

Appendix A12

CORE Clean Energy Plan

1-Q24-063-Application Documents

Canyon Peak Power Arapahoe County 1041/USR Application Q24-063



Clean Energy Plan

Submitted December 2023

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Resource Planning Process Overview

CORE Electric Cooperative (CORE) is a cooperative electric association whose members elected to exempt it from the Public Utilities Law pursuant to §40-9.5-13, Colorado Revised Statutes, including for retail rate and resource planning processes. As such, CORE's Board of Directors, elected from its membership, serve as CORE's regulator for purposes of resource acquisition and contract approval. It submitted a notice of intent to file a voluntary Clean Energy Plan (CEP) on July 30, 2021, per §25-7-125.5(1)(e)(VIII)(J) C.R.S. , pending the outcome of Public Service Company of Colorado's (Xcel) 2021 Electric Resource Plan, which impacts future operations and early retirement of CORE's largest existing generation resource, the Comanche Unit 3 coal plant.

CORE has engaged in an ongoing planning process over the last several years, focused on first replacing energy and capacity purchased from Xcel under an existing long-term requirements agreement and its entitlement to generation from its ownership share of Comanche Unit 3. CORE's Board has actively engaged in this process and authorized CORE to enter into several contracts to purchase output from generators located throughout Colorado, as further described herein. CORE's resource planning process has identified additional resource needs near the end of the CEP planning period, above currently contracted or planned resources. CORE expects to fill that resource need through acquisitions later in the planning period, due to expected changes in technology, transmission topology, and wholesale market structures. CORE intends to fill the specific energy and capacity needs identified consistent with the greenhouse gas reduction goals described in §40-2-125.5(3)(a)(1) C.R.S.

Retail Load Forecast

CORE uses multi-variate linear regression techniques to estimate weather-normalized average consumption for each of its major customer classes, accounting for expected and observed shifts in end-user technology adoption. These shifts include electrification of loads previously served directly by fossil fuels, such as transportation and heating, as well as trends in adoption of on-site parallel generation and storage. Meter population growth is estimated based on county-level population and econometric data forecasts sourced from third parties.

CORE's estimated energy requirements are expected to grow at an average rate of 1.8% through the planning period, compared to the most recent five-year period of 1.3%. This increase reflects continued population growth in CORE's Front Range service territory and ongoing shifts towards electrifying end uses previously served using direct fossil fuel combustion. The forecast includes continued growth in light-duty vehicle adoption from current levels. While adoption of electric space and water heating is expected to increase over the planning period, CORE believes this will primarily impact a growing share of new construction with slower adoption in building retrofits. As such, the impact of fuel switching for heating is expected to primarily impact years following the end of the current CEP planning period. The load forecast also accounts for the continued growth of retail-sited renewable generation, primarily from solar photovoltaic facilities with some increasing amount of co-located battery storage. Interconnections are expected to total between 52 and 55 megawatts (MW) by the end of 2023. Recent adoption trends are extrapolated for several years with some moderation forecast in the latter part of the planning period due to changing

market conditions. CORE is developing member-facing programs to encourage optimization of newly electrified load to minimize the need for incremental generation capacity and mitigate system wide transmission and distribution upgrades.

Table 1: CORE Load Forecast

Year	Energy (GWh)	% Change	System Peak (MW)	% Change	Data Type
2021	2,687	2.7%	649	5.5%	Actual
2022	2,690	0.1%	632	-2.6%	Actual
2023	2,610	-3.0%	628	-0.7%	10 Act/2 Fcast
2024	2,631	0.8%	686	9.2%	Forecast
2025	2,667	1.4%	711	3.6%	Forecast
2026	2,734	2.5%	713	0.3%	Forecast
2027	2,785	1.9%	732	2.7%	Forecast
2028	2,839	1.9%	750	2.5%	Forecast
2029	2,894	2.0%	766	2.2%	Forecast
2030	2,962	2.3%	785	2.4%	Forecast

Resource Summary

A summary of CORE's current and forward-looking resource portfolio is provided below for the period extending through 2030. CORE's primary focus in resource planning is maintaining reliability and affordability while meeting its compliance obligations, including the 2030 greenhouse gas targets described in §40-2-125.5(3) C.R.S.

2005 Supply and Emissions

CORE's entire energy and capacity requirements were met through long term purchase power contracts in 2005, including with Xcel and two divisions of the Western Area Power Administration (WAPA). Total energy purchases for 2005 totaled 2,037,959 MWh, as described in more in table 2. Purchases from WAPA's Colorado River Storage Projects (CRSP) include a limited volume of market purchases on CORE's behalf. Emissions estimates for 2005 are shown in Attachment 1, CORE's Verification Workbook.

