

**Electric Energy Supply Policy
2008 Annual Update**

July 2009



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1.0 Executive Summary

This report provides an update of 2008 activities and progress related to the City of Fort Collins *Electric Energy Supply Policy (Energy Policy)*, adopted in 2003. The primary goals of the *Energy Supply Policy* are to sustain high-system reliability, maintain competitive electric rates and reduce the environmental impact of electricity generation.

This report is organized in sections covering reliability, rates, energy efficiency, load management and renewable energy. Appendices A, B and C present supplemental data, financial reporting and information on avoided greenhouse gas emissions. Appendix D is the *Electric Energy Supply Policy*. In January 2009, Fort Collins City Council adopted a revised *Energy Policy* with new goals, objectives and metrics. The *2009 Energy Policy* is described in Appendix E.

1.1 Energy Supply Policy Results for 2008

The *Energy Supply Policy* adopted general goals and specific objectives in the areas of reliability, rates, energy efficiency, load management and renewable energy. The following table describes these goals, accomplishments in 2008 and a summary of impacts under the policy from 2003 through 2008.

Reliability objective: continue to provide very high-level service	
2008 Results	Summary 2003-2008
2008 electric system reliability was 99.9981% (average system availability index)	2008 electric system reliability was at historic high levels. Performance during the five years of the policy was above target levels.
Rate objective: maintaining competitive rates	
2008 Results	Summary 2003-2008
Electric rates increased 2.8% in 2008.	Rate increases in 3 of the last 5 years totaled 12.5% on average, though increases by customer class varied. 2% of this increase was directly related to the energy efficiency and renewable energy aspects of this policy. As of January 2009, Fort Collins rates remained in the lowest 4–7% of utilities in Colorado.
Energy efficiency and load management objective: developing and promoting effective programs and services	
2008 Results	Summary 2003-2008
Electricity savings from 2008 efficiency programs saved over 11,400 megawatt-hours in annual electricity use, or 0.8% of the community’s electricity use. This is the highest annual energy savings to date, equivalent to the	Efficiency program results increased at a rate of 64% per year, reaching the highest levels in 2008. Cumulative annual electricity savings in 2009 from efficiency programs will be over 39,000 megawatt-hours. Cumulative annual peak demand savings in 2009 from efficiency programs will be over 7.3 megawatts. Efficiency programs continue to be very cost effective. 2008

annual electricity use of over 1,300 typical Fort Collins homes.	efficiency programs saved energy at a cost of 1.3 cents per kilowatt-hour (kWh), compared with a 3.9 cents per kWh total wholesale cost from Platte River.
Energy efficiency and load management objective: reduce per capita electric consumption 10% by the year 2012	
2008 Results	Summary 2003-2008
Per capita electric consumption was 0.9% lower than the 2002 baseline	Per capita energy use saw both increases and decreases in year to year differences. Per capita metrics proved difficult to relate directly to energy efficiency programs, as much of the variation comes from economic and weather related effects. The new policy shifts to a percentage of electric use goal specific to energy efficiency.
Energy efficiency and load management objective: reduce per capita electric demand 15% by the year 2012	
2008 Results	Summary 2003-2008
Per capita peak electric demand was 2.9% higher than the 2002 baseline. Load management programs for residential air conditioning, residential hot water heaters and commercial/industrial customers expanded, avoiding over 3.5 megawatts of summer peak demand.	Per capita peak demand saw both increases and decreases in year to year differences. Per capita metrics proved difficult to relate directly to energy efficiency programs and load management programs, as much of the variation comes from economic and weather related effects. The new policy shifts to a percentage of peak demand targeted for load management.
Renewable energy objectives include promotion of use with a target of 2% of total energy resources in 2004 and 15% by 2017	
2008 Results	Summary 2003-2008
Renewable energy comprised 6.3 percent of total electrical energy purchases in 2008. Renewable energy purchases were 93,000 megawatt-hours	Renewable energy strategy now targets meeting policy initiatives to increase use of renewable energy and customers who volunteer to subscribe for additional renewable energy. After the policy was in place, the State of Colorado implemented a Renewable Energy Standard (RES) that covers Fort Collins. The Colorado RES requires Fort Collins to have a minimum of 1% renewable energy through 2009, increasing to 3% in 2011, 6% in 2015 and 10% in 2020. In 2007, the <i>Wind Power Program</i> went through a re-branding to the <i>Green Energy Program</i> . This program is a premium-priced rate option for customers who wish to have all or a portion of their electricity generated from renewable sources. Fort Collins Utilities purchases all renewable energy from

	<p>Platte River Power Authority under their Tariff 7, sufficient to meet the requirements of both policy and the Green Energy Program. In 2008, the City's renewable program was supplied from two types of sources. Wind turbines at Platte River's Medicine Bow Wind Project in Wyoming provide both energy and Renewable Energy Credits (combined). In addition, Renewable Energy Credits (RECs) with no associated energy are purchased by Platte River from multiple renewable sources in the region. RECs in the Tariff 7 portfolio are certified by Green-e, as is Fort Collins Utilities' Green Energy Program.</p> <p>In 2008, RECs accounted for 83% of the renewable energy purchased for Fort Collins. Platte River plans to reduce the fraction of their renewable energy portfolio supplied by RECs over time by increasing investment directly in wind energy projects.</p>
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2.0 Reliability Summary

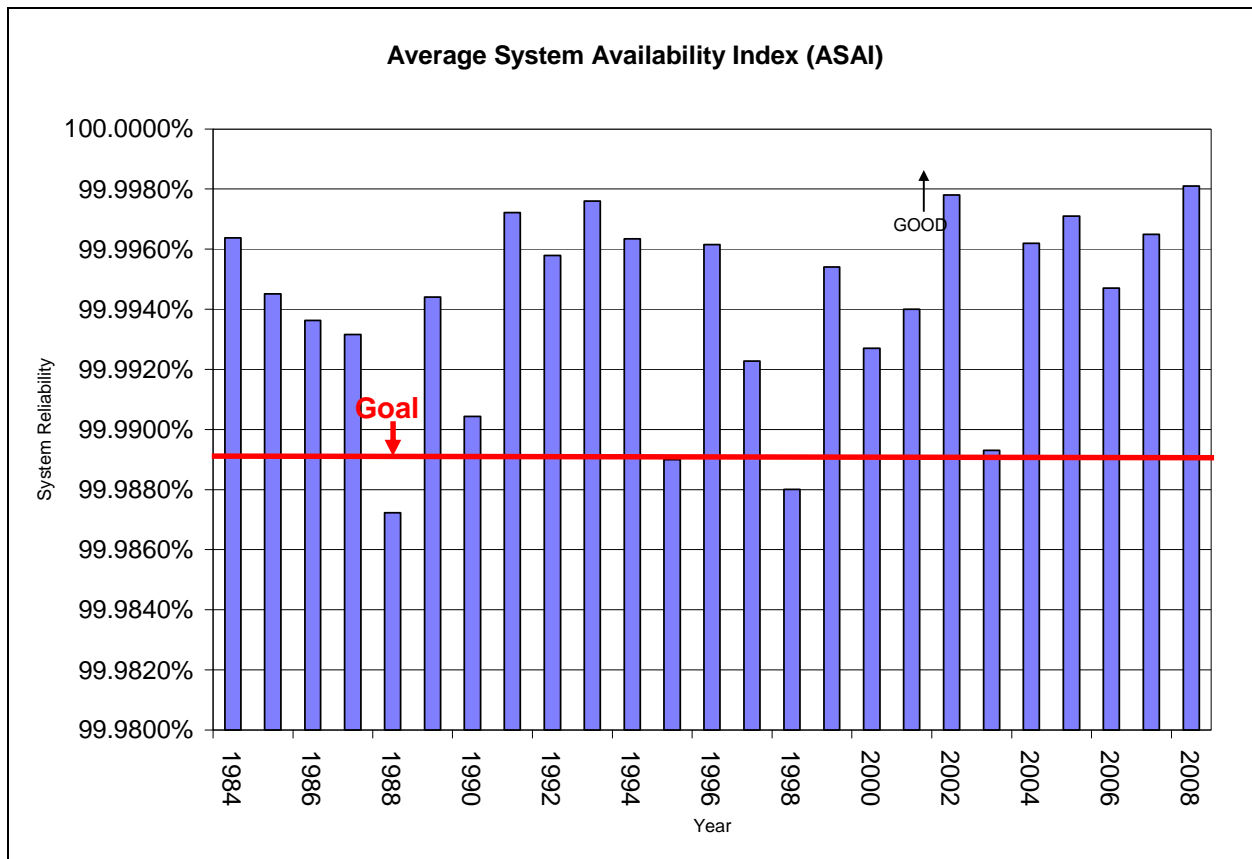
Fort Collins Utilities uses several indices to measure reliability. The 2008 indices were at historically high levels, exceeding Utilities goals.

The Average System Availability Index (ASAI) measures the percentage of time that power is available to the average customer. It provides a combined measure of the frequency and duration of outages. The ASAI for 2008 was 99.9981%. The historical record for Fort Collins Utilities ASAI is shown in Figure 2.1.

