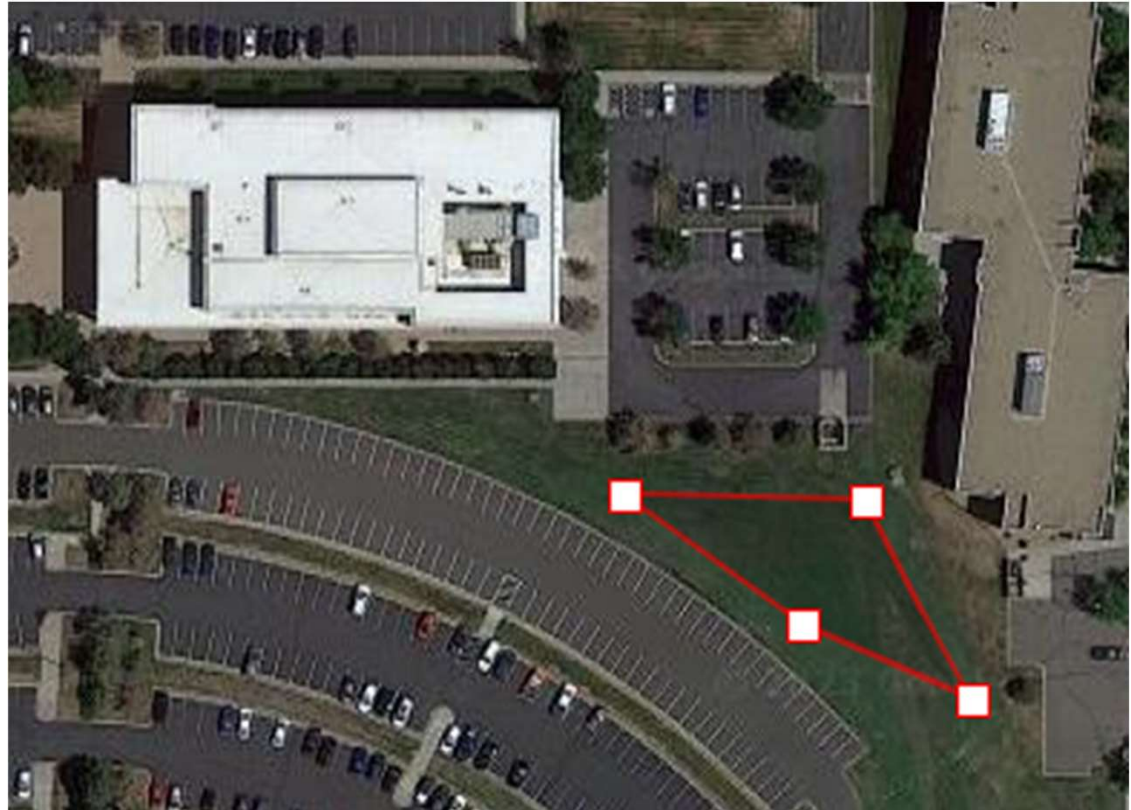
# JUSTICE CENTER

- **System Size:** 551 kWdc
- **Estimated generation:** 36% of building use
- **Utility:** United Power
- **Notes:**
  - Opportunity for canopy solar as well over parking lot.



## DISTRICT ATTORNEYS BUILDING

- **System Size:** 101 kWdc
- **Estimated generation:** 27% of building use
- **Utility:** United Power
- **Notes:**
  - Opportunity for canopy solar as well over parking lot.





## CORONER & PROBATION OFFICE

- **System Size:** 354 kWdc
- **Estimated generation:** 112% of building use
- **Utility:** United Power
- **Notes:**
  - May want to scale to avoid over producing based on net metering agreements.