Table 2: 2005 Energy Purchase by Contract

Supplier	Purchases	Measurement Point
Xcel Energy	1,920,550 MWh	CORE's PSCo Delivery Points
WAPA (Loveland Area Projects)	81,482 MWh	WAPA/PSCo Interconnection
WAPA (Colorado River Storage Projects)	42,971 MWh	WAPA/PSCo Interconnection

2024-2025 Resource Plan

CORE's energy and capacity requirements for 2024-2025 will be met primarily through energy generated from the Comanche 3 coal plant and purchases under the wholesale contracts with Xcel and WAPA, supplemented by energy from solar Qualifying Facilities (QFs) and retail-sited generation owned by CORE's members. The Xcel contract allows CORE only limited purchases or generation from other sources, including purchases from WAPA, generators that meet the requirements of Qualifying Facilities (QFs) under the Public Utilities Policy Regulatory Act, and net-metered retail generation per Colorado statute. CORE does not expect to supply any significant share of its energy needs from suppliers other than those described below until after the Xcel contract terminates at the end of 2025.

CORE has modeled its emissions for this two-year period largely based on information developed by Xcel. Projected greenhouse gas emission intensities were forecast for CORE's purchases under the Xcel wholesale contract using modeling results filed on September 18, 2021 in Docket 21M-0141E at the Colorado Public Utilities Commission (included as Attachment 2). Specifically, CORE is using Portfolio 1 results from Public Appendix T to Xcel's 120-Day Report to calculate expected carbon dioxide emissions for 2024-2025. CORE estimated emissions for its share of generation from Comanche Unit 3 based on availability projections for the period provided by the plant operator as part of the normal budgeting process, accounting for reduced offtake from the plant for planned outages, estimated forced outages, and to take energy from solar QFs. This represents a conservative estimate for emissions during this period, as the modeled availability is higher than historical actuals and does not account for the impact of Xcel's capacity factor limitations described in an approved Settlement Agreement in the abovementioned PUC docket.

CORE will continue to purchase energy and capacity from WAPA, and three solar QFs with nameplate capacity totaling 138 MW. The market purchases described for 2005 under the CRSP contract are projected to continue at reasonably comparable levels through the end of the CEP planning period. A small adjustment to emissions consistent with this level of purchases is included, based on an average emissions rate developed for 2024-2029 using estimates included in the Energy Information Administration's Annual Energy Outlook 2023 for the WECC/Rockies region.

2026-2030 Resource Plan

CORE will supply its members' electricity needs through long term purchase agreements with specific generators, generation from the Comanche Unit 3 facility, and active participation in regional wholesale energy markets beginning in 2026.

Table 3: Modeled Energy Supply (GWh) & Emissions by Year

Year	2024	2025	2026	2027	2028	2029	2030
Net Retail Load	2,631	2,667	2,734	2,785	2,839	2,894	2,960
PSCo Purchases	1,019	859	0	0	0	0	0
WAPA Purchase	111	110	136	136	137	136	137
Coal	1,271	1,470	1,020	723	610	453	293
Solar	340	337	754	748	756	776	1,093
Wind	0	0	824	1,194	1,211	1,240	1,592
Natural Gas	0	0	204	308	450	586	67
Net Battery	0	0	-27	-28	-27	-28	-57
Net Purchase/(Sale)	-109	-108	-29	-133	-121	-80	35
CO2 Emissions (000 st)	1,742	1,854	1,163	875	826	755	377

Existing Resources

Western Area Power Administration

CORE is party to two long-term power purchase agreements with divisions of the Western Area Power Administration (WAPA) for approximately 30 MW of firm capacity and approximately 105-110 GWh of annual energy. These contracts extend beyond the planning period and are assumed to supply clean energy throughout their term at levels comparable to the current volume. WAPA has transferred RECs corresponding to approximately 96% of CORE's actual purchases in recent years.

Solar Qualifying Facilities & Net Metered Generation

CORE has entered into agreements to purchase energy from 3 solar photovoltaic generators which meet the requirements of a Qualifying Facility (QF) under PURPA. These three facilities, Victory Solar, Pioneer Solar, and Hunter Solar are rated to supply 138 MW of nameplate capacity to CORE under contracts extending through the planning period.

CORE also purchases energy and capacity from small QFs totaling slightly less than 3 MW of nameplate capacity spread across 150 retail meters throughout CORE's territory. These

generators are rated above the capacity limits specified in the net metering statute applicable to CORE.

CORE provides net metering to more than 8,500 smaller renewable generators co-located with individual members' homes and businesses across CORE's service territory. Most of these generators are rooftop solar units with a slowly increasing adoption of member-owned battery facilities. Total nameplate capacity is 47.5 MW as of November 1, 2023, and has averaged growth of 1.3 MW/month in 2023.