The Customer Average Interruption Index (CAIDI) is the average duration of an outage experienced by the customer. This index is indicative of average restoration time once an outage has occurred and is calculated by dividing the sum of the duration of all interruptions by the total number of customers interrupted. The average outage time for 2008 was 37 minutes (goal < 60 minutes).

The System Average Interruption Frequency Index (SAIFI) is the total number of customers who experienced an outage in the last 12 months divided by the total number of customers served. This provides the number of outages a customer could expect to experience during the year. SAIFI for 2008 was 0.27 interruptions per year.

Figure 2.1: Average System Availability Index, 1984 – 2008 (ASAI)



3.0 Electric Rate Summary

The rate objectives of the *Energy Supply Policy* include maintaining competitive rates (defined as lower than Xcel Energy) and promoting energy efficiency and renewable energy.

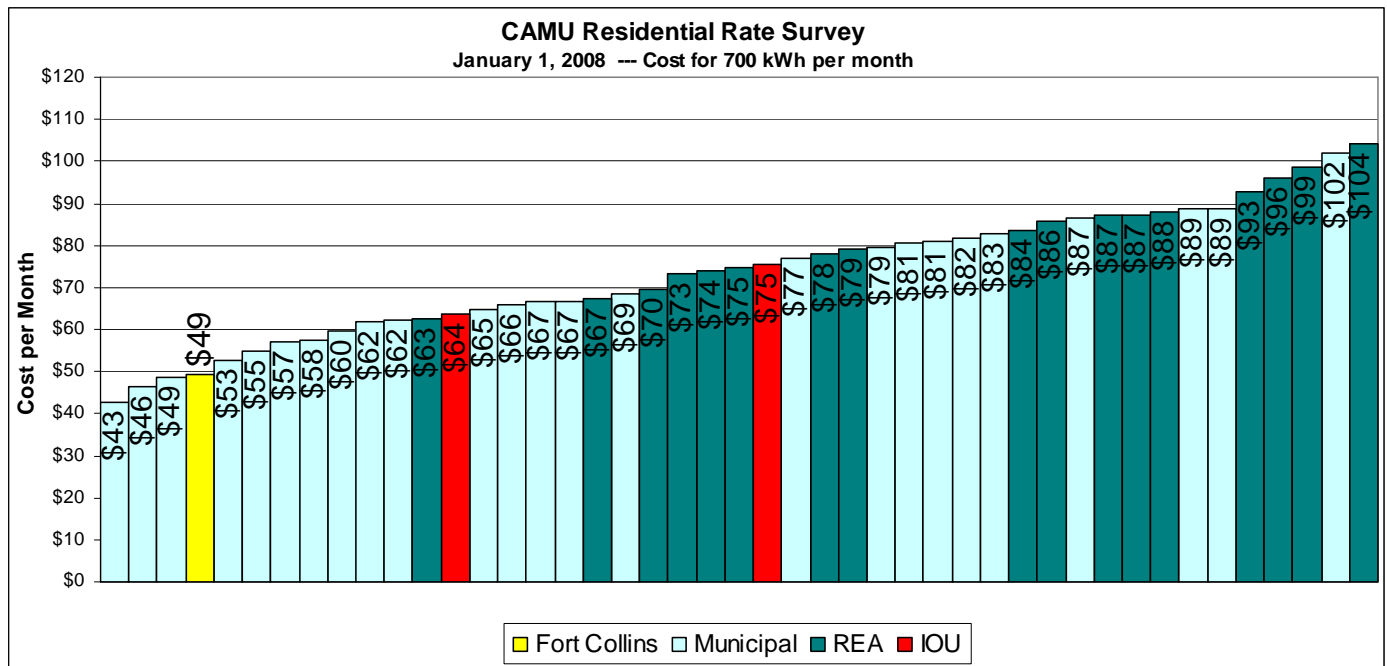
- An electric rate increase in 2008 averaged 2.8% over all the rate classes.
- Fort Collins Utilities electric rates are lower than those of Xcel Energy in all rate classes. Electric utility rates are ranked by the Colorado Association of Municipal Utilities (CAMU). Table 3.1 shows the ranking of Fort Collins Utilities and the percentage by which each rate is lower than Xcel Energy's (as of January 2008). Figure 3.1 shows a chart of the residential rates developed by CAMU.

Table 3.1: 2008 Electric Rates Comparison*

Rate Class	Ranking of Fort Collins Utilities	Percentage Fort Collins Utilities lower than Xcel Energy
Residential	Lowest 7%	22% lower
Small Commercial	Lowest 7%	9% lower
Large Commercial	Lowest 5%	20% lower
Industrial	Lowest 4%	18% lower

*Based on CAMU report, January 2008

Figure 3.1: 2008 Residential Rates Comparison



4.0 Energy Efficiency and Load Management Summary

Fort Collins Utilities has provided programs and services to help customers manage their energy use for over 25 years. This section summarizes energy efficiency programs and services for residential, commercial and industrial customers. Energy efficiency and load management are also called “demand side management” (DSM). Many of the programs are a collaborative effort between Fort Collins Utilities and Platte River Power Authority.

Energy efficiency and load management results for 2008 include:

- Electricity savings from 2008 efficiency programs saved over 11,400 megawatt-hours in annual electricity use, or 0.8% of the community’s electricity use;
- Efficiency programs in 2008 saved energy at a cost of 1.3 cents per kilowatt-hour (kWh), compared with a 3.9 cents per kWh total wholesale cost from Platte River;
- Cumulative annual electricity savings in 2009 from efficiency programs (2002 through 2008) will be over 39,000 megawatt-hours;
- Cumulative annual peak demand savings in 2009 from efficiency programs (2002 through 2008) will be over 7.3 megawatts;
- Load management programs for residential air conditioning, residential hot water heaters and commercial/industrial customers expanded, avoiding over 3.5 megawatts of summer peak demand; and
- 2008 per capita electric consumption was 0.9% lower than the 2002 baseline; per capita peak electric demand was 2.9% higher than the 2002 baseline.

4.1 2008 Energy Efficiency Program Results

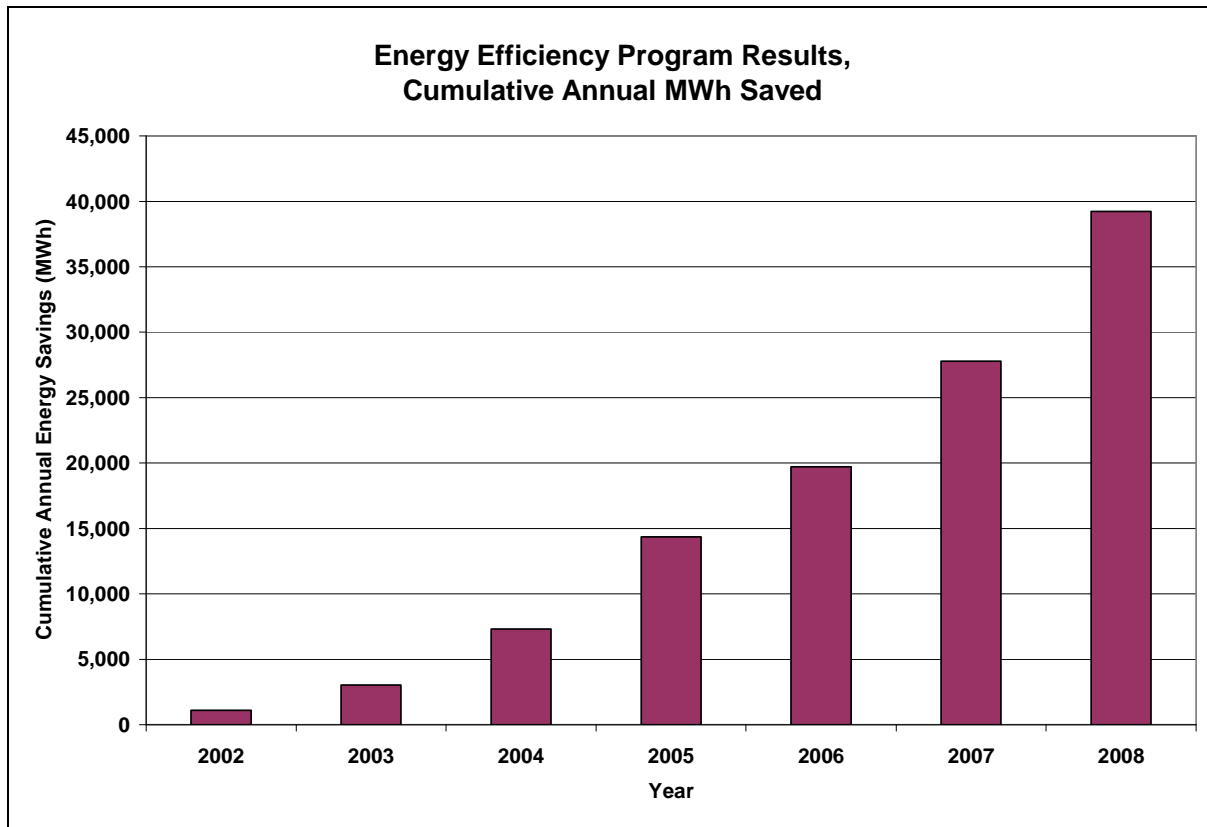
Efficiency programs are a reliable energy resource for Fort Collins Utilities and Platte River Power Authority. The *cost of conserved energy* (CCE) is a measure of the cost per kilowatt-hour saved by specific efficiency programs, which can be directly compared with wholesale electric costs. Energy efficiency programs in 2008 saved energy at an average cost of 1.3 cents per kWh, which is dramatically lower than the 3.9 cents per kWh average wholesale cost from Platte River. Energy efficiency continues to be the lowest cost resource for electricity.