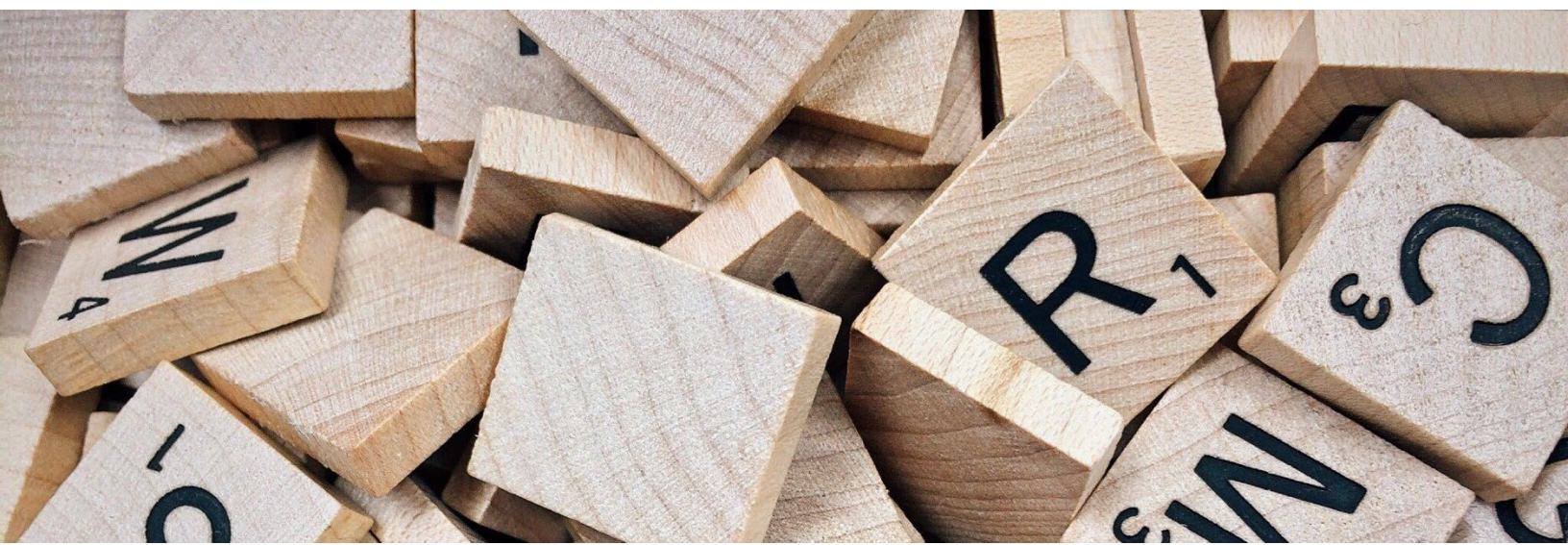


## FLATROCK TRAINING FACILITY

- **System Size:** 273 kWdc
- **Estimated generation:** 191% of building use
- **Utility:** United Power
- **Notes:**
  - Check with utility rep about net metering agreements to determine best size.



## APPENDIX C: GLOSSARY OF TERMS



**15 x 15:** Xcel Energy’s privacy rule, requires all data summary statistics to contain at least 15 premises, with no single premise responsible for more than 15% of the total. Following these rules, if a premise(s) is responsible for more than 15% of the total for that data set, it is/they are removed from the summary.

**British Thermal Unit (BTU):** the amount of heat needed to raise one pound of water at maximum density through one degree Fahrenheit

**Carbon-free:** Carbon-free refers to sources of energy that will not emit additional carbon dioxide into the air. Wind, solar and nuclear energy are all carbon-free sources but only wind and solar are renewable.

**Carbon-neutral:** Carbon-neutral, also described as “**net zero**”, could include carbon-free sources but is broader and refers to the energy that removes or avoids as much carbon dioxide as is released over a set period. Carbon-neutral is sometimes used to describe a site that produces an excess amount of electricity from a renewable energy source, such as solar, compared to what it consumes. That excess energy is put back into the grid in an amount that offsets the carbon dioxide produced from the electricity it draws from the grid when it is not producing renewable energy.

**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.

**Energy Reduction:** The result of behavior changes that cause less energy to be used. For example, setting the thermostat to a lower temperature *reduces* the energy used in your home during the winter. Since energy reductions can be easily reversed, they are not accounted for when calculating changes in energy usage.

**Energy Savings:** Comes from a permanent change that results in using less energy to achieve the same results. A new furnace uses X% less energy to keep your home at the same temperature (all things being equal), resulting in energy *savings* of X%. For accounting purposes, energy savings are only counted in the year the new equipment is installed.

**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 electricity and natural gas consumption to be combined.

**Metric Tons of Carbon Dioxide Equivalent (MTCO<sub>2e</sub>):** A unit of measure for greenhouse gas emissions. The unit "CO<sub>2e</sub>" represents an amount of a greenhouse gas whose atmospheric impact has been standardized to that of one unit mass of carbon dioxide (CO<sub>2</sub>), based on the global warming potential (GWP) of the gas.

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

**Net Zero:** Also described as "carbon neutral", balances the GHG produced from electricity with an equal amount of emissions eliminated.

**Premise:** A unique combination of service address and meter. For residential customers, this is the equivalent of an individual house or dwelling unit in a multi-tenant building. For business customers, it is an individual business, or for a larger business, a separately-metered portion of the business's load at that address.

**Renewable Energy Certificate (REC):** For every megawatt-hour of clean, renewable electricity generation, a renewable energy certificate (REC) is created. A REC embodies

all of 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.