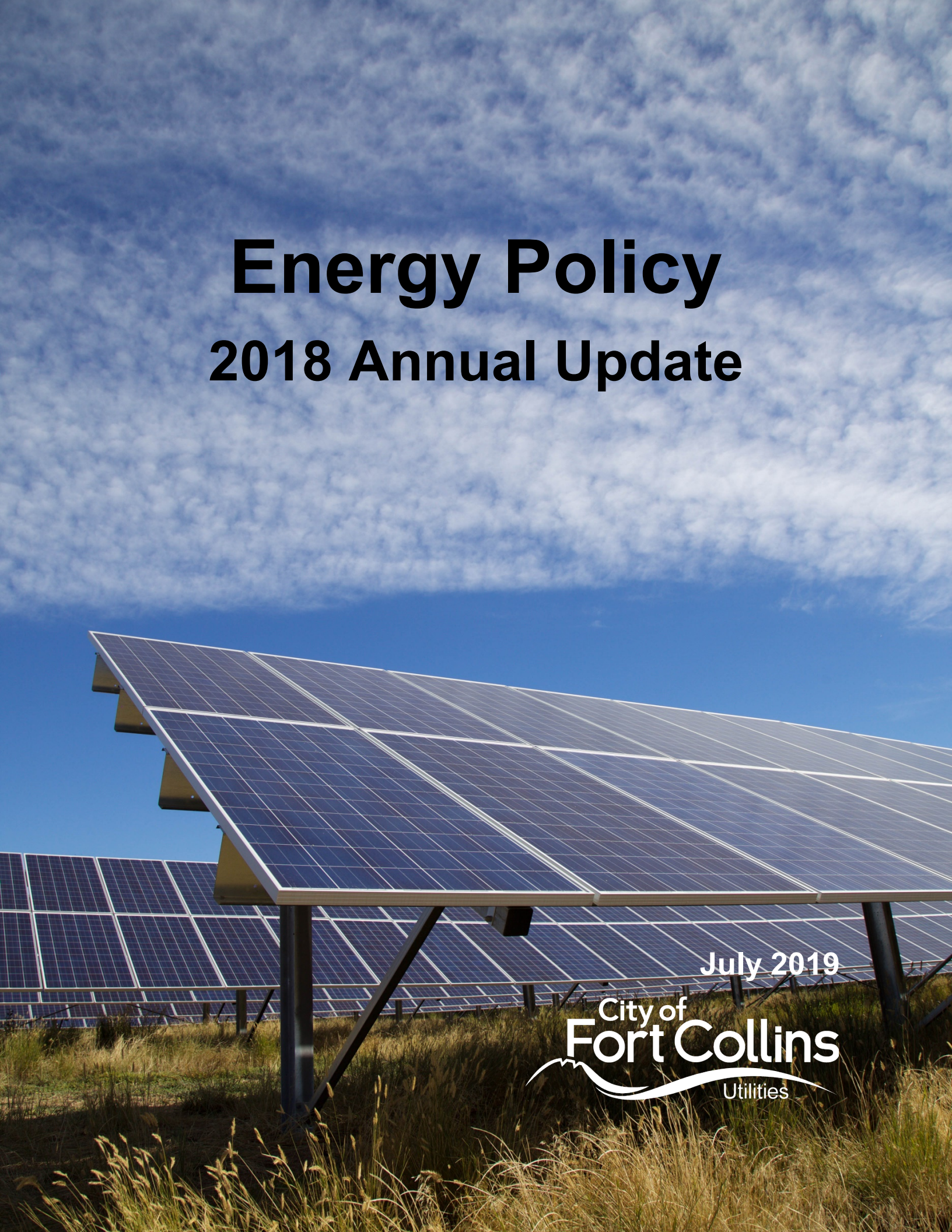
Energy Policy

2018 Annual Update



July 2019

City of Fort Collins Utilities

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Introduction

This report provides an update of 2018 activities and results related to the Fort Collins Energy Policy. The policy reflects Fort Collins' energy values of reliability, affordability, safety, greenhouse gas emission reduction, pollution prevention, environmental stewardship and energy independence. It includes goals for the quantity and sources of energy for electricity, heating and transportation. The vision for the Energy Policy is: *"Fort Collins is a leader in the transition to sustainable and resilient local energy systems to serve the community's 2050 carbon neutral future."* During 2019 and 2020, the Energy Policy and Climate Action Planning processes will be further aligned to achieve 20% carbon reduction below 2005 levels by 2020, 80% by 2030 and carbon neutral by 2050.

2018 Outcomes

- Electricity use per person has decreased by 16% since 2005 and natural gas use per person decreased by 12%. Total electricity and natural gas use for the community has gone up by only 11% since 2005, despite a population increase of 28%.
- Efficiency programs saved 32,800,000 kilowatt-hours (kwh), or 2.1% of the community's annual usage, which is equivalent to the annual electric use of over 4,200 typical Fort Collins homes.
- Fort Collins buildings were 9% more efficient than in 2005 while building square footage increased by 21%.
- Community carbon emissions from electricity are down 16% from 2005.
- Electricity from non-carbon resources accounted for 33% of total resources, with 19% from hydro, 11% from wind energy and 3% from solar energy. Fossil fuel energy comprised 67% of electricity sources.
- Efficiency and renewable programs generated $40 million in local economic benefits through reduced utility bills, direct rebates and leveraged investment, supporting an estimated 204 jobs.
- Electric reliability remained high at 99.997%, with an average system outage of only 17 minutes.

2018 Major Activities and Highlights

- Fort Collins Utilities implemented Time-of-Day rates for all residential electric customers and the Income-Qualified Assistance Program for all utility services.
- Fort Collins passed a 100% renewable energy by 2030 resolution and the Building Energy and Water Scoring ordinance.
- Fort Collins was a winner of the Bloomberg Philanthropies' Mayors Challenge and a $1 million award to bring energy efficiency upgrades to rental properties and document health and well-being indicators.

2018 Annual Update Infographic

Each year, Fort Collins Utilities provides an update on the progress and activities related to the Energy Policy. In 2018, the annual update included an infographic *(see Figure 1).*