Table 4.1 summarizes 2008 energy efficiency program results, including activity levels, energy savings, demand savings and cost of conserved energy. Figure 4.1 shows the cumulative annual energy efficiency program results from 2002 through 2008.

Table 4.1: 2008 Energy Efficiency Program Results

Residential					
Description	Clothes Washer Rebate Program	Dishwasher Rebate Program	Refrigerator and Freezer Recycling Program	Residential Lighting Program	Residential Subtotal
Activity (rebates, bulbs, units)	1,011	528	392	48,242	50,173
Energy Saved- Utility (MWh)	138	16	313	896	1,363
Demand Saved- Utility (kW)	16	2	36	50	103
Utilities/Platte River Cost	\$14,400	\$3,225	\$65,660	\$27,416	\$110,701
Cost of conserved energy	\$0.012	\$0.024	\$0.034	\$0.005	\$0.013
Commercial					
Description	Electric Efficiency Program	LightenUP	Cooling Rebate Program	Integrated Design Assistance Program	Commercial Subtotal
Activity (projects)	9	63	14	2	88
Energy Saved- Utility (MWh)	3,723	6,392	174	85	10,373
Demand Saved- Utility (kW)	860	1,387	142	25	2,414
Utilities/Platte River Cost	\$409,193	\$654,567	\$82,474	\$30,000	\$1,176,234
Cost of conserved energy	\$0.013	\$0.012	\$0.057	\$0.011	\$0.013
Combined Total					
				Activity	50,261
				Energy Saved- Utility (MWh)	11,736
				Demand Saved- Utility (kW)	2,517
				Utilities/Platte	\$1,286,935
				Cost of conserved energy	\$0.013

Figure 4.1: Cumulative Annual Energy Efficiency Results, 2002 – 2008



4.2 2008 Load Management Results

Load management focuses on reducing the community’s peak power use, which is a primary driver for power plant capacity requirements. While load management does not generally reduce energy use, it does have a critical role for overall utility resource and financial planning.

As a part of the revitalization of the load management program (formerly Hot Shot), Utilities staff are methodically servicing all receiving units in customers’ homes. The fieldwork includes replacing aging units, verifying operation and promoting awareness of the program. In addition, a program for air conditioning load management continued in 2008, adding 458 homes.

The current load management system uses a radio frequency signal to communicate with water heater controllers, air conditioning controllers, and large commercial and key account customers. Together, these customers are able to reduce peak demand by over 3.5 megawatts during summer months. The residential customer demand reductions result in direct purchased power savings, benefiting all customers. Because of their rate structure, large commercial and industrial customers are able to manage their own electricity costs without impacting Fort Collins Utilities revenue.

Table 4.2 Load Management Program Summary

Equipment Controlled	Type of Control*	Number of Units	Total Load Controlled (kW)
Electric Water Heaters	DLC	2,000	1,120
Air Conditioners	DLC	500	500
Commercial	DR	30	1,900
Total			3,520

*DLC = Direct Load Control, DR = Demand Response

4.3 Energy Use Statistics

The *Energy Supply Policy* energy and demand reduction targets are in per-capita terms in order to normalize for changes in population over time. Energy use per capita decreased 5.4 percent in 2008 and was 0.9 percent lower than the 2002 baseline year. Peak demand per capita decreased in 2008 by 7.9 percent and was 2.9 percent higher than the 2002 baseline year.

5.0 Renewable Energy Summary

Fort Collins Utilities renewable energy strategy targets meeting policy initiatives to increase use of renewable energy and customers who volunteer to subscribe for additional renewable energy.

The *Energy Supply Policy* set a goal of a minimum of 2% renewable energy, increasing to 15% in 2017. The State of Colorado also has a Renewable Energy Standard (RES) that covers Fort Collins. The Colorado RES requires Fort Collins to have a minimum of 1% renewable energy through 2009, increasing to 3% in 2011, 6% in 2015 and 10% in 2020.

Utilities has offered renewable energy to customers since 1998. In 2007, the *Wind Power Program* went through a re-branding to the *Green Energy Program*. This program is a premium-priced rate option for customers who wish to have all or a portion of their electricity generated from renewable sources. The amount of energy purchased through the Green Energy Program varies from year to year, but has been approximately 2.5% of community electricity use.

Fort Collins Utilities purchases all renewable energy from Platte River Power Authority under their Tariff 7, sufficient to meet the requirements of both policy and the Green Energy Program. In 2008, the City's renewable program was supplied from two types of sources. Wind turbines at Platte River's Medicine Bow Wind Project in Wyoming provide both energy and Renewable Energy Credits (combined). In addition, Renewable Energy Credits (RECs) with no associated energy are purchased by Platte River from multiple renewable sources in the region. RECs in the Tariff 7 portfolio are certified by Green-e, as is Fort Collins Utilities' Green Energy Program.

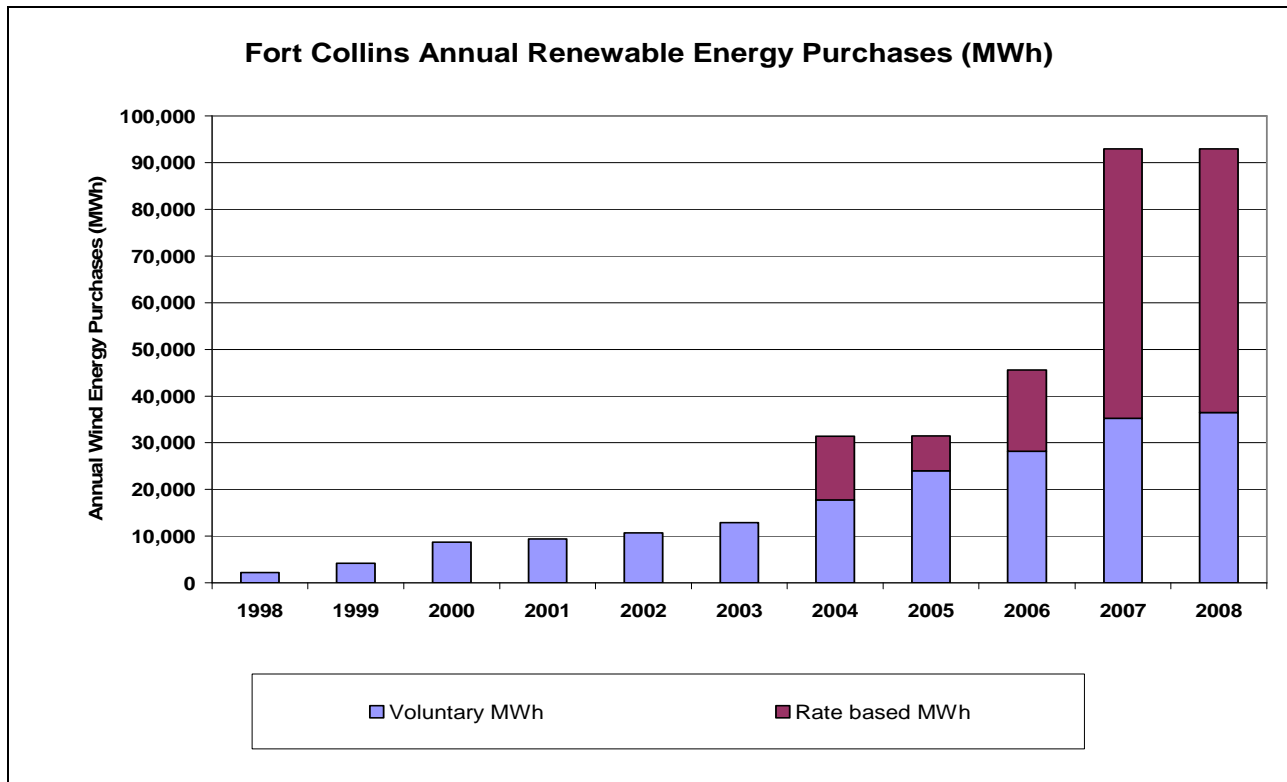
In 2008, RECs accounted for 83% of the renewable energy purchased for Fort Collins. Platte River plans to reduce the fraction of their renewable energy portfolio supplied by RECs over time by increasing investment directly in wind energy projects. The most recent addition to the portfolio, in April 2009, was 12 megawatts of wind in southern Wyoming.

Figure 5.1 shows total renewable energy purchases from 1998 – 2008.

5.1 2008 Renewable Energy Results

- Renewable energy comprised 6.3 percent of total electrical energy purchases in 2008. Renewable energy purchases were 93,000 megawatt-hours (Figure 5.1);
- The Green Energy Program facilitated the purchase of over 36,000 megawatt-hours of electricity, comprising 39% of overall renewable energy purchases;
- The Green Energy Program has over 1,650 residential customers and approximately 120 commercial customers; and
- Rate based purchases of renewable energy totaled over 56,000 megawatt-hours of electricity, comprising 61% of overall renewable energy purchases.