Comanche Unit 3

CORE holds a 25.3% minority ownership interest in the supercritical 750 MW, Comanche Unit 3 coal plant in Pueblo and is entitled to 190 MW of capacity from the unit. It relies on Xcel to provide operational control of the plant consistent with the ownership agreements. CORE has modeled the unit for 2026-2030 using estimates of availability generally corresponding with the capacity factor limitations described in the Xcel Settlement Agreement. The model assumes CORE will use what it anticipates will be provided of its full entitlement of capacity from the plant to continue to meet peak seasonal needs through 2030 consistent with the proposed accelerated retirement date. This model assumes CORE will serve its retail load with what it anticipates will be provided of its full entitlement during peak summer and winter months and dispose of excess energy in the regional market based on prevailing conditions. CORE has not modeled the retirement of Comanche 3 prior to January 1, 2031, because it cannot make that decision without the consultation and agreement of the other owners of the plant. Further, given the need for capacity on the system over the CEP planning period, it is not reasonable to retire Comanche 3.

New Resources

Contracted Clean Energy Resources

CORE has entered into purchase agreements with two wind farms and a hybrid solar-storage facility, all in late stages of development or early stages of construction. Each of these facilities are expected to be operational in 2026 and will provide the bulk of CORE's energy requirements through the planning period. Table 4 below shows CORE's contracted new clean-energy resources.

Table 4: Contracted Clean Energy Resources

Name	Technology	County	Nameplate	COD
██████████	Wind	██████████	199 MW	██████████
██████████	Wind	██████████	150 MW	██████████
██████████	Solar	██████████	200 MW	██████████
██████████	Battery Storage	██████████	100 MW/4 hour	██████████

Contracted Thermal Capacity Resources

CORE has entered into tolling agreements with two existing natural gas facilities to provide firming capacity and energy as the region continues to transition to primarily rely on variable renewable generation, described in Table 5. CORE's modeling shows the expected capacity factor of these facilities declining over the term of their contracts, which extend past the end of the current CEP planning period.

Table 5: Contracted Thermal Capacity Resources

Name	Technology	County	Summer Capacity	Contract Start
██████████	2x1 Combined Cycle	██████████	120 MW	██████████
██████████	Combustion Turbine	██████████	300 MW	██████████

Market Participation

CORE expects to participate actively in the regional wholesale electricity market with significant purchases and sales of energy due to the mismatch between the availability of renewable generation and member's consumption profiles. The CEP model run reflects modest short-term purchases and sales of energy, reflecting limited expected inter-regional transmission over the planning period and high expected correlation with other regional utilities' renewable portfolios. Annual average emissions rates were used for short-term market interactions, though CORE expects to retain RECs associated with any market sales from clean energy resources and may sell excess into the market, where feasible, to provide retail rate relief. Purchases were modeled with emissions intensities based on data derived from the EIA model discussed earlier and sales were based on an annual system average intensity. Market purchases for 2030 were modeled using the intensity specified in the verification workbook for that year.

Additional Planning Period Resources

Current modeling reflects the need for additional near-term capacity resources and significant replacement energy and capacity beginning in 2030, as Comanche 3 nears its new retirement date and reduces its operations. CORE is in active discussions to add several distribution-sited storage facilities to provide system capacity and relieve transmission loading during peak months. These projects are expected to supply 50-60 MW of four-hour battery storage to CORE's portfolio, beginning before the summer of 2026. In addition, CORE is in discussions with several counterparties to provide firming capacity and energy for 2026 and 2027 prior to the effective date for the ██████████ contract. This is modeled as a market purchase for the purposes of this clean energy plan filing and reflects the average carbon dioxide intensity described for purchases under the Market Participation section above.

The model calls for the addition of substantial new resources for 2030, including 100 MW of solar, 150 MW of wind, and 200 MW of battery storage, largely due to the expected low availability of Comanche 3 in that year. However, potential changes in technology,

transmission topology, and market structure in the planning period are likely to affect the optimal combination of resources to serve CORE's load. Additional planning cycles will identify specific resources to meet its member's evolving needs. CORE will engage in a resource-specific acquisition process that will adapt to the changing pace of electrification and future shifts to Comanche 3's future operational parameters.

Portfolio Summary

CORE will begin meeting its members' electricity requirements through a portfolio of owned and directly contracted resources beginning in 2026 while meeting the emissions reductions laid out in Colorado statute. The portfolio summarized below in Table 6 shows CORE's expected portfolio composition for 2030, based on the best available information at this time. While thermal resources will still provide a significant share of CORE's capacity requirements, the amount of energy served from these facilities will decrease substantially over the planning period for this CEP.