Figure 1. 2018 Energy Policy Annual Update Infographic

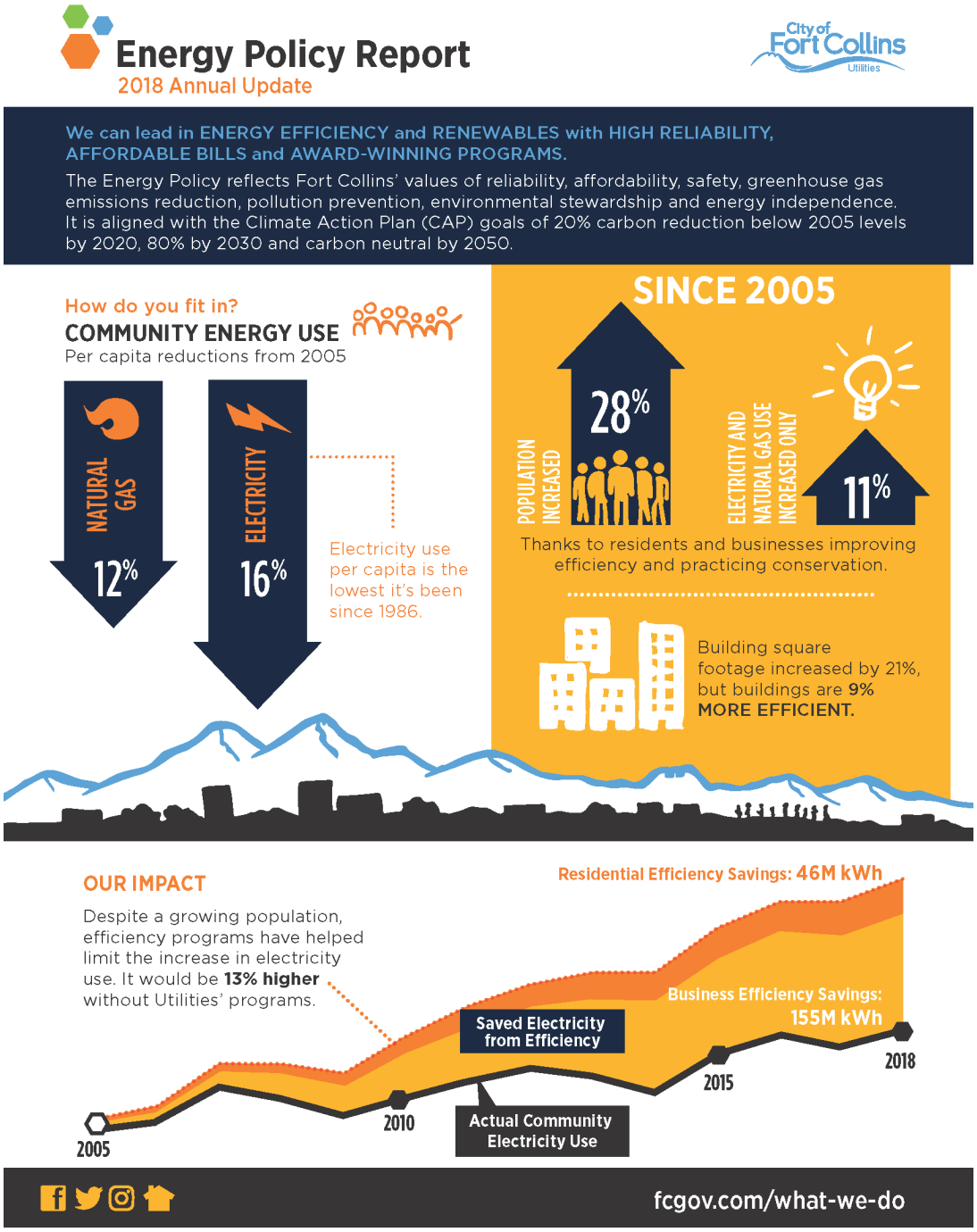
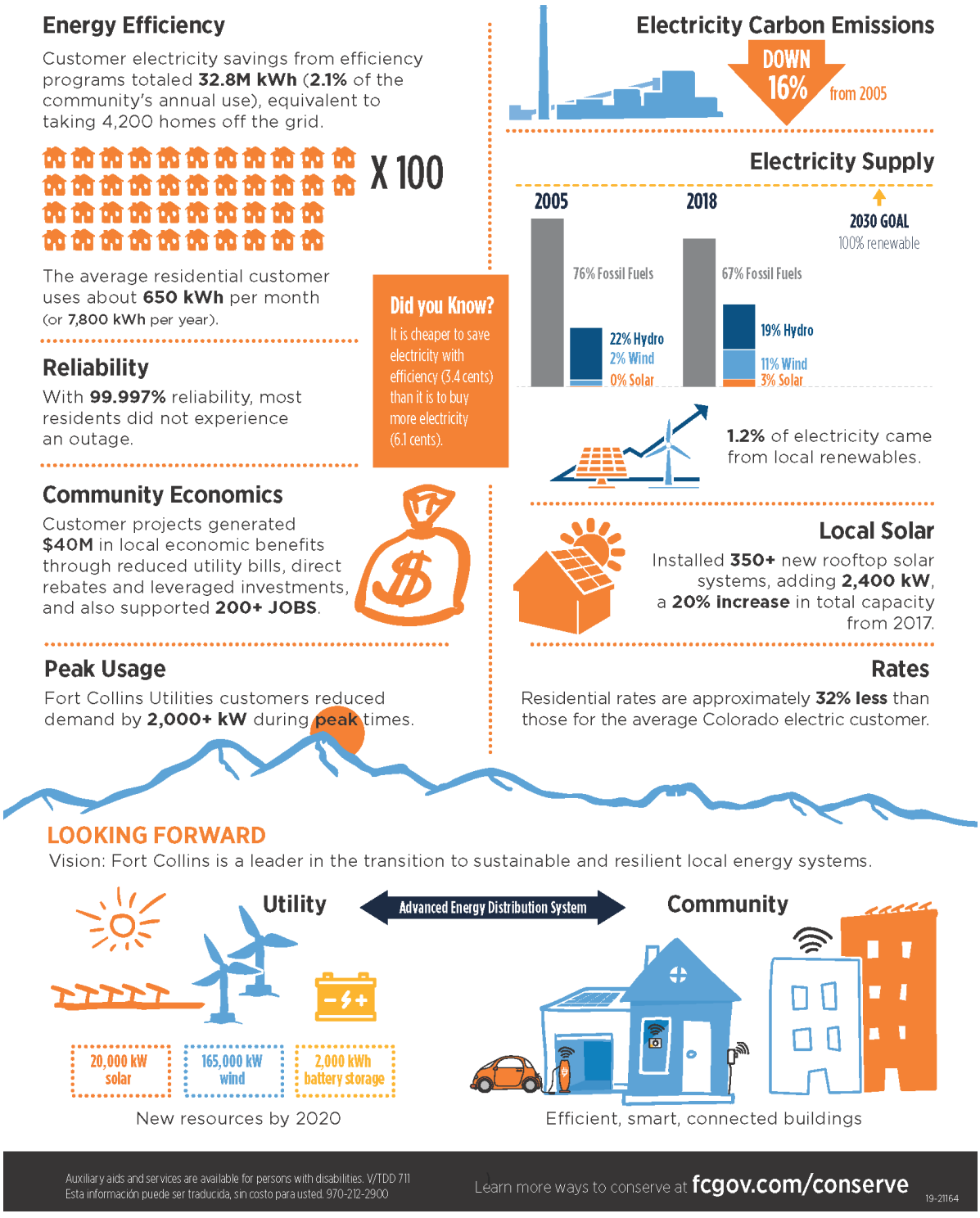


Figure 1. 2018 Energy Policy Annual Update Infographic (continued from previous page)



Community Energy Use

Community electricity and natural gas use has increased by 11% since 2005, while the population has increased by 28% from 132,489 to 170,100 residents. Per capita energy use decreased by 16% from 2005 levels for electricity, 12% for natural gas and 14% for both combined *(see Table 1).*

Table 1. Electricity and Natural Gas (Total and Per Capita) Consumption in 2005, 2017 and 2018

Metric/Indicator	2018 Value	% change from 2017	% change from 2005
Total Energy	*13,514,877 MMBtu*	*+3%*	***+11%***
Non-Carbon	527,129 MWh	-2%	+50%
Coal	1,085,774 MWh	+1%	-4%
Natural Gas	81,256,313 thm	+5%	+12%
Per Capita	*79,453 kBtu*	*0%*	*-14%*
Electric	9,285 kWh	-3%	-16%
Natural Gas	478 thm	+1%	-12%

Electricity use per capita went from 11,015 kwh in 2005 to 9,285 kwh in 2018 *(see Figure 2).* Both electricity and natural gas use per capita have steadily decreased since 2005, with more variation for natural gas use per capita *(see Figure 3). View up-to-date comparisons to 2005 per capita electricity consumption on the Community Energy Use dashboard at* https://fortcollins.clearpointstrategy.com/environmental-health-2/community-energy-use/.