Figure 5.1: Renewable Energy Purchases (1998 – 2008)



5.2 Solar Photovoltaic Net Metering Program

The Residential Parallel Generation Pilot Program continued in 2008 with steps taken to transition this program to a permanent offering and align with Colorado HB1160 (passed in March 2008). The program, also known as the Net Metering Program, offers residential and small commercial electric customers full retail buy-back provisions for electricity generated by solar photovoltaic (PV) systems connected to the electric grid.

As of December 2008, the program had 16 residential customers and three commercial customers whose PV systems have been inspected and are operational. The total peak capacity of these systems is 47 kilowatts. From 2005 to 2007, interval recording meters and PV system data loggers were installed on 12 installations to capture detailed data on the net power demand of these homes. The combination of the two meters has allowed Utilities to understand typical electric production and usage patterns for this type of customer.

Utilities participated in a matching grant from the Colorado Governor’s Energy Office for rebates for PV installations. Twelve rebates were awarded (or reserved for early 2009 installations), totaling \$47,000.

Appendix A: Supplemental Information

Reliability

Utilities completed a number of projects on the distribution system and related communications infrastructure that promote high reliability. Project highlights for 2008 include:

- Completed scheduled substation power transformer Load Tap Changer (LTC) maintenance at Harmony and Drake Substations. Load tap changers regulate the source voltage at the substation to a fixed value as the load on the system varies;
- Completed preventative maintenance and testing of substation breakers at Drake and Dixon Substations per NERC requirements;
- Upgraded Beckwith load tap changer (LTC) controls from analog to new digital controls at Linden and Dixon Substations;
- Performed maintenance on Hot Line, breaker control and 86 lockout switches at various substations as part of the relay protection schemes;
- Performed quarterly battery maintenance at all substations;
- Installed high side interlocks associated with PRPA motor operated switches to prevent PRPA from opening the switches under load at Linden and Richard's Lake Substations;
- Replaced oil filters on the Velcon LTC oil filtration units at Harmony, Drake, and Dixon Substations;
- Computerized records for substation inspection and maintenance;
- Installed oil filtration system and associated SCADA monitoring on the Cooper voltage regulators at Overland Substation to extend the life of the units by preventing contamination of the oil when changing tap positions;
- Replaced the Harris D20 RTU at Overland Substation with a new SCADA Pack ethernet RTU to monitor site security, the voltage regulator oil filtration unit and Hot Shot controls; and
- Sub crews began a program to test new 15KV distribution switches prior to placement in the field.

Energy Efficiency and Load Management

Tables A.1 and A.2 summarize the residential and commercial energy efficiency programs and services offered by Fort Collins Utilities in 2008. Programs and services include those that provide verifiable electricity and demand savings and those that promote energy efficiency and conservation awareness and education.

Table A.1: 2008 Residential Energy Efficiency Programs and Services

Residential Energy Efficiency Programs and Services	
Program	Description
Refrigerator and Freezer Recycling Program	Rebate, in-home pickup and comprehensive recycling of unwanted refrigerators and freezers
Residential Lighting Program	Discounted compact fluorescent light bulbs through local retailers (offered in Platte River member cities), LED holiday lighting component
Clothes Washer Rebate Program	Rebate for purchase of ENERGY STAR clothes washer
Dishwasher Rebate Program	Rebate for purchase of ENERGY STAR dishwasher
ZILCH	Zero interest loans for energy saving home improvements
REACH	Free home weatherization (based on income eligibility)
Water Heater Load Management	Radio frequency control of electric water heaters for coincident peak demand savings. Bill credit to customers.
AC Load Management	Radio frequency control of residential air conditioners for coincident peak demand savings. Bill credit to customers.
Home Performance with ENERGY STAR	Contractor training and support for whole-house approach to improve energy performance of existing homes, rebates available
Energy Score	Support for home energy ratings
Solar PV Rebates	\$2 per watt for solar photovoltaic installations
ENERGY STAR New Homes	Collaborative northern Colorado program for energy efficient new home construction
Education and Awareness	Energy efficiency education and awareness activities include The Power to Save campaign, What to Look for in a New Home, the Utilities website, Environmental Program Series and various community events.

Table A.2: 2008 Commercial Energy Efficiency Programs and Services

Commercial Energy Efficiency Programs and Services	
Program	Description
LightenUP Program	Incentives for lighting retrofits
Electric Efficiency Program	Incentives for projects that reduce summer peak demand or annual electricity consumption
Cooling Rebate Program	Rebates for high efficiency air conditioners
Integrated Design Assistance Program	Funding and expertise for integrated design of energy efficient new buildings, whole building and prescriptive paths.
C&I Load Management	Radio signal for customer control of coincident peak demand
Technical Assistance and Energy Assessments	Free energy assessments to help customers implement energy efficiency projects
Electri-Connect	Provides online access to interval electric data for large commercial and industrial customers
Keep Current	Electronic newsletter, web information resource and “Ask an Expert” tool
Education and Awareness	Energy efficiency education and awareness activities include The Power to Save campaign, the Utilities website, the Business Environmental Program Series and commercial accounts luncheons.

Figure A.3 shows how the costs of these efficiency programs compare to wholesale power and fuel costs per kilowatt-hour.

Table A.4 and Figure A.5 summarize the annual efficiency program energy and demand savings for 2002 – 2008.

Table A.6 and Figure A.7 show the year-by-year annual peak demand savings, by program, for 2002 – 2008.

Table A.8 shows energy use statistics for energy use and peak demand, including per capita results.

Figure A.3: Energy Efficiency Program Cost Effectiveness (\$/kWh)

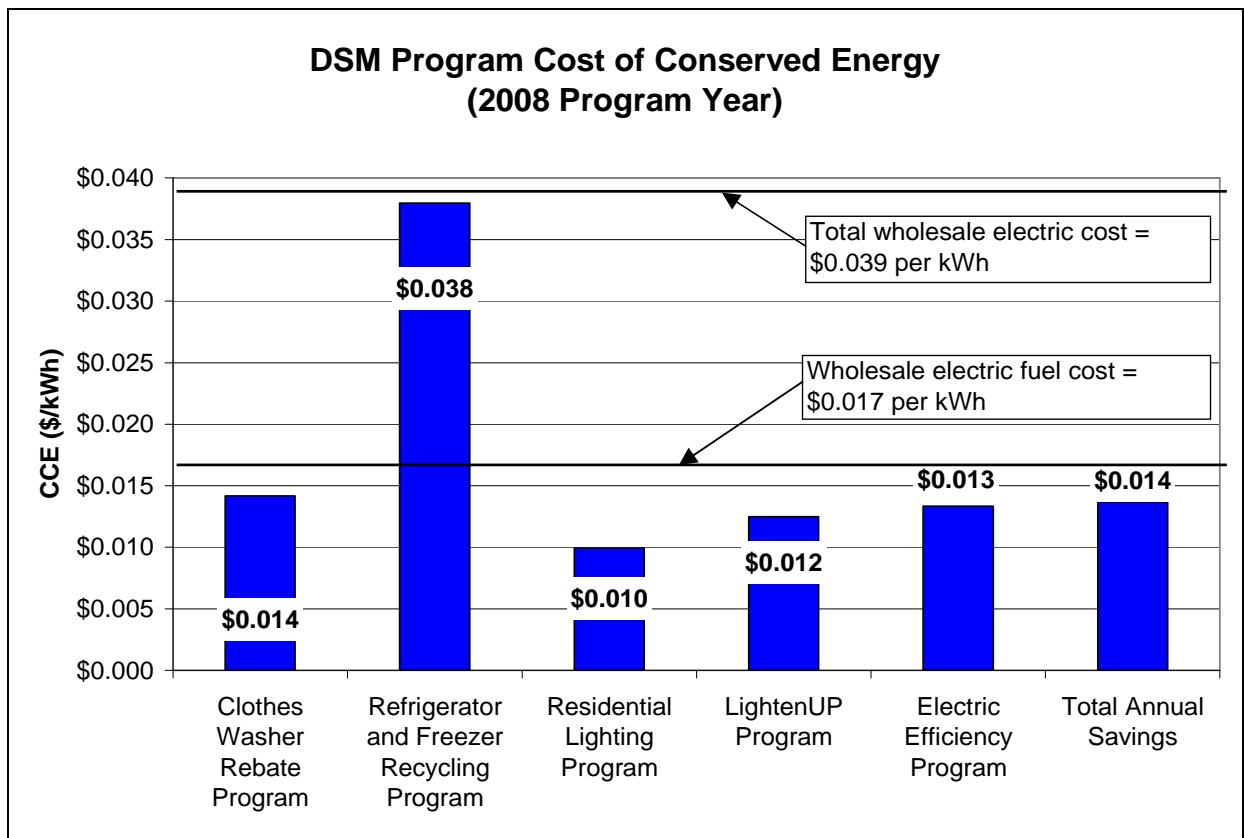


Table A.4: Efficiency Program Energy Savings 2002 – 2008 (MWh)