Table 6: CORE's 2030 Resource Portfolio by Energy Source

Resource Type	Nameplate Capacity (MW)	Firm Summer Capacity (MW)	Modeled Energy (% 2030 Gen)
Wind	481	72	51%
Solar	439	143	35%
Battery Storage	352	318	-2%
Hydro	28	28	4%
Coal	190	190	10%
Natural Gas	439	417	2%

Attachment 1

Public CEP Summary & Verification Workbook

CORE Electric Cooperative
2023 Clean Energy Plan - Public Summary



		2024	2025	2026	2027	2028	2029	2030
Energy Requirements, net DG	MWh	2,630,980	2,667,440	2,734,469	2,785,158	2,839,069	2,894,444	2,959,936
Modeled Energy by Resource Type								
Xcel Purchases	MWh	1,019,242	858,919	0	0	0	0	0
WAPA Purchases	MWh	110,538	109,738	136,109	136,094	136,664	136,129	136,529
Coal Generation	MWh	1,270,680	1,470,251	1,020,357	723,407	609,544	452,618	292,930
Natural Gas Generation	MWh	0	0	203,872	308,249	450,333	586,489	67,265
Wind Generation	MWh	0	0	823,730	1,193,710	1,211,468	1,239,738	1,591,577
Solar Generation (Utility Scale)	MWh	339,711	336,916	753,618	747,690	756,371	775,658	1,092,820
Net Losses from Storage	MWh	0	0	-26,883	-27,634	-26,847	-27,599	-56,871
Market Purchases	MWh	0	0	262,273	162,630	177,896	221,383	338,056
Modeled Sales	MWh	-109,191	-108,384	-291,301	-295,201	-298,501	-301,201	-303,301
Modeled RE Curtailment	MWh	0	0	100,052	150,767	130,736	77,345	119,798
Heat Input								
Coal	mmBTU	12,579,735	14,555,483	10,123,533	7,189,230	6,050,990	4,497,421	2,917,493
Natural Gas	mmBTU	0	0	1,688,658	2,698,380	4,119,263	5,362,558	550,169
Emissions								
Carbon Dioxide	short tons	1,742,233	1,853,956	1,162,791	874,803	825,864	755,220	377,036
Methane	short tons	211	238	137	93	77	61	40
Nitrous Oxide	short tons	39	40	149	69	48	57	6

CEP Demonstration

No Data Entry on this tab. This tab displays the results of the evaluation.

Safe Harbor Evaluation

No Data Entry on this tab. This tab displays the results of the evaluation.

2005 All Electricity

Owned Assets

Co-owned facilities and units: Report data based on percentage of each facility or unit that is owned by the utility filing the report. If ownership is not correlated to actual energy received and associated emissions, report actual energy and emissions for baseline year assigned to the company filing the CEP. During the verification of the form by the Air Pollution Control Division, all data used to populate the form will be made available for review.

Plant: Report Plant or Unit Name of the asset

Primary Generation Type: Use the picklist to report the primary fuel or resource type for the asset.

Total Heat Input: Report the actual heat input consumed in mmbtu by the unit in 2005 for fuel fired units. Report zero if asset does not combust fuel.

% Heat Input Coal: Report the percentage of total heat input associated with combusting coal to the nearest tenth of a percent.

% Heat Input Natural Gas: Report the percentage of total heat input associated with combusting natural gas to the nearest tenth of a percent.

% Heat Input Fuel Oil: Report the percentage of total heat input associated with combusting fuel oil to the nearest tenth of a percent.

% Heat Input Biomass: Report the percentage of total heat input associated with combusting biomass to the nearest tenth of a percent.

Generation: Report the actual load produced by the unit in Net MWh in 2005.

CO2 Emissions Methodology: Use the picklist to select the method of determining CO2 emissions from the asset. Use the most specific data source available.

Picklist is sorted in order of most specific to least specific, followed by zero GHG.

CO2 Total: Report actual CO2 emissions determined by the emission methodology for 2005.

Contract Purchases - Use FERC Form 1 or other relevant publicly available data to report 2005 contract purchases.

Counter Party: Report the entity with which the contract is established.

Primary Generation Type: Use the picklist to report the primary fuel or resource type for the asset.

Purchases: Report the actual quantity of energy purchased in Net MWh.

Emission Rate Source: Use the picklist to select the most specific CO2 emission rate source for the contract. Picklist is sorted in order of most specific to least specific, followed by zero GHG.

Market Transactions - Use FERC Form 1 or other relevant publicly available data to report 2005 market transactions. During the verification of the form by the Air Pollution Control Division, all data used to populate the form will be made available for review.

Market Name: Report the name each market from which transactions occurred in 2005.

System Subregion or Region Identification: Report the location of each market using the picklist. If sales are made into a market and the company system rate is used for emissions calculations, select Company System Rate.

Transactions: Report transactions conducted through each market with positive values indicating purchases and negative values indicating sales. Report separate lines for purchases and sales to each market if historical data is available. If separate purchase and sales data is not available, report net transactions through each market. Report energy in Net MWh.

Emission Rate Source: Use the picklist to select the most specific CO2 emission rate source for the contract. Picklist is sorted in order of most specific to least specific, followed by zero GHG.

Colorado Sales Information - Use FERC Form 1 or other relevant publicly available data to report all retail electricity sales and all Colorado wholesale requirements contract sales that occurred in 2005. Report all contracts, including those that are excluded below from the baseline because they were no longer valid as of January 1, 2019 or because the customer intends to file their own CEP. Contact the Air Pollution Control Division with further questions. During the verification of the form by the Air Pollution Control Division, all data used to populate the form will be made available for review.