Figure 2. Fort Collins Community Per Capita Electricity Use

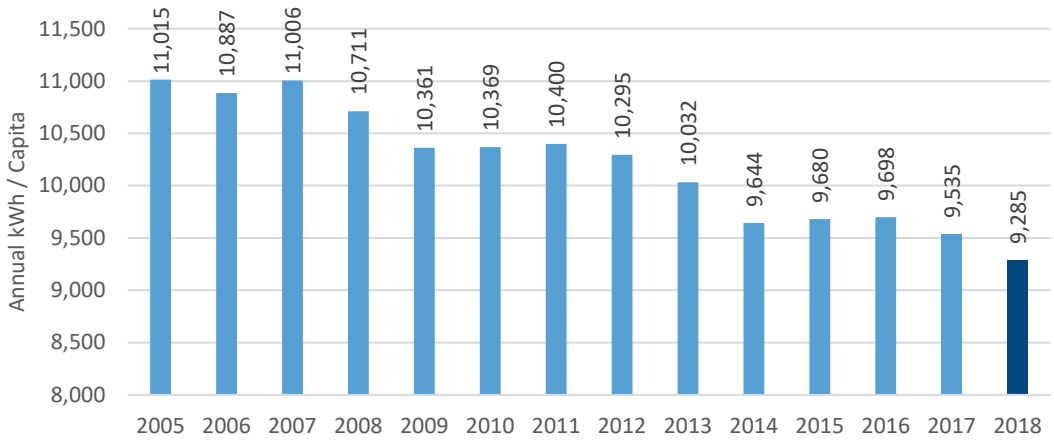
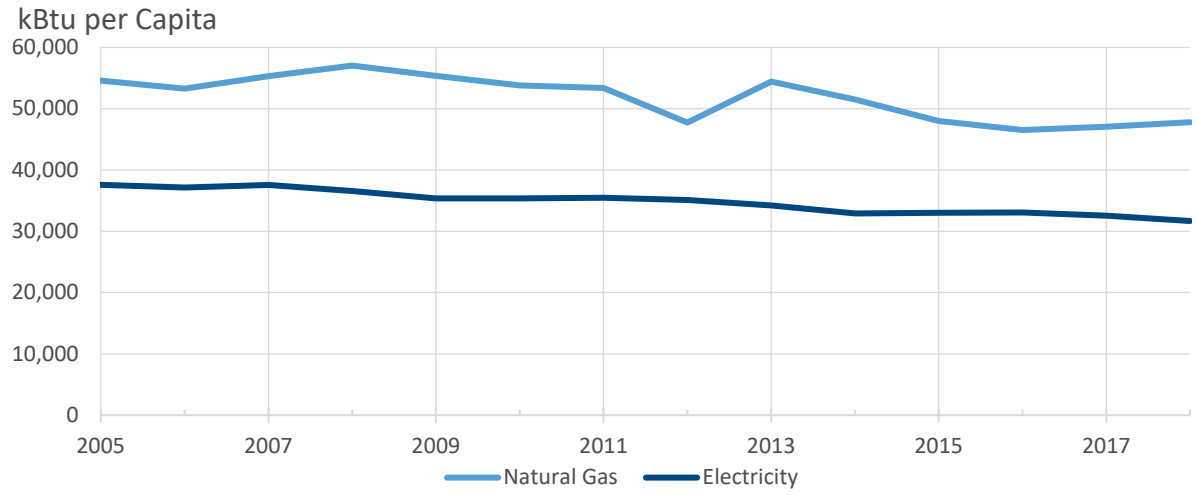


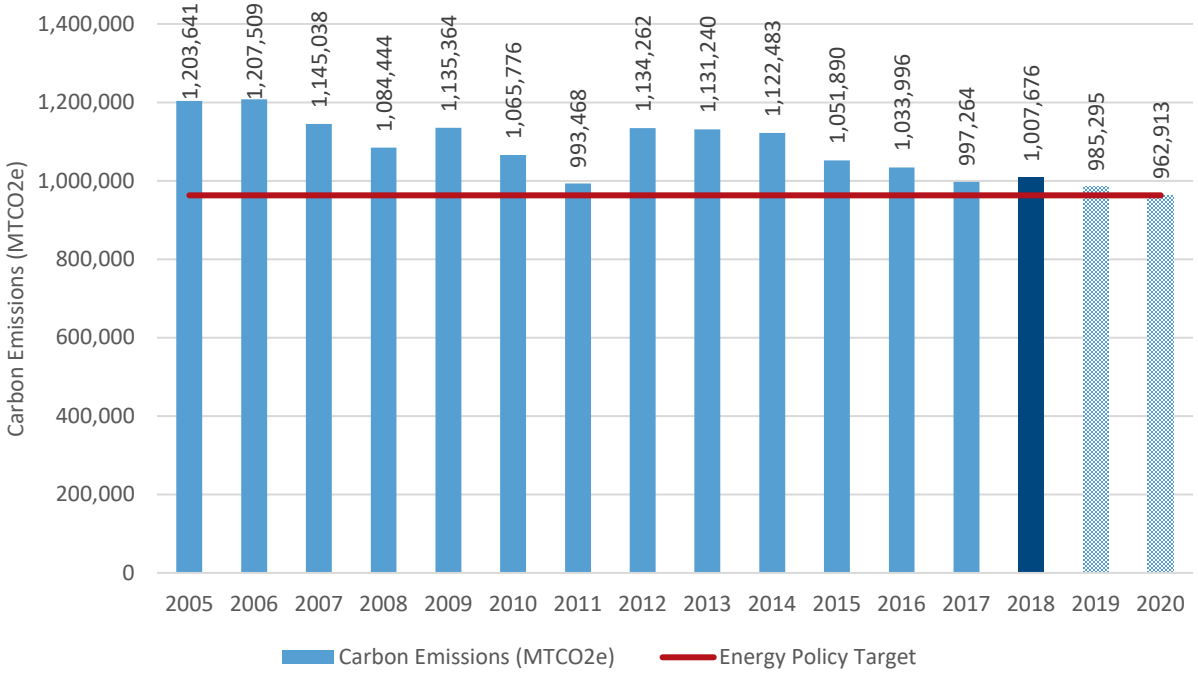
Figure 3. Fort Collins Community Per Capita Electricity and Natural Gas Use