Annual Energy Savings (MWh) Program	2002	2003	2004	2005	2006	2007	2008	Total Program Savings
Clothes Washer Rebate Program	NA	149	223	101	110	132	135	851
Cooling Rebate Program	190	190	246	202	11	10	170	1,019
Refrigerator and Freezer Recycling Program	NA	NA	819	564	415	303	271	2,371
Residential Lighting Program	NA	NA	140	1,738	1,429	1,501	861	5,669
LightenUP Program						3,391	6,232	9,623
Electric Efficiency Program	242	1,492	2,237	4,439	3,190	2,450	3,630	17,679
Integrated Design Assistance Program	657	115	614	11	190	247	82	1,916
Total Annual Savings	1,090	1,945	4,279	7,054	5,345	8,035	11,380	39,127

Figure A.5: Annual Efficiency Program Energy Savings 2002 – 2008 (MWh)

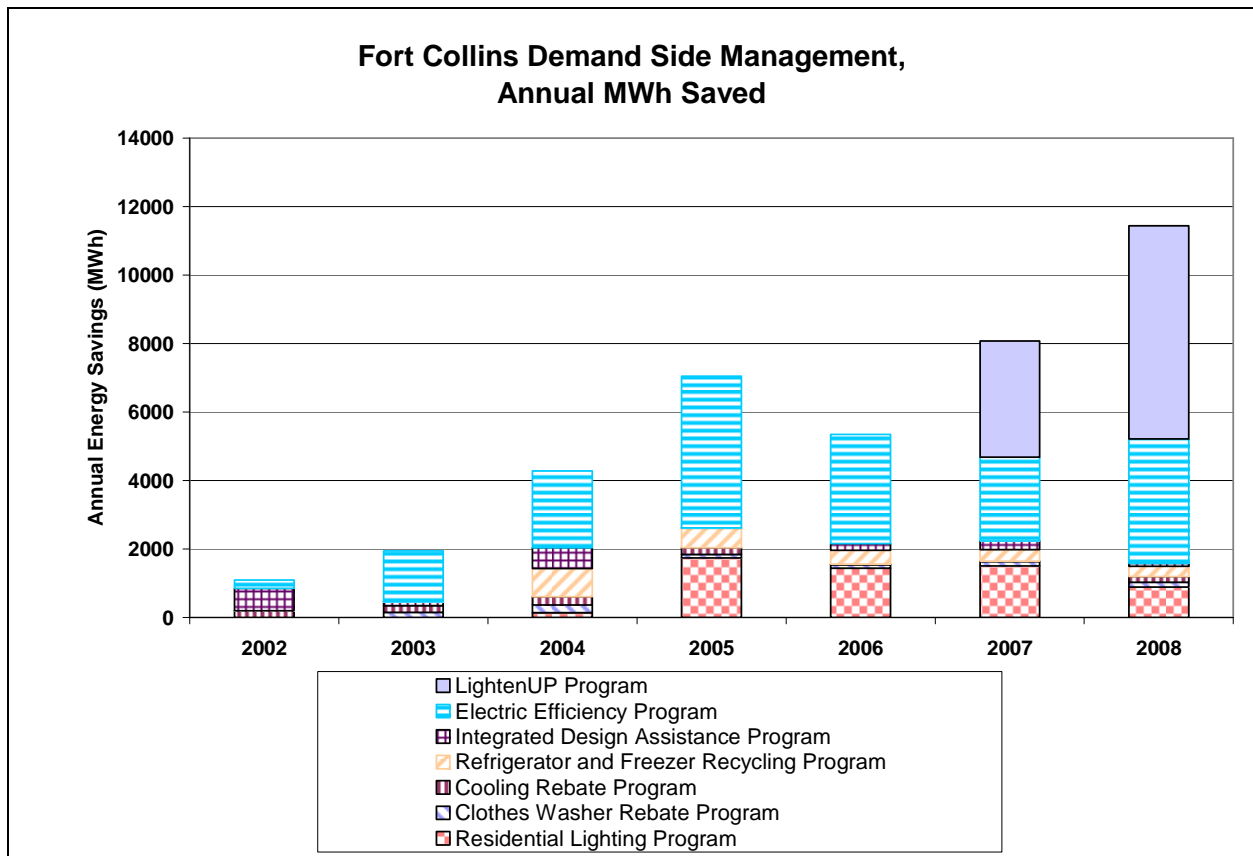


Table A.6: Efficiency Program Demand Savings 2002 – 2008 (Summer Peak kW)

Annual Demand Savings (summer kW)								
Program	2002	2003	2004	2005	2006	2007	2008	Total Program Savings
Clothes Washer Rebate Program	NA	17	25	12	13	15	15	97
Dishwasher Rebate Program						0	2	2
Cooling Rebate Program	269	274	358	294	33	8	139	1,375
Refrigerator and Freezer Recycling Program	NA	NA	94	64	47	39	35	279
Residential Lighting Program	NA	NA	0	0	0	164	49	213
Electric Efficiency Program	40	224	423	1,019	321	163	838	3,029
LightenUP Program	0	0	0	0	0	846	1,352	2,198
Integrated Design Assistance Program	197	35	190	7	0	84	24	538
Total Annual Savings	506	551	1,091	1,396	414	1,319	2,454	7,731

Figure A.7: Annual Efficiency Program Demand Savings 2002 – 2008 (Summer Peak kW)

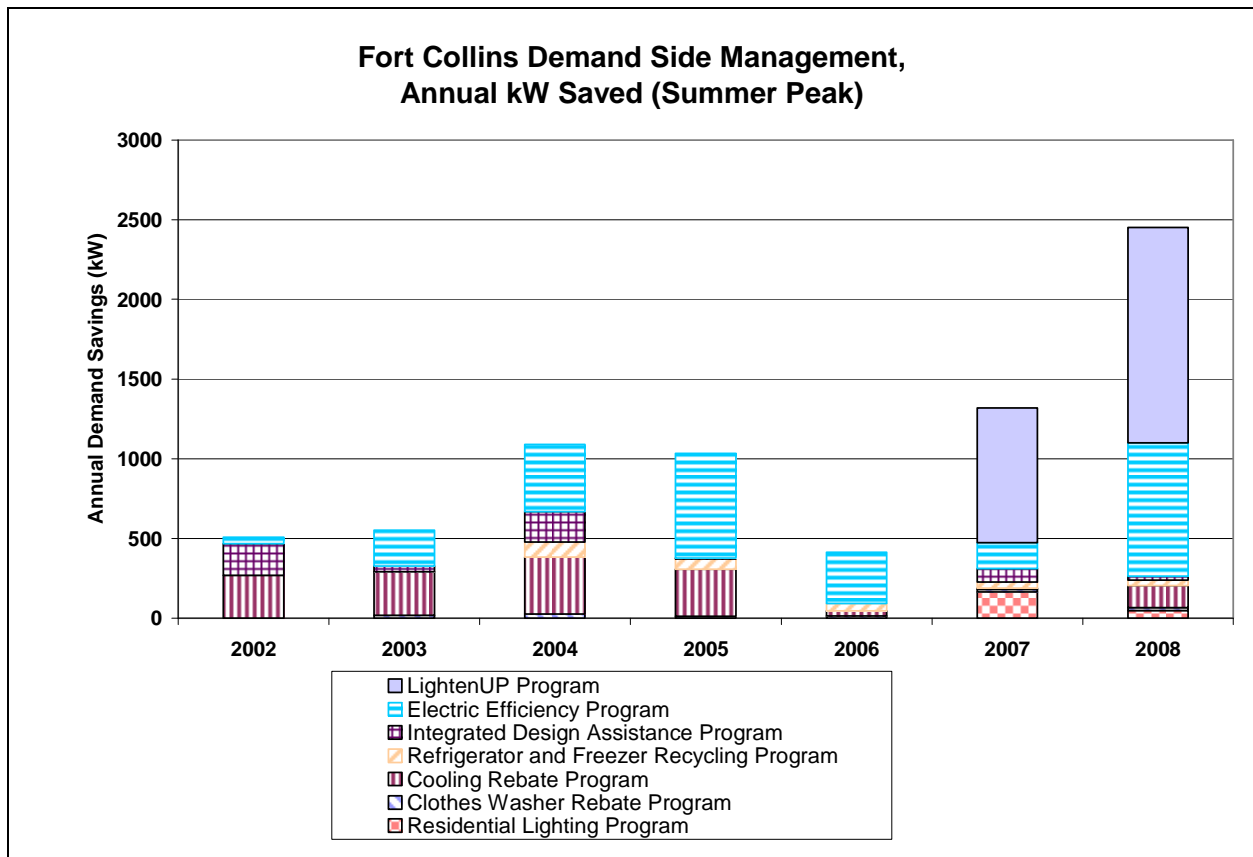


Table A.8: Fort Collins Energy Use Statistics for 2002 – 2008

Year	City Population	Total Energy (MWh)	energy growth	kWh/ person-yr	Per capita annual change	Per capita change from 2002	Peak Demand (MW)	Demand Growth	kW/ person-yr	Per capita annual change	Per capita change from 2002
2002	124,428	1,346,420		10,821			251.3		2.02		
2003	125,461	1,374,004	2.0%	10,952	1.2%	1.2%	268.6	6.9%	2.14	6.0%	6.0%
2004	126,903	1,389,277	1.1%	10,948	0.0%	1.2%	271.8	1.2%	2.14	0.0%	6.0%
2005	127,686	1,432,566	3.1%	11,219	2.5%	3.7%	291.0	7.1%	2.28	6.4%	12.9%
2006	129,511	1,442,892	0.7%	11,141	-0.7%	3.0%	279.2	-4.1%	2.16	-5.4%	6.8%
2007	131,000	1,484,957	2.9%	11,336	1.7%	4.8%	295.7	5.9%	2.26	4.7%	11.8%
2008	137,200	1,471,868	-0.9%	10,728	-5.4%	-0.9%	285.2	-3.5%	2.08	-7.9%	2.9%

Renewable Energy

Figure A.9: Renewable Energy Purchases by Customer Sector

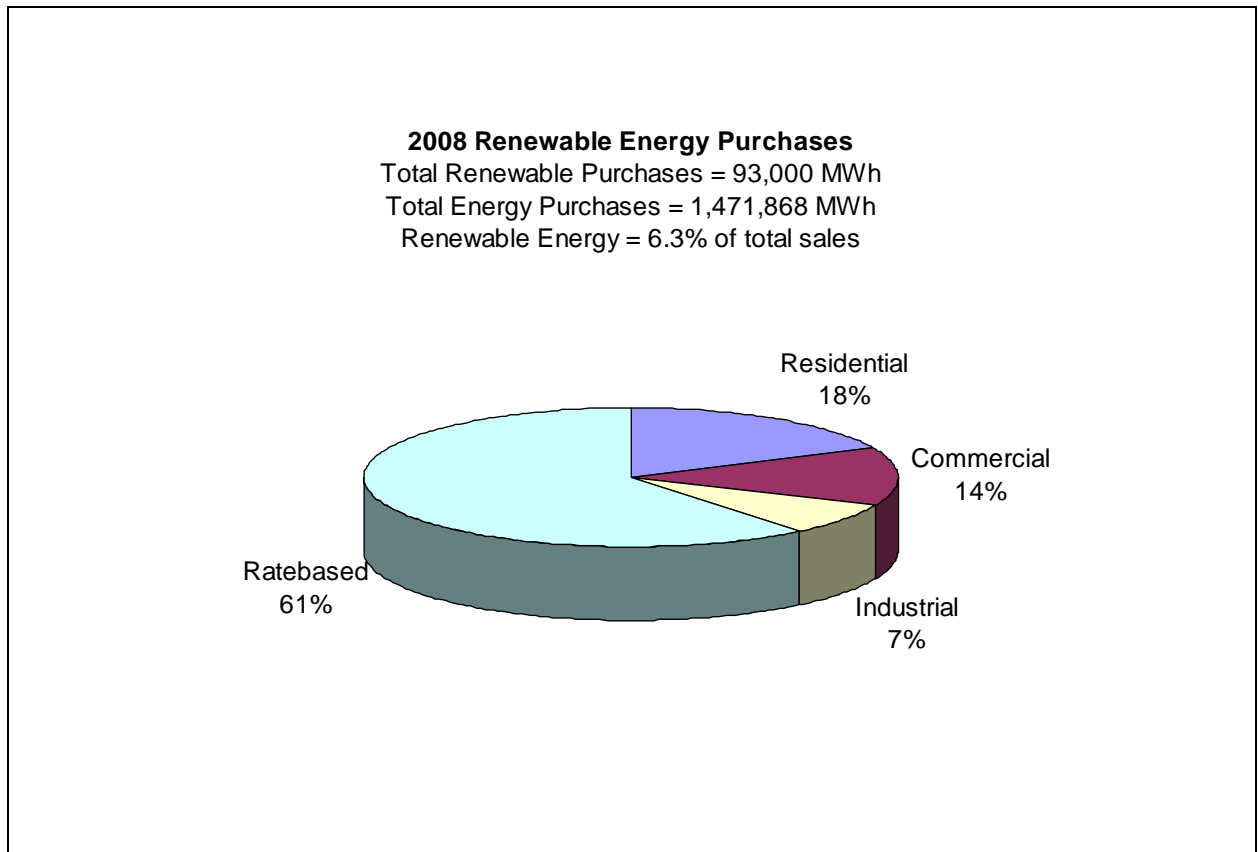
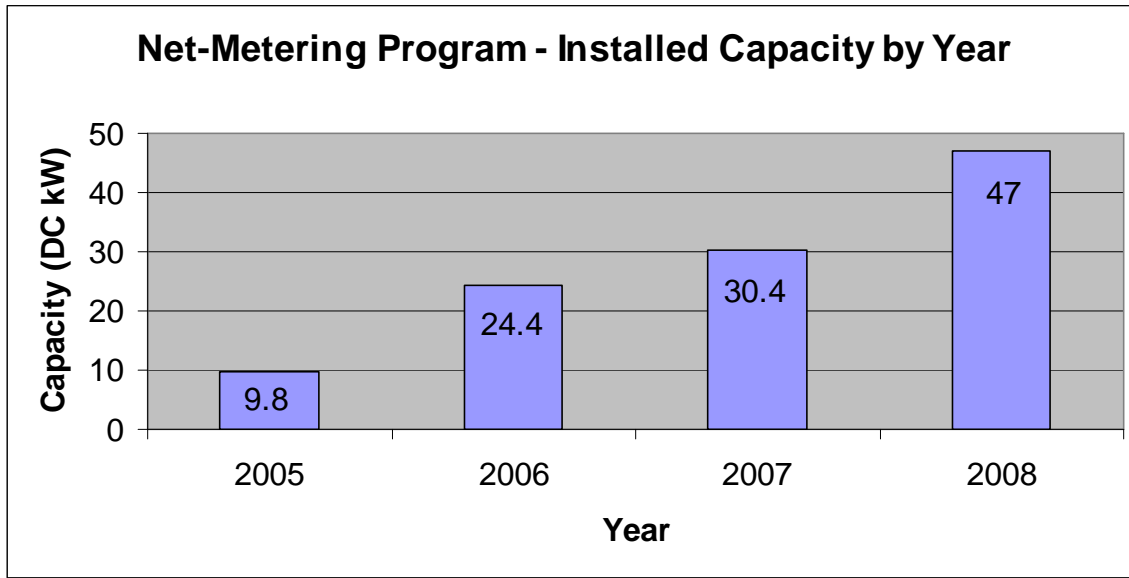


Figure A.10: Customer On-site Renewable Installed Capacity



Appendix B: 2008 Energy Efficiency Expenditures

2008 Energy Services Financial Summary	Date	June 1, 2009		
Summary Financial Information				
Description	Residential	Commercial	Industrial	Total
Utilities Efficiency Program Expenditures	\$302,097	\$79,874	\$45,428	\$427,399
Utilities Community Energy Program Expenditures	\$277,312	\$44,153	\$759	\$322,224
Platte River Efficiency Program Expenditures	\$137,802	\$500,713	\$645,521	\$1,284,036
Total Expenditures	\$717,211	\$624,740	\$691,708	\$2,033,659
Energy Efficiency Programs	Utilities expenditures	PRPA expenditures		
Residential				
Clothes Washer Program	\$24,265			
Dishwasher Program	\$6,525			
Refrigerator Recycling	\$63,509			
Residential Lighting	\$53,222	\$137,802		
Summer Comfort	\$46,428			
Commercial				
Electric Efficiency Program	\$25,074	\$17,826		
Technical Assistance	\$54,800	\$0		
Lighten UP	\$0	\$401,521		
Cooling Rebate Program	\$0	\$81,366		
Integrated Design Assistance Program	\$15,022	\$0		
Industrial				
Electric Efficiency Program	\$0	\$391,367		
Technical Assistance	\$45,428	\$0		
Lighten UP	\$0	\$253,046		
Cooling Rebate Program	\$0	\$1,108		
Integrated Design Assistance Program	\$0	\$0		
Total	\$334,273	\$1,284,036		

Appendix C: Greenhouse Gas Emissions Benefits

This section is for information purposes only, relating to estimates of reductions in greenhouse gas (GHG) emissions due to programs related to the *Energy Supply Policy*. Reporting for the *2009 Energy Policy* will use carbon emissions inventory as a primary metric. Development of the methodology for carbon emissions reporting is expected to evolve to reflect best practices and regulatory changes. The two primary considerations for the methodology are transparency and consistency. The intent is that carbon emissions reporting for the *Energy Policy*, 21st Century Utilities (via the Global Reporting Initiative) and the City of Fort Collins Climate Plan will be consistent and aligned.

The basic methodology is as follows:

- Fort Collins Utilities electricity related emissions inventory is estimated using a conversion factor based on Platte River resource mix without renewable energy or RECs included. The 2008 factor for this mix is 1,775 pounds of CO₂ per megawatt-hour (wholesale).
- Energy efficiency program annual electricity savings are converted to carbon emissions reductions using a standardized conversion factor. The factor is 1,618 pounds of carbon dioxide avoided per megawatt-hour of electricity savings. It is based on 2007 Environmental Protection Agency (EPA) “eGRID” non-baseload emission rate calculations for Western Electric Coordinating Council (WECC) Rockies subregion.
- Metered renewable energy, such as that delivered from the Medicine Bow wind site, is converted to carbon emissions reductions using Fort Collins fraction of Platte River’s renewable energy and a standardized conversion factor. The factor is 1,618 pounds of carbon dioxide avoided per megawatt-hour of electricity savings. It is based on 2007 Environmental Protection Agency (EPA) “eGRID” non-baseload emission rate calculations for Western Electric Coordinating Council (WECC) Rockies subregion.
- Renewable energy credits are reported in electricity units of megawatt-hours. Carbon emissions reductions are estimated and reported here *for information purposes only*. The calculation uses a method prescribed by Green-e for estimating GHG emissions reductions due to REC purchases. The Marginal Emission Rate is based on the 2007 eGRID non-baseload emissions factors for each NERC region from which Platte River purchased RECs, weighted according to the amount purchased from each region, as follows:

NERC Region Energy Delivered to	Energy (MWh)	% Energy	Marginal CO ₂ Emission Rate (lb/MWh)
Western Electricity Coordinating Council Rockies (RMPA)	47,923	37%	1,618
Southwest Power Pool South (SPP)	70,000	53%	1,379
Midwest Reliability Organization West (MRO)	13,038	10%	2,159
TOTALS	130,961		
AVERAGE			1,544

The *Refrigerator and Freezer Recycling Program* has an additional mechanism for reducing greenhouse gas emissions by the destruction of CFC-11 contained in the foam insulation of the recycled products. CFC-11 is a powerful greenhouse gas. The program collects the foam insulation from the de-manufactured appliances and destroys it by incineration. The impact of removing greenhouse gases other than carbon dioxide from the atmosphere is calculated with

conversion factors known as GWP (global warming potential). The Intergovernmental Panel on Climate Change (IPCC 2001) lists the GWP of CFC-11 as 4,680. This multiplier also is known as a carbon equivalent factor (CO₂ has a GWP of 1.0).

Table C.1 summarizes the greenhouse gas emissions calculations described above for reductions from energy efficiency programs from 2002 – 2008. Table C.2 summarizes the emissions factors for electricity inventory related greenhouse gas emissions. Table C.3 summarizes the 2008 greenhouse gas emissions reductions (tons) related to the *Electric Energy Supply Policy*.

Table C.1: Energy Efficiency Program Avoided Greenhouse Gas Emissions (tons CO₂)

Annual Energy Efficiency Program Greenhouse Gas Emissions Avoided (tons of CO ₂ equivalent)								
Program	2002	2003	2004	2005	2006	2007	2008	Total Annual Program Savings
Clothes Washer Rebate Program	NA	121	180	82	89	107	109	688
Dishwasher Rebate Program	NA	NA	NA	NA	NA	2	13	15
Cooling Rebate Program	154	154	199	163	9	8	137	824
Refrigerator and Freezer Recycling Program	NA	NA	663	456	335	245	219	1,918
Residential Lighting Program	NA	NA	113	1,406	1,156	1,214	707	4,597
Electric Efficiency Program	196	1,207	1,809	3,591	2,580	1,982	2,937	14,302
LightenUP Program	0	0	0	0	0	2,743	5,042	7,785
Integrated Design Assistance Program	532	93	497	9	154	200	67	1,550
Total EE Annual Savings	881	1,574	3,462	5,707	4,324	6,502	9,230	31,679

Table C.2: Greenhouse Gas Emissions Factors

Description	Value	Notes
Electricity inventory, wholesale emissions factor	1,775	based on Platte River resource mix without renewable energy or RECs
Efficiency reduction emissions factor	1,618	based on 2005 EPA eGrid marginal emissions rate for RMPA area
Metered renewable energy emissions factor	1,618	based on 2005 EPA eGrid marginal emissions rate for RMPA area
REC renewable energy emissions factor	1,544	based on Green-e method using weighted average EPA eGrid marginal emissions factors

Table C.3: Energy Policy, 2008 Avoided Greenhouse Gas Emissions

2008 Electricity Inventory	Value	Notes
Community electricity use (MWh)	1,471,868	
Community electricity GHG emissions (tons)	1,306,021	(A) gross emissions
Metered renewable energy (MWh)	15,624	
Metered renewable energy GHG reductions (tons)	-12,640	(B) from Medicine Bow
Net community electricity GHG emissions (tons)	1,293,382	(A) - (B) net without RECs counted
REC renewable energy purchases (MWh)	77,376	
REC renewable energy GHG reductions (tons)	-59,735	(C) from RECs
Net community electricity GHG emissions (tons)	1,233,647	(A) - (B) - (C) net with RECs counted

Electric Energy Supply Policy Avoided Emissions	Value	Notes
Energy Efficiency Program Savings, 2002 - 2008	31,679	tons CO ₂ e
Metered renewable energy GHG reductions	12,640	tons CO ₂ e
RFR Program CFC-11 Destruction	4,583	one time savings from 2004 through 2008 programs
Electric Energy Supply Policy	48,902	tons CO ₂ e avoided w/o RECs
REC renewable energy GHG reductions	59,735	tons CO ₂ e
Electric Energy Supply Policy	108,636	tons CO ₂ e avoided with RECs

Appendix D: Electric Energy Supply Policy (2003)

City of Fort Collins Electric Energy Supply Policy

March 25, 2003

Introduction

Motivated by their concern for the welfare of the community, the citizens of Fort Collins created the electric utility in 1935. During the years that followed, the electric system grew both in size and sophistication. In 1973, Fort Collins joined with Estes Park, Longmont and Loveland to create the Platte River Power Authority (PRPA), a joint action agency charged with meeting the electric generation and transmission needs of the four cities.

The City now has a state of the art electric system that provides citizens with highly reliable service at an affordable and competitive price. However, getting to this point did not happen without a lot of effort and thoughtful guidance. The future will be no different. There will be many challenges to overcome if the city is to continue to provide its citizens with a high level of service. The most significant of these challenges will be addressing both important environmental issues and increasing demand, while maintaining high system reliability and competitive pricing. The purpose of this policy is to provide strategic objectives regarding system reliability, rates and the environment to guide the electric utility into the future as it continues to provide the citizens of Fort Collins with reliable and competitively priced electric service, in partnership with PRPA.

System Reliability

System reliability is the core of providing electric service. It is critical for the welfare of the community. It should not be compromised. The Utilities must continue to provide businesses and residents with highly reliable electric service consistent with established reliability goals.

Objectives for the Future

1. Continue to design, build and maintain the electric system utilizing the high standards that have been developed.
2. Maintain an emphasis on system safety for the benefit of employees and citizens.
3. Complete the electric system undergrounding program by the end of 2006 (revised from 2004).
4. Reduce peak electric use in order to minimize overloading of the electric system.
5. Encourage Platte River Power Authority to design, operate and maintain their electric transmission and generation system to minimize the risk of system outages.
6. Encourage Platte River Power Authority to maintain a diverse source of electric generation capacity.
7. Investigate the merits of distributed generation as a method of reducing system peak demands.

Electric Rates

For many years the citizens of Fort Collins have benefited from low electric rates. During the past 18 years, there have been two electric rate increases and two electric rate decreases. Electric rates today are only 0.2% more than they were in 1983, while the consumer price index has increased 77.8%. The City's residential electric rates are lower than 88% of the 51 Colorado utilities surveyed by the Colorado Association of Municipal Utilities.

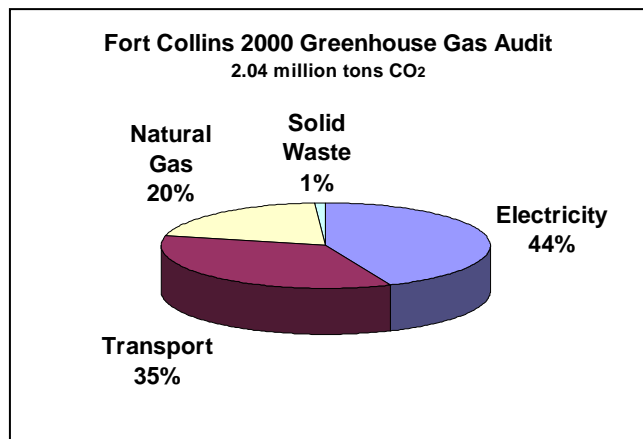
In order for the City to continue being a viable provider of electric service, it will be essential to maintain competitive rates in the future.

Objectives for the Future

1. Continue to design and implement electric rates that allocate costs between customer classifications in an equitable manner.
2. Design and implement electric rates that encourage conservation (e.g. market based incentives, block pricing) and demand side management.
3. Maintain rates that are regionally competitive and are below Xcel Energy.
4. Maintain long-term rate stability.
5. Establish alternative cost based rate structures that reflect the community's interest in and benefit from renewable energy (green pricing, net metering, system benefit charges).
6. Increase productivity and efficiency throughout the Utilities.
7. Work with Platte River Power Authority to delay or mitigate the expected rate impact associated with the construction of new base load generation facilities.
8. Work with Platte River Power Authority to develop a process whereby the avoided generation capacity costs, associated with demand side management (DSM) programs developed by the City, can be passed along to the City.