System Losses and SF6 Leakage - For Colorado system line losses, report all losses and SF6 emissions in the distribution row. If data is not calculated separately for transmission and distribution assets.

For transmission and distribution systems that cover multiple states, report the quantity of SF6 emitted from Colorado portion of the system only.

2005 Baseline Adjustment Details - Report all contracts that are excluded from the baseline because they were no longer valid as of January 1, 2019 or because the customer intends to file their own CEP.

2030 All Electricity

Owned Assets

Co-owned facilities and units: Report data based on percentage of each facility or unit that is owned by the utility filing the report and consistent with modeling results submitted for the CEP.

Plant: Report Plant or Unit Name of the asset

Primary Generation Type: Use the picklist to report the primary fuel or resource type for the asset.

Total Heat Input: Report projected heat input for each asset from the CEP resource modeling. Report zero if asset does not combust fuel.

% Heat Input Coal: Report the percentage of total heat input associated with combusting coal to the nearest tenth of a percent.

% Heat Input Natural Gas: Report the percentage of total heat input associated with combusting natural gas to the nearest tenth of a percent.

% Heat Input Fuel Oil: Report the percentage of total heat input associated with combusting fuel oil to the nearest tenth of a percent.

% Heat Input Biomass: Report the percentage of total heat input associated with combusting biomass to the nearest tenth of a percent.

Generation: Report projected load produced by the unit in Net MWh from the resource plan modeling for the CEP.

CO2 Emissions Methodology: Use the picklist to select the method of determining CO2 emissions from the asset. Use the most specific data source available.

Picklist is sorted in order of most specific to least specific, followed by zero GHG.

CO2 Total: Report actual CO2 emissions determined by the emission methodology for 2030.

Contract Purchases - Report contracts that are included in the load forecast used for resource plan modeling of the CEP.

Counter Party: Report the entity with which the contract is or will be established.

Primary Generation Type: Use the picklist to report the primary fuel or resource type for the asset.

Purchases: Report the projected quantity of energy purchased in Net MWh.

Emission Rate Source: Use the picklist to select the most specific CO2 emission rate source for the contract. Picklist is sorted in order of most specific to least specific, followed by zero GHG.

Market Transactions - Report market transactions that are included in the load forecast used for resource plan modeling of the CEP.

Market Name: Report the name each market from which transactions are expected to occur in 2030 based on current or expected market participation.

System Subregion or Region Identification: Report the location of each market using the picklist.

Transactions: Report transactions projected through each market with positive values indicating purchases and negative values indicating sales. Report separate lines for purchases and sales to each market if modeling data is available. If separate purchase and sales data is not modeled, report net transactions modeled through each market. Report energy in Net MWh.

Emission Rate Source: Use the picklist to select the most specific CO2 emission rate source for the contract. Picklist is sorted in order of most specific to least specific, followed by zero GHG.

Sales Information - Report projected retail and Colorado wholesale contract sales included in the load forecast used in resource plan modeling for the CEP. Report all contracts, including those that the customer intends to file their own CEP.

System Losses and SF6 Leakage - For Colorado system line losses, report anticipated losses and SF6 emissions in the distribution row. If data is not calculated separately for transmission and distribution assets.

For transmission and distribution systems that cover multiple states, report the quantity of SF6 emitted from Colorado portion of the system only.

2030 Adjustment Details - Report all contracts that the customer intends to file their own CEP.

Interim Year Summary

This tab is not used for determining acceptability of a CEP, nor any compliance determination with AQCC regulations. It is submitted for information purposes only to inform GHG reduction planning activities.

Report Total Load, Beneficial Electrification Program Load, Total GHG emissions, and Total CO2 emissions for each calendar year based on forecasts submitted with resource planning activities.

Lists and Lookups

If Biomass fuels are used, enter the appropriate emission factors based on fuel type.

For long-term contract transactions, enter contract-specific emission rates based on all generation assets included under the contract.

For company system rate emission factors, enter the appropriate emission factors for the electricity pool supplied by the company. During the verification of the form by the Air Pollution Control Division, all data used to populate the emission factors will be made available for review.

If additional lines are necessary for contract transactions, they must be added above the line titled "LEAVE BLANK" and data must be entered in alphabetical order in the first column in order for the vlookup function to work properly.

Demonstration for 80% CO2 reduction in Retail + Colorado Wholesale sales pursuant to SB19-236

Step 1: Calculate 2005 CO2 baseline

Baseline	2005
Electricity sales CO2 (short tons)	1,882,717

Step 2: Calculate 2030 CO2 forecast

Forecast	2030
Electricity sales CO2 (short tons)	377,036

Step 3: Calculate percent CO2 reductions

CO2 Reduction Demonstration	
2005 Baseline CO2	1,882,717
2030 Projected CO2	377,036
Percent Reduction	80%

Plans that achieve 80% reduction when filed meet the minimum requirement of the statute.

Demonstration of 75% reduction in GHGs from retail sales pursuant to HB19-1261

Step 1: Calculate retail only GHG 2005 baseline

Baseline	2005
Retail electricity sales CO2e (Metric Tons)	1,719,758

Step 2: Calculate 2030 retail only GHG forecast

Forecast	2030
Retail electricity sales CO2e (Metric Tons)	344,738

Step 3: Calculate percent GHG reductions for retail sales

GHG Reduction Demonstration	
2005 Retail Baseline CO2e	1,719,758
2030 Retail Forecast CO2e	344,738
Percent Reduction	80%

Plans that achieve 80% reduction when filed meet the minimum initial requirement of the statute.

Approved plan that achieves 75% reduction meets minimum final requirement of the statute to qualify for the safe harbor provisions.

RED FONT: DATA ENTRY

BLACK FONT: Calculated

2005 All Electricity: Historical Generation and Emissions Data for CEP Baseline

Owned Assets															
Plant or Unit	Primary Generation Type	Total Heat Input (MMBtu)	% Heat Input Coal	% Heat Input Natural Gas	% Heat Input Fuel Oil	% Heat Input Biomass	Generation (Net MWh)	CO2 Emissions Methodology	CO2 Total (Short Tons)	CO2 Total (Metric Tons)	CH4 Total (Metric Tons CO2e)	N2O Total (Metric Tons CO2e)	CO2e Total (Metric Tons)	CO2 Intensity (Lb/Net MWh)	GHG Intensity (Metric Ton / Net MWh)
N/A										0	0	0	0	0	0.00
N/A										0	0	0	0	0	0.00
N/A										0	0	0	0	0	0.00
N/A										0	0	0	0	0	0.00
N/A										0	0	0	0	0	0.00
TOTAL HEAT INPUT		0					TOTAL GENERATION	0	TOTAL Emissions	0	0	0	0	0	0.00

Contracted Assets									
Counter Party	Primary Generation Type	Purchases (MWh)	Emission Rate Source	CO2 Intensity (Lb/MWh)	CO2 Total (Short Tons)	CO2 Total (Metric Tons)	CH4 Total (Metric Tons CO2e)	N2O Total (Metric Tons CO2e)	CO2e Total (Metric Tons)
Xcel Energy	Coal	1,920,550	System Rate	1,959	1,881,328	1,706,712	3,384	8,395	1,718,492
WAPA LAP	Water	81,482	Zero GHG	0	0	0	0	0	0
WAPA CRSP	Water	42,971	System Rate	65	1,389	1,260	0	6	1,266
N/A				0	0	0	0	0	0
TOTAL CONTRACT PURCHASES		2,045,003		TOTAL Emissions	1,882,717	1,707,972	3,385	8,401	1,719,758
Market Transactions (Negative for Sales, Positive for Purchases)									
Market Name	System, Subregion, or Region Identification	Transactions (MWh)	Emission Rate Source	CO2 Intensity (Lb/MWh)	CO2 Total (Short Tons)	CO2 Total (Metric Tons)	CH4 Total (Metric Tons CO2e)	N2O Total (Metric Tons CO2e)	CO2e Total (Metric Tons)
N/A				0	0	0	0	0	0
N/A				0	0	0	0	0	0
N/A				0	0	0	0	0	0
TOTAL MARKET ENERGY TRANSACTIONS		0		TOTAL Emissions	0	0	0	0	0

Customer Sales Information			
	Net MWh	CO2 Emissions (Metric Tons)	GHG Emissions (Metric Tons CO2e)
Retail Sales	1,929,108	1,707,972	1,719,758
Colorado Wholesale Contract #1		0	0
Colorado Wholesale Contract #2		0	0
Colorado Wholesale Contract #3		0	0
Colorado Wholesale Contract #4		0	0
Total Sales	1,929,108	1,707,972	1,719,758
System Losses and Leakage Information			
			SF6 Emissions (Metric Tons CO2e)
Colorado Distribution System Losses	115,895		
Colorado Transmission System Losses			
Generation to Sales/Losses Variance Quick Check:			0.00%

CEP Baseline Emissions Summary			
	Short Tons	Metric Tons	
CO2 Total Emissions	1,882,717	1,707,972	These now subtract totals from below to give adjusted 2005 baseline
GHG Total Emissions		1,719,758	This now subtracts total from below to give adjusted 2005 baseline

2005 Baseline Adjustment Details							
	Net MWh	CO2 Intensity (Lb/MWh)	CO2 Total (Short Tons)	CO2 Total (Metric Tons)	CH4 Total (Metric Tons CO2e)	N2O Total (Metric Tons CO2e)	CO2e Total (Metric Tons)
Excluded Wholesale Contract #1		0	0	0	0	0	0
Excluded Wholesale Contract #2		0	0	0	0	0	0
Excluded Wholesale Contract #3		0	0	0	0	0	0
Excluded Wholesale Contract #4		0	0	0	0	0	0
Total Sales	0	Total Emissions	0	0	0	0	0

RED FONT: DATA ENTRY

BLACK FONT: Calculated

2030 All Electricity Projected Generation and Emissions Data for CEP Compliance Year

Owned Assets															
Plant or Unit	Primary Generation Type	Total Heat Input (MMBtu)	% Heat Input Coal	% Heat Input Natural Gas	% Heat Input Fuel Oil	% Heat Input Biomass	Generation (Net MWh)	CO2 Emissions Methodology	CO2 Total (Short Tons)	CO2 Total (Metric Tons)	CH4 Total (Metric Tons CO2e)	N2O Total (Metric Tons CO2e)	CO2e Total (Metric Tons)	CO2 Intensity (Lb/Net MWh)	GHG Intensity (Metric Ton CO2e / Net MWh)
Comanche 3	Coal	2,917,493	100.0%	0.0%	0.0%	0.0%	292,930	Generator Rate	299,984	272,141	802	1,391	274,334	2,048	0.94
Plant 2										0	0	0	0	0	0.00
Plant 3										0	0	0	0	0	0.00
Plant 4										0	0	0	0	0	0.00
Plant 5										0	0	0	0	0	0.00
TOTAL HEAT INPUT		2,917,493		TOTAL GENERATION			292,930	TOTAL Emissions	299,984	272,141	802	1,391	274,334	2,048	0.94

Contracted Assets									
Counter Party	Primary Generation Type	Purchases (MWh)	Emission Rate Source	CO2 Intensity (Lb/MWh)	CO2 Total (Short Tons)	CO2 Total (Metric Tons)	CH4 Total (Metric Tons CO2e)	N2O Total (Metric Tons CO2e)	CO2e Total (Metric Tons)
WAPA LAP	Water	84,049	Zero GHG	0	0	0	0	0	0
WAPA CRSP	Water	52,480	Contract Rate	20	531	482	1	2	485
	Solar	27,215	Zero GHG	0	0	0	0	0	0
	Solar	186,101	Zero GHG	0	0	0	0	0	0
	Solar	114,897	Zero GHG	0	0	0	0	0	0
	Natural Gas	67,265	Contract Rate	957	32,178	29,192	17	261	29,471
	Wind	705,833	Zero GHG	0	0	0	0	0	0
	Solar	436,275	Zero GHG	0	0	0	0	0	0
	Wind	532,035	Zero GHG	0	0	0	0	0	0
	Natural Gas	0	Contract Rate	1,319	0	0	0	0	0
2030 Solar	Solar	328,331	Zero GHG	0	0	0	0	0	0
2030 Wind	Wind	353,709	Zero GHG	0	0	0	0	0	0
TOTAL CONTRACT PURCHASES		2,888,190		TOTAL Emissions	32,710	29,674	19	263	29,956

Market Transactions (Negative for Sales, Positive for Purchases)									
Market Name	System, Subregion, or Region Identification	Transactions (MWh)	Emission Rate Source	CO2 Intensity (Lb/MWh)	CO2 Total (Short Tons)	CO2 Total (Metric Tons)	CH4 Total (Metric Tons CO2e)	N2O Total (Metric Tons CO2e)	CO2e Total (Metric Tons)
Imbalance Sale	Company System Rate	(303,301)	System Rate	209	(31,720)	(28,776)	(76)	(131)	(28,983)
Imbalance Purchase	WECC	338,056	Regional Factor	450	76,063	69,003	173	256	69,431
Market 3				0	0	0	0	0	0
TOTAL MARKET ENERGY TRANSACTIONS		34,755		TOTAL Emissions	44,342	40,227	97	125	40,448

Sales Information			
	Net MWh	CO2 Emissions (Metric Tons)	GHG Emissions (Metric Tons CO2e)
Retail Sales	2,959,936	342,041	344,738
Colorado Wholesale Contract #1		0	0
Colorado Wholesale Contract #2		0	0
Colorado Wholesale Contract #3		0	0
Colorado Wholesale Contract #4		0	0
Total Sales	2,959,936	342,041	344,738

System Losses and Leakage Information			
		SF6 Emissions (Metric Tons CO2e)	
Colorado Distribution System Losses	141,564	0	
Colorado Transmission System Losses	57,505		
Generation to Sales/Losses Variance Quick Check			1.77%

Emissions Summary			
	Short Tons	Metric Tons CO2e	
CO2 Total Emissions	377,036	342,041	These now subtract total from below to give adjusted 2030 emissions based on customers who file CEP
GHG Total Emissions		344,738	This now subtracts total from below to give adjusted 2030 emissions based on customers who file CEP

2030 Adjustment Details							
	Net MWh	CO2 Intensity (Lb/MWh)	CO2 Total (Short Tons)	CO2 Total (Metric Tons)	CH4 Total (Metric Tons CO2e)	N2O Total (Metric Tons CO2e)	CO2e Total (Metric Tons)
Excluded Wholesale Contract #1		209	0	0	0	0	0
Excluded Wholesale Contract #2		209	0	0	0	0	0
Excluded Wholesale Contract #3		209	0	0	0	0	0
Excluded Wholesale Contract #4		209	0	0	0	0	0
Total Sales	0	Total Emissions	0	0	0	0	0

Year	CO2 (Short Tons)	Total GHG (Metric Tons CO2e)	Load (Net MWh)	Beneficial Electrification Program Load (Net MWhr)	CO2 Intensity (Lb/Net MWhr)	GHG Intensity (Metric Ton CO2e / Net MWh)
2021						
2022						
2023						
2024	1,742,233	1,595,985	2,630,980		1324	0.61
2025	1,853,956	1,698,179	2,667,440		1390	0.64
2026	1,162,791	1,098,282	2,734,469		850	0.40
2027	874,803	814,377	2,785,158		628	0.29
2028	825,864	763,884	2,839,069		582	0.27
2029	755,220	701,838	2,894,444		522	0.24

Emission Rate Picklist
CEMS
Generator Rate
Contract Rate
System Rate
Market Rate
Regional Factor
Zero GHG

Emission Rate Picklist is in order from most specific to least specific from carbon emitting sources

Primary Resource Type
Coal
Natural Gas
Fuel Oil
Biomass
Wind
Water
Solar

Constants	
Global Warming Potential, per AR4	Sources
Methane (CH4)	25 GHG Protocol
Nitrous Oxide (N2O)	298 EPA Discussion
Sulfur Hexafluoride (SF6)	22,800
kg/ton	0.00110231

2005 GHG Emission Rate Lookup Table			
OWNED GENERATION			
Fuel	CO2 (kg/mmbtu)	CH4 (kg/mmbtu)	N2O (kg/mmbtu)
Biomass			
Coal	--	0.0110	0.0016
Fuel Oil	--	0.0030	0.0006
Natural Gas	--	0.0010	0.0001
PURCHASED GENERATION			
Energy Source	CO2 (lb/MWh)	CH4 (lb/MWh)	N2O (lb/MWh)
N/A			
WAPA CRSP	64.64674735	0.001	0.001
WAPA LAP			
Xcel Energy	1959.155054	0.155	0.032

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LEAVE BLANK			
AZNM	1311.05	0.017	0.018
CAMX	724.12	0.030	0.008
Company System Rate			
ERCT	1324.35	0.019	0.015
MRO	1823.69	0.028	0.031
MROW	1821.84	0.028	0.031
NWPP	902.24	0.019	0.015
RMPO	1883.08	0.023	0.029
SPNO	1960.94	0.024	0.032
SPP	1751.37	0.025	0.026
SPSO	1658.14	0.025	0.023
TRE	1324.35	0.019	0.015
WECC	1033.12	0.023	0.015

2030 GHG Emission Rate Lookup Table			
OWNED GENERATION			
Fuel	CO2 (kg/mmbtu)	CH4 (kg/mmbtu)	N2O (kg/mmbtu)
Biomass			
Coal	--	0.0110	0.0016
Fuel Oil	--	0.0030	0.0006
Natural Gas	--	0.0010	0.0001
PURCHASED GENERATION			
Energy Source	CO2 (lb/MWh)	CH4 (lb/MWh)	N2O (lb/MWh)
2030 Solar			
2030 Wind			
	956.761	0.023	0.029
	1318.5	0.023	0.029
WAPA CRSP	20.25	0.002	0.000
WAPA LAP			
LEAVE BLANK			
Company System Rate	209.1676041	0.022040663	0.003189604
MRO	675	0.060	0.0103
SPP	525	0.069	0.0096
TRE	540	0.048	0.0058
WECC	450	0.045	0.0056

Company enters appropriate factor based on solid, liquid or gaseous fuel type

Company enters contract specific values here

Company enters contract specific values here

Company enters contract specific values here

Company enters contract specific values here

Company enters contract specific values here

Company enters contract specific values here

Company enters contract specific values here

Company enters contract specific values here

Company enters contract specific values here

17.45 17.94

30.24 8.08

18.65 15.11

27.94 30.66

28.00 30.71

19.13 14.90

22.88 28.75

23.82 32.09

24.62 25.52

24.98 22.61

18.65 15.11

22.62 14.77

CH4 N2O
lb/GWh lb/GWh
OUTPUT EMISSIONS RATE - eGRID
2005

Attachment 2

**Xcel Energy Portfolio Annual Costs and Emissions
120-Day Report, Appendix T, Portfolio 1**

Notes: Costs do not include transmission network upgrades for delivery.
Other costs include PPA, Generics, Market Purchases/Sales, less Fuel.