Community Carbon Emissions

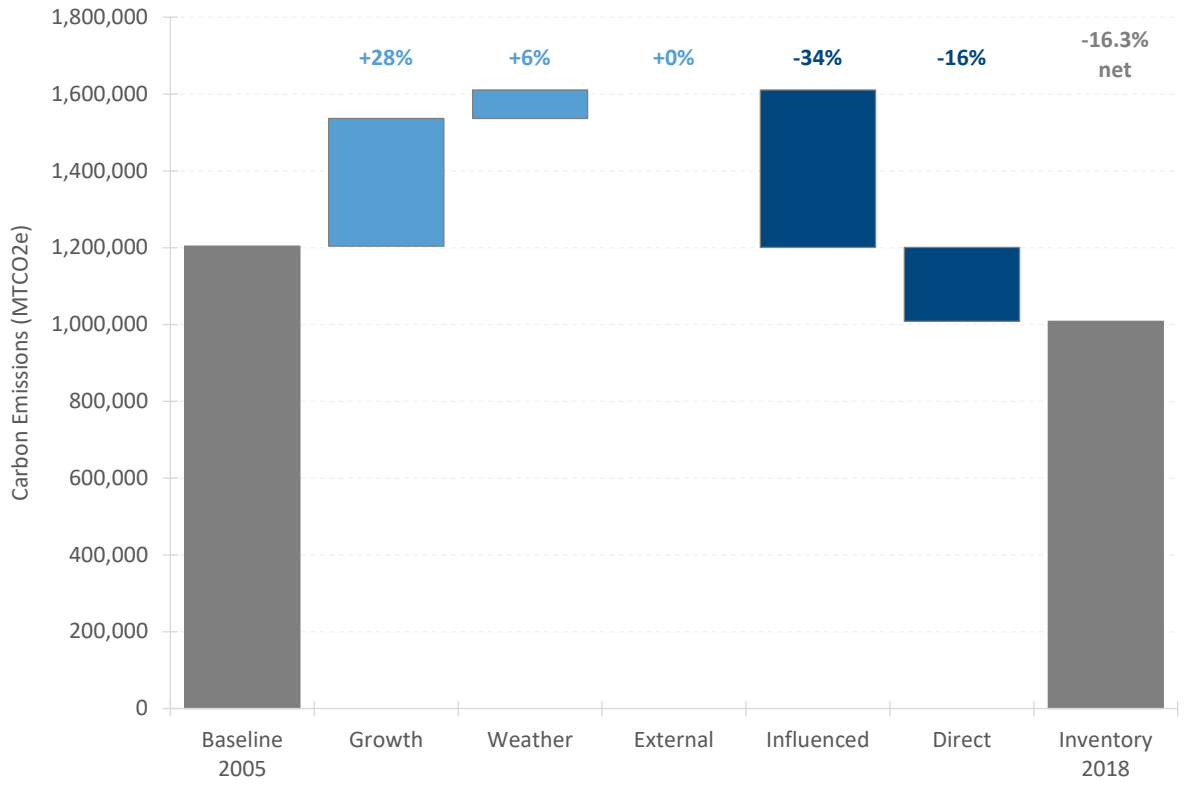
In 2018, carbon emissions from electricity were 16% below 2005 levels, with a goal to be 20% below by 2020 *(see Figure 4).* Carbon emissions reductions come from influenced areas (such as Platte River Power Authority renewable energy) and direct areas (such as energy efficiency and roof top solar), which counteract emissions from growth and weather *(see Figure 5).*

Figure 4. Carbon Emissions from Electricity



**2019 and 2020 numbers are projections in incremental steps to achieve 20% below 2005 by 2020.*

Figure 5. Drivers of Change for Carbon Emissions from Electricity



To learn more about community carbon emissions, visit the City of Fort Collins Climate Dashboard at https://ftcollinscap.clearpointstrategy.com/.

Fort Collins Utilities is also a member-owner of Platte River Power Authority (PRPA). As such, Fort Collins reports the ownership share of PRPA's carbon emissions. This value differs from the operational share of emissions, which only account for electricity consumed by Fort Collins residents and businesses. The ownership share includes emissions associated with the generation of electricity that is sold to other utilities. In 2018, ownership share emissions were 1,359,213 metric tons, a reduction of 22.1% below the 2005 baseline year.

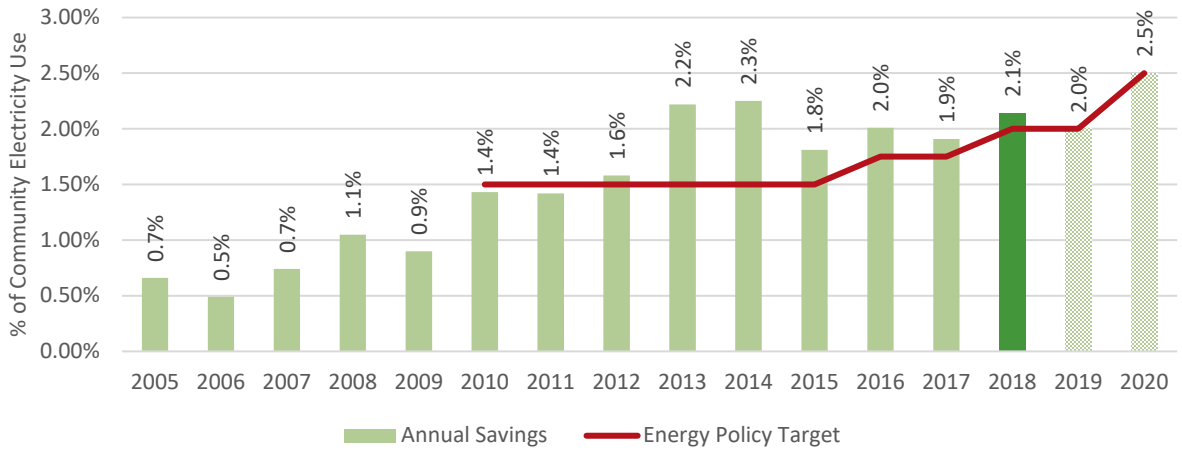
Energy Efficiency

In 2018, customer electric savings from efficiency programs totaled 32,800,000 kWh *(see Table 2),* which is equivalent to 2.1% of the community's annual retail electricity consumption. The 2018 goal to achieve savings of 2% of the community's annual electricity use was slightly exceeded *(see Figure 6).* It is cheaper to save electricity with energy efficiency at $.034 per kWh, compared to purchasing more electricity at $.061 per kWh.

Table 2. Energy Efficiency Program Savings

Program	Participation (audits & projects)	First year customer gross electric savings (MWh)	Cost of saved energy ($ per kWh levelized)
Business Efficiency	726	16,954	$0.027
Home Energy Reports	58,000	11,860	$0.049
Efficiency Works Store	590	179	$0.132
Consumer Products Appliances	1,445	559	$0.035
Consumer Products In-Store Discounts	5,879	845	$0.007
Building Code: Compliance and Amendments	440	642	$0.014
Home Efficiency	1,038	576	$0.160
Conservation Corps	425	184	$0.105
Design Assistance	3	456	$0.051
Special Projects (Take Two)	6,000	545	$0.021
Total	**74,546**	**32,800**	**$0.034**