The Environment

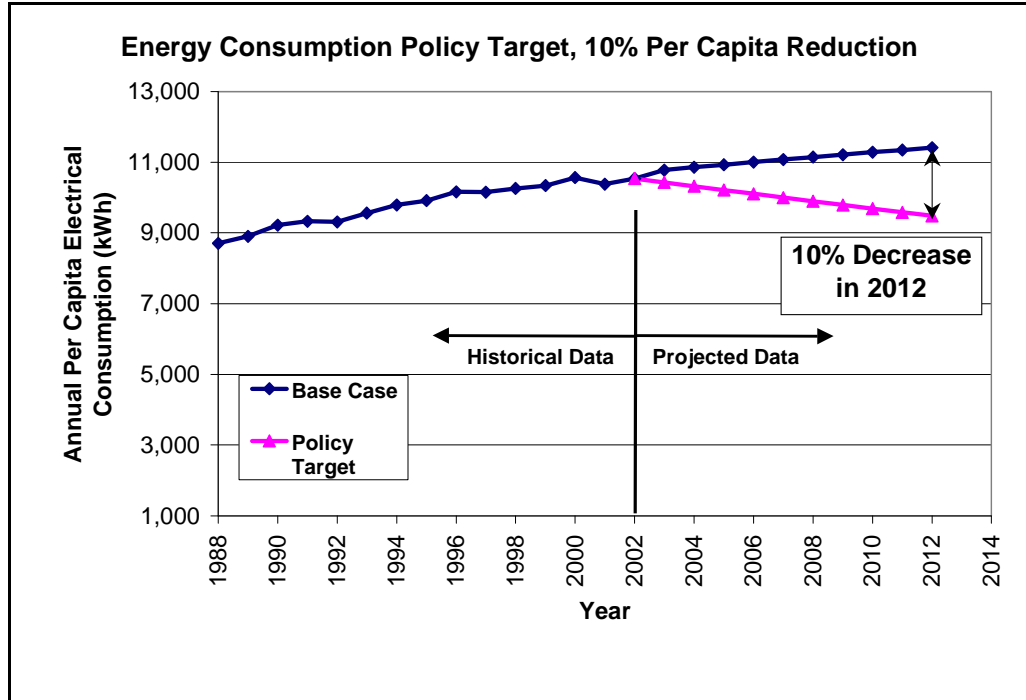
There is a growing awareness of and concern about global climate change and the harmful contributing effects of greenhouse gases. In 1999, the Fort Collins City Council adopted a local action plan to reduce greenhouse gas emissions. In the City's 2000 Climate Protection Status Report, the use of electricity, generated from facilities fueled with either coal or natural gas, was identified as the largest contributor of carbon dioxide (CO₂) to the environment. Although there are new and evolving technologies to reduce fossil fuel pollutants such as sulfur dioxide and nitrogen



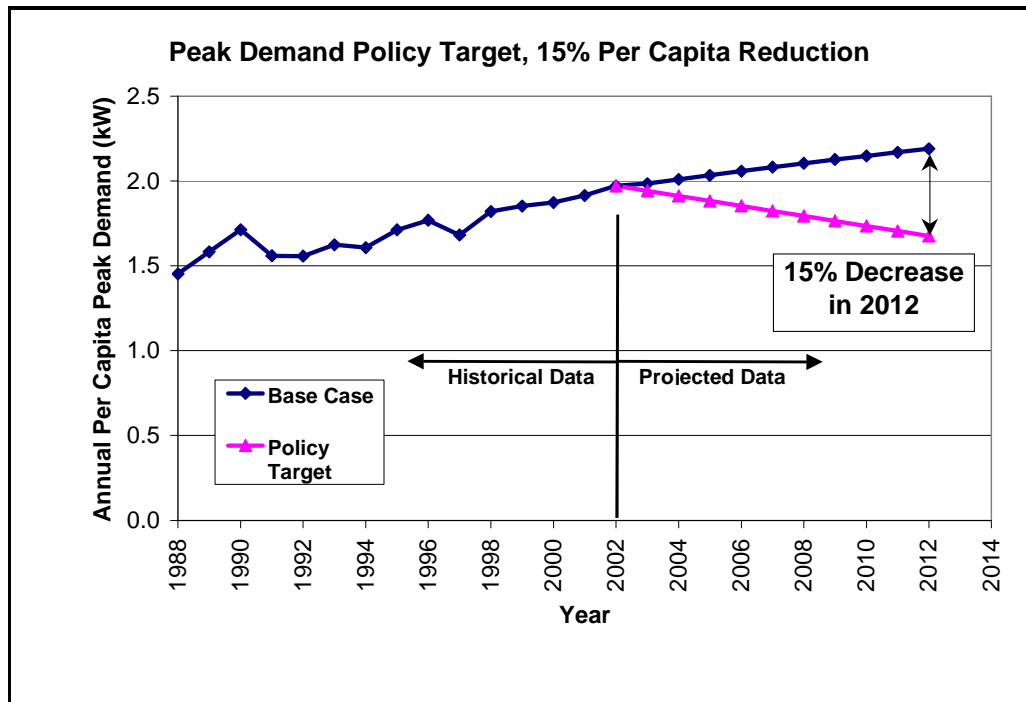
oxides (NO_x) emissions, there are presently no feasible methods of reducing CO₂ emissions at the generating facility. However, CO₂ emissions could be reduced by decreasing the consumption of electricity generated with CO₂ producing fuels and/or generating electricity with energy sources that do not produce CO₂, such as wind, solar and water. Decreasing consumption and using these energy sources also would reduce the negative environmental impacts (e.g. habitat destruction, air and water pollution) associated with fossil fuel exploration, mining and transportation.

Objectives for the Future

1. Reduce per capita electric consumption 10%, from the baseline of 2002, by the year 2012. The 10% per capita consumption reduction target will reduce overall electric consumption approximately 17% by 2012 (see the following graph). During this time period (2002-2012), the overall reduction in electric consumption amounts to approximately 1.7 billion kilowatt-hours of electricity and the avoided production of over 1.8 million tons of CO₂.



- Reduce per capita peak day electric demand 15%, from the baseline of 2002, by the year 2012. The 15% per capita demand reduction target will reduce the peak demand by approximately 80 MW by 2012 (see the following graph). This projected reduction in peak day demand is approximately equal to the output of one combustion turbine, which presently costs about \$25 million.



3. Develop and implement effective demand side management (DSM) programs.
4. Develop a strategic plan by July 1, 2003, for reaching the consumption and demand reduction targets outlined in this policy. The approaches to be evaluated will include, without limitation, a systems benefit charge, efficiency programs, incentive programs, educational programs, revolving loan programs and innovative rate structures.
5. Increase community awareness and understanding of DSM and renewable energy programs.
6. Encourage Platte River Power Authority to continue reducing emissions from fossil fuels and to avoid the use of coal in any new generation facilities (Rawhide Unit 2 or other potential generation facilities that PRPA may pursue).
7. Work with Platte River Power Authority to continue to diversify the portfolio of energy sources that serve the City.
8. Work with Platte River Power Authority to increase the City's percentage of renewable energy (in addition to the existing large hydro from WAPA) to 2% by the end of 2004 and to 15% by the year 2017.
9. Develop and implement policies and programs that support:
 - the development and use of renewable resources,
 - sustainable practices,
 - the City's effort to reduce global warming, and
 - the design and construction of energy efficient buildings
10. Develop and implement policies that require the use of energy efficient design principles in the renovation and construction of all City facilities.
11. Whenever possible, integrate efforts related to energy efficiency, renewable resources, green buildings (energy code), sustainable practices and education.

Annual Report

On an annual basis, the City Manager will provide the City Council and the Electric Board with a status report on the objectives included in the *Electric Energy Supply Policy*.

Appendix E: 2009 Energy Policy Summary

Fort Collins City Council adoption of the 2009 Energy Policy (Resolution 2009-002) provided new strategic planning guidance for Fort Collins Utilities' Light and Power Service Unit, the Energy Services group and the entire City government (http://www.fcgov.com/electric/energy_policy.php).

The primary objectives of the policy are to:

- Provide highly reliable electric service;
- Support the community's carbon emissions goal of reducing the City's carbon footprint 20% below 2005 levels by 2020 and 80% by 2050;
- Enhance local economic health; and
- Continue collaboration with Platte River Power Authority and member Cities.

The policy also includes the following specific targets and goals related to energy efficiency and load management.

- Achieve annual energy efficiency and conservation program savings of at least 1.5% of annual energy use; and
- Increase the power managed by load management, smart grid and distributed generation to at least 5% of 2005 system peak demand by 2015 and at least 10% by 2020.

Council expects the following outcomes and benefits stemming from implementation of the 2009 Energy Policy.

- Continued high electric system reliability;
- Modernization of electric metering system;
- Long-term asset management of electric distribution system;
- Reduction of greenhouse gas emissions from efficiency, conservation and renewable energy;
- Affordable electric bills, through competitive rates, efficiency and conservation;
- Local economic benefits resulting from a healthy municipal utility, high electric system reliability, competitive electric rates and investments in efficiency and renewable energy.

The Energy Policy is also a component of the Climate Action Plan, adopted by Council in December 2008. The Climate Plan references the Energy Policy for energy conservation, energy efficiency, renewable energy and smart grid related strategies for carbon emissions reduction.

Implementation plans are under development in 2009 and will be presented through the City's Budgeting for Outcomes process.