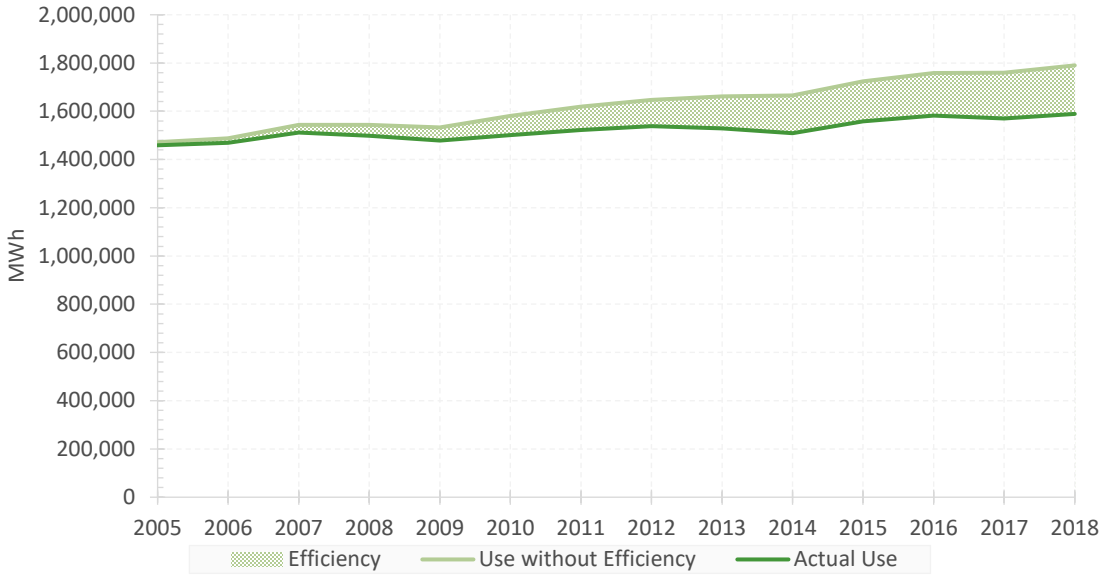
Figure 6. Annual Efficiency Savings



**2019 and 2020 numbers are projections assuming the policy target is met each year.*

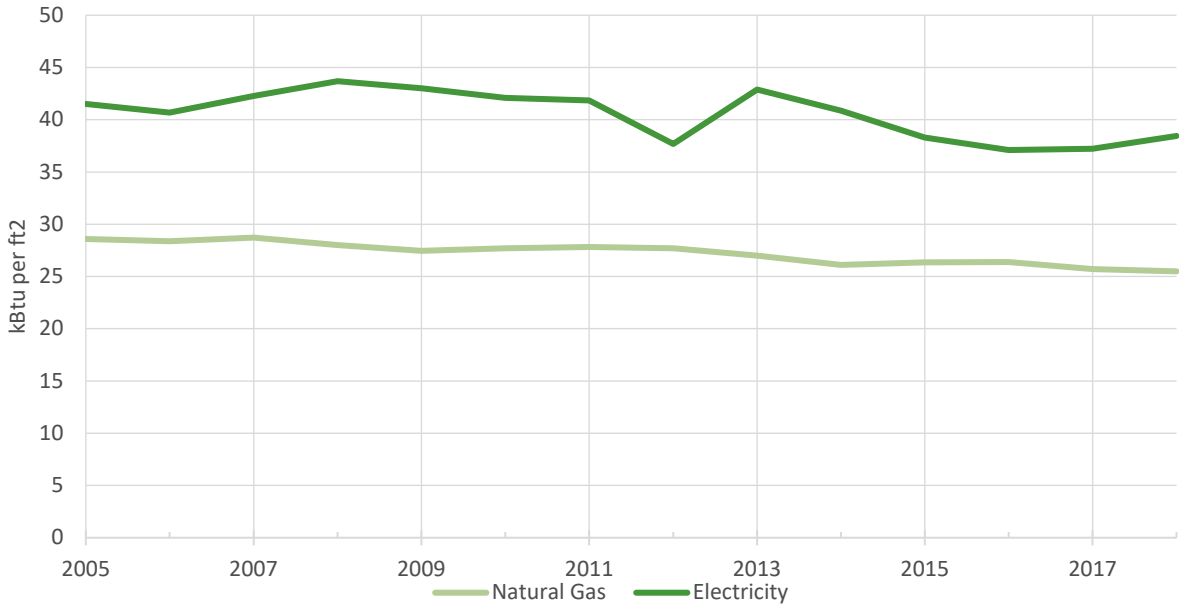
Cumulative savings from energy efficiency programs since 2002 totaled 201,120,000 kWh of avoided electricity use in 2018 *(see Figure 7)*. Without efficiency programs, community electricity use would be 13% higher. Comparatively, wind and solar energy sources generated 231,700,000 kWh (or 14% of Fort Collins Utilities operational electricity use in 2018), meaning that Fort Collins Utilities has saved nearly as much electricity through efficiency programs as is generated from renewable sources. This has helped keep our electricity consumption increase to only 8%, even with a growing population and increased building stock.

Figure 7. Cumulative Electricity Savings from Efficiency Programs



Energy use in buildings went from 12,207,703,000 kBtu in 2005 to 13,514,877,000 kBtu in 2018, an increase of 11%. However, building square footage has gone from 174,174,000 ft^2 in 2005 to 211,411,000 ft^2 in 2018, a 21% increase. This means that buildings in 2018 were 9% more efficient than in 2005, using 64 kBtu per ft^2 instead of 70 kBtu per ft^2 *(see Figure 8).*

Figure 8. Natural Gas and Electricity Use per Square Foot



Electricity Supply

Resource Mix

The Energy Policy states specific goals for the electric resource mix, which include:

- Less than 60% of electricity from fossil fuels by 2020
- Minimum of 20% of electricity from renewables by 2020
    - Minimum of 2% of electricity from local renewables by 2020

In 2018, Utilities moved toward these goals with 67% from fossil fuels (includes coal, natural gas, and regional purchases), 14% from renewables and 1.2% from local renewables (s*ee Figure 9 and Table 3).* Additionally, 33% of electricity supply came from non-carbon resources. Renewable energy has steadily increased from only 2% in 2005, with a large jump from 6% in 2014 to 12% in 2015 *(see Figure 10).*

Note: There is a slight decrease in the percent of electricity from renewable resources in 2018 because of a planned sale of 15 MW of wind power. Fort Collins Utilities is still on track to achieve 20% renewable electricity by 2020 and expected to reach 30% by 2021.

Figure 9. 2018 Operational Electricity Resource Mix

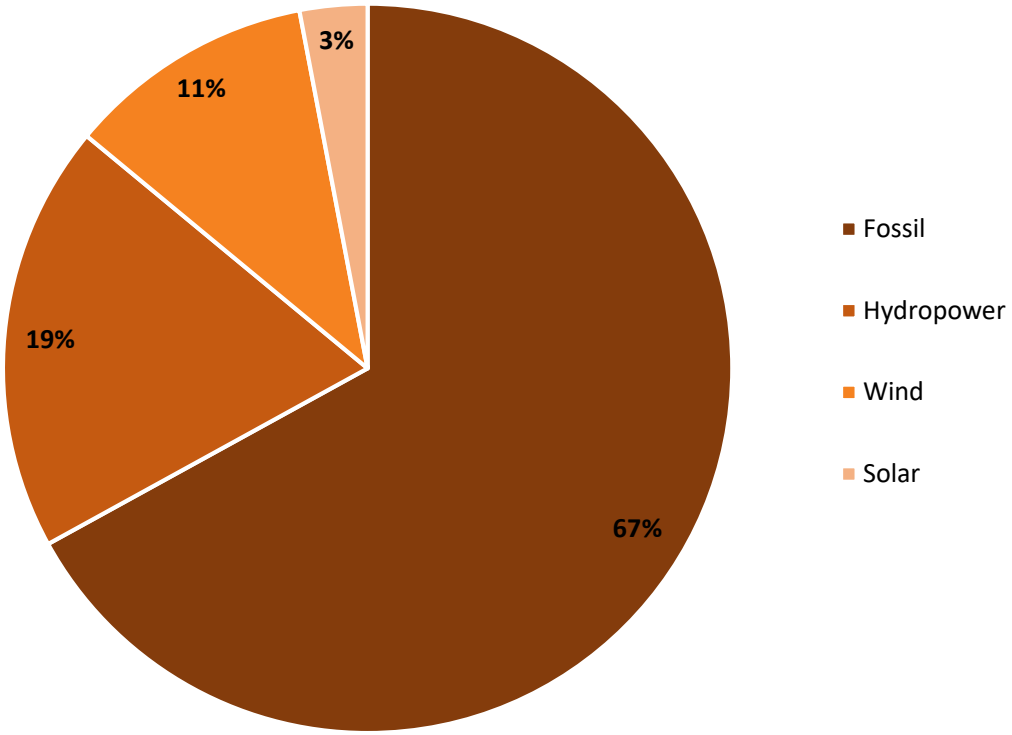
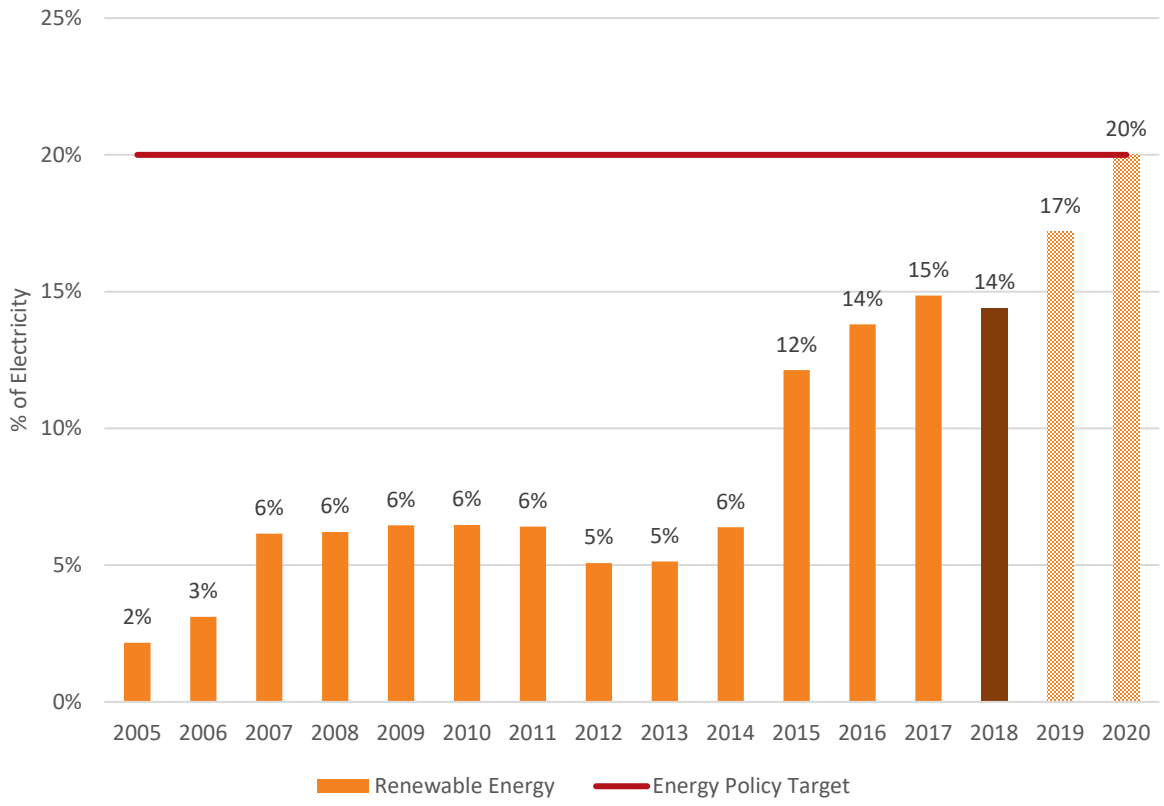


Table 3. Electricity Resource Mix 2005, 2017, and 2018

	2005		2017		2018	
	MWh	%	MWh	%	MWh	%
Fossil Fuels	1,127,732	76	1,072,721	66	1,085,774	67
Hydro	319,594	22	303,240	19	295,428	19
Wind	31,499	2	189,534	12	182,075	11
Solar	0	0	43,885	3	49,625	3
Total	1,458,857	100	1,570,634	100	1,588,967	100

Figure 10. Renewable Energy Percentage of Total Electricity

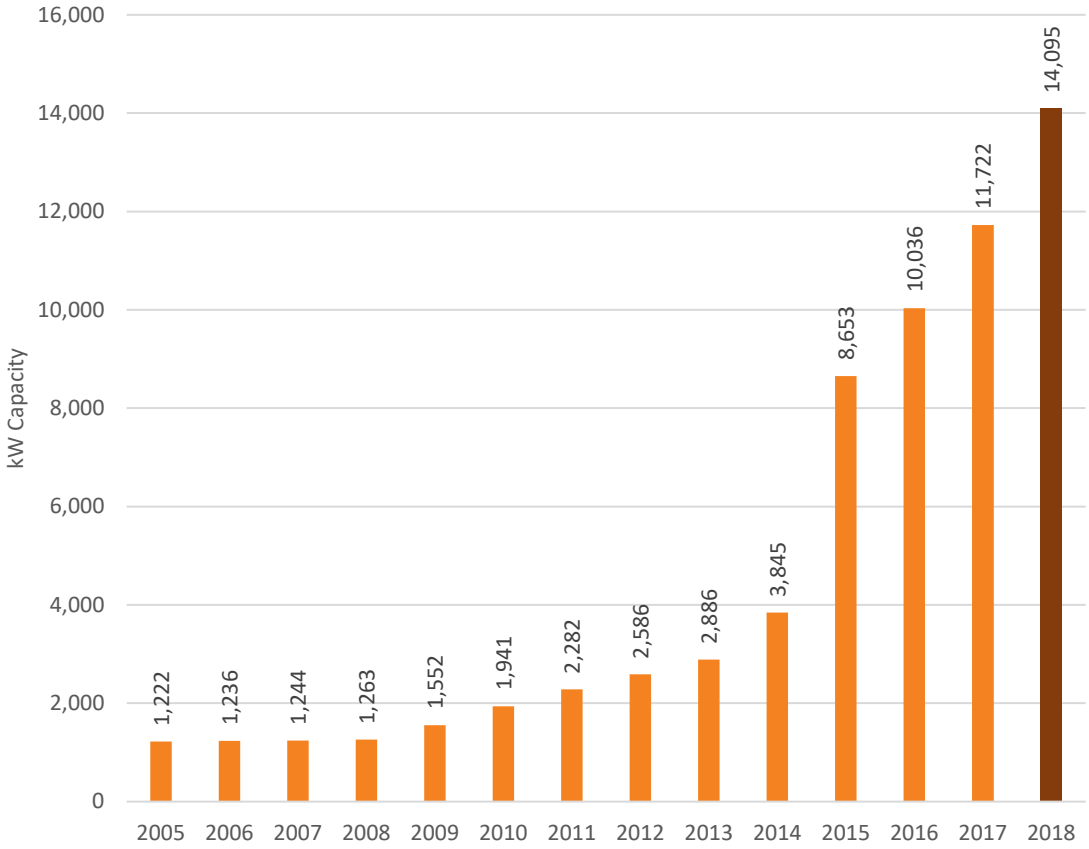


**2019 and 2020 numbers are projections in incremental steps to achieve 20% by 2020.*

Distributed Generation

Distributed generation capacity has increased from 1,200 kW in 2005 to 14,100 kW in 2018 *(see Figure 11).* This is from residential and commercial solar and cogeneration rebate programs, solar purchase power agreements and community solar. Fort Collins Utilities has an additional 15,000 kW of utility-scale solar operated by Platte River Power Authority (PRPA).

Figure 11. Fort Collins Distributed Generation Capacity



View information about all solar installations in the OpenData Solar Installations dataset at https://opendata.fcgov.com/Environmental-Health/Solar-Installations/3ku5-x4k9.

Reliability and Demand Response

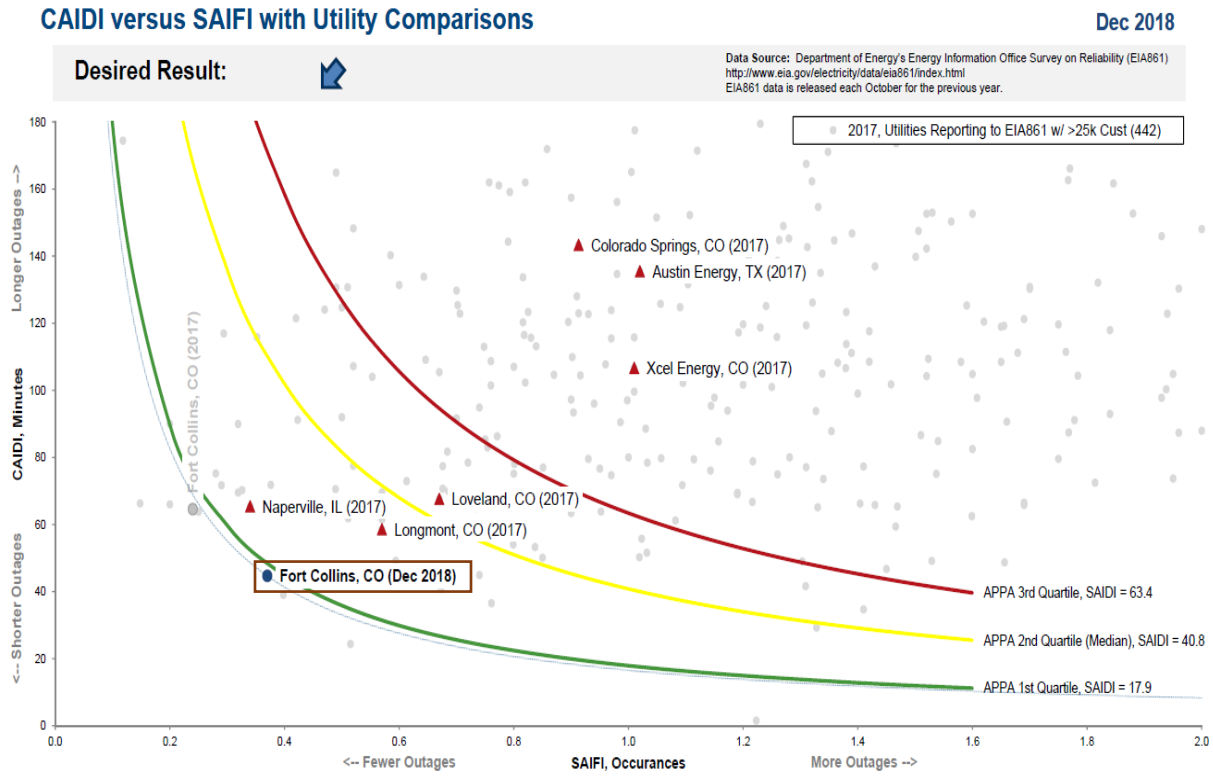
Reliability remained high in 2018 with an uptime of 99.997% and an average system outage time of 17 minutes *(see Table 4).* Fort Collins also remained among the topmost reliable utilities for duration and frequency of outages based on standards set by the American Public Power Association (APPA) *(see Figure 12).*

Table 4. 2018 Reliability Metrics

DATE	ASAI	CAIDI	SAIDI	SAIFI	MAIFI
12/31/2018	99.9968	44.7	16.8	0.37	0.12

View up-to-date SAIDI metrics on the Electric System Average Interruption Duration Index (SAIDI) in Minutes dashboard at https://fortcollins.clearpointstrategy.com/economic-health/electric-system-average-interruption-duration-index-saidi-in-minutes/.

Figure 12. Fort Collins Reliability Comparison to Other Utilities



Peak Partners, a demand response portfolio of programs, allowed us to reduce peak loads in 2018 by up to 2,000 kW, with a capacity to reduce peak loads by 3,300 kW. Peak Partners offers wi-fi enabled thermostats and water heater controllers to help residential customers reduce their energy demand at peak times. Modifications were made to the program in 2018 to proactively help customers shift load with the Time-of-Day rate. Peak Partners also works with commercial customers to use building automation features that reduce electricity demand during monthly peak events.

Community Economics and Partnerships

Through efficiency and renewable projects in the community, Fort Collins Utilities has generated over $40 million in local economic benefits through reduced utility bills, direct rebates and leveraged investment. Investing in energy efficiency and solar job sectors supported 204 more jobs in our community than investing in other job sectors *(see Table 5).* According to the Clean Jobs Colorado 2018 Report, there are an estimated 3,008 clean energy jobs in Larimer County, and Colorado ranked seventh in the U.S. for renewable energy jobs.

Table 5. Local Economic Benefits from Energy Efficiency and Solar Projects

Energy Efficiency	**Dollar Amount (M)**	**Notes**
Leveraged Investment (2018)	$5.4	Incentives are typically 1/2 of project cost
Prior Year Utility Cost Savings (2002-2017)	$15.6	Direct customer bill savings
Direct Incentives (2018)	$5.4	Annual incentives in 2018
Annual Utility Cost Savings (2018)	$2.8	Annual savings for 2018
Indirect and Induced Benefits (2018)	$5.4	50% multiplier on incentives and investment
Energy Services Expenditures (2018)	-$6.9	Annual utilities expenditures
Total Energy Efficiency ($M)	$27.8	
Renewables		
Leveraged Investment (2018)	$7.0	Actual costs minus incentives
Prior Year Utility Cost Savings (2005-2017)	$1.4	Direct customer bill savings
Direct Incentives (2018)	$.5	Annual incentives in 2018
Annual Utility Cost Savings (2018)	$.3	Annual savings for 2018
Indirect and Induced Benefits (2018)	$3.7	50% multiplier on incentives and investment
Energy Services Expenditures (2018)	-$.7	Annual utilities expenditures
Total Renewables ($M)	$12.2	
Total	**$40.0**	

Table 5. Local Economic Benefits from Energy Efficiency and Solar Projects (continued)

EE Jobs Analysis	EE Path	Business as Usual Path
Jobs per $M	20	17
2018 Investment ($M)	$10.8	$10.8
Gross Jobs	219	187
Net Jobs	**32**	
Cumulative annual shift in utility bill spending ($M)	$18.5	$18.5
Jobs per $M	17	10
Gross Jobs	320	183
Net Jobs	**137**	
Net EE Jobs	**169**	
Solar Jobs Analysis	**Solar Path**	**Business as Usual Path**
Jobs per $M	20	17
2018 Investment ($M)	$7.5	$7.5
Gross Jobs	152	130
Net Jobs	**22**	
Cumulative annual shift in utility bill spending ($M)	$1.7	$1.7
Jobs per $M	17	10
Gross Jobs	29	16
Net Jobs	**12**	
Net Solar Jobs	**35**	
Combined Net Jobs	**204**	

**Calculations from American Council for an Energy-Efficiency Economy Fact Sheet: 'How Does Energy Efficiency Create Jobs?'*

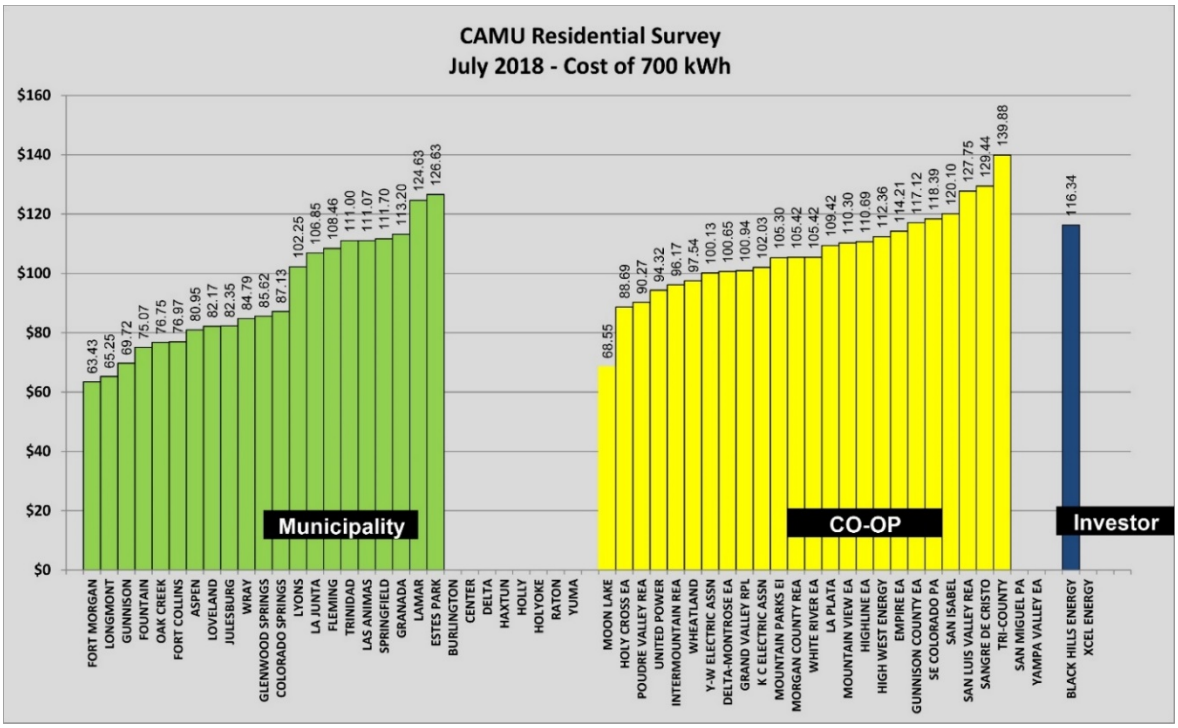
Fort Collins Utilities collaborates with many partner organizations to achieve these community impacts and Energy Policy goals. Partners in 2018 included:

- Platte River Power Authority (PRPA) and other owner municipalities (Loveland Water and Power; Longmont Power and Communications; and Estes Park Light and Power)
- Energy Outreach Colorado
- Colorado Energy Office
- Xcel Energy's Partners in Energy
- Colorado State University
- Bloomberg Philanthropies
- NRDC and IMT's City Energy Project

Rates

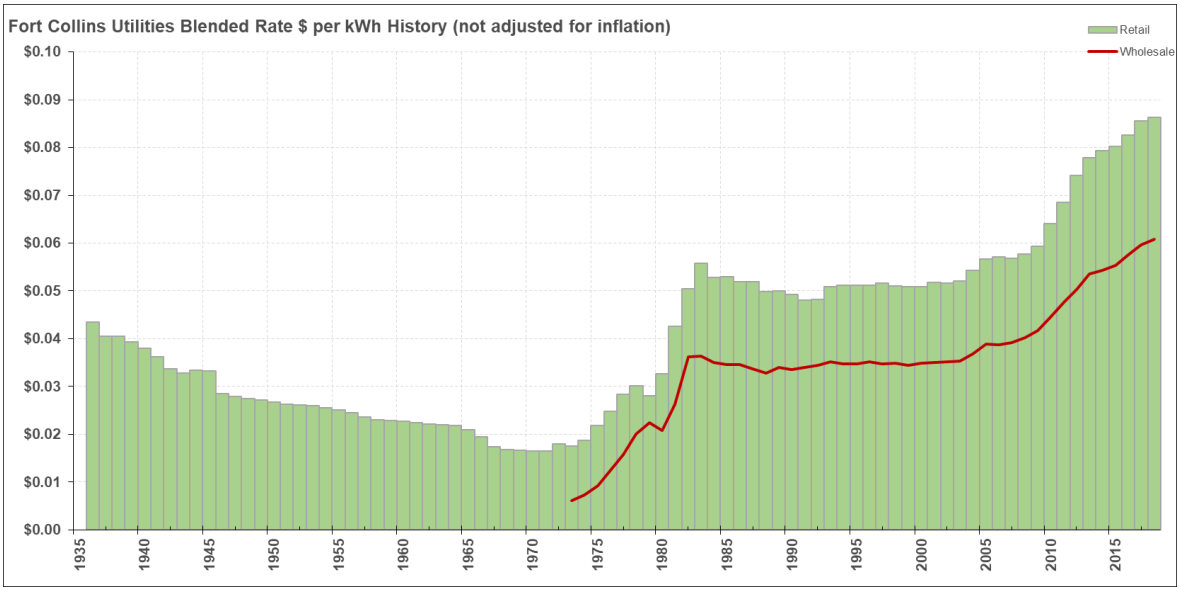
In 2018, Fort Collins Utilities residential rates were 32% lower than the average Colorado utility residential rate ($68.14 compared to $100.51) and 26% lower than the average Colorado municipal utility residential rate ($68.14 compared to $92.67). Residential rates also ranked as the 6th lowest residential rates among municipal utilities *(see Figure 13),* while providing high quality programs in business energy efficiency, residential energy efficiency and renewable energy. Our blended retail rate increases reflect increases in the wholesale rate over time *(see Figure 14).*

Figure 13. Colorado Association of Municipal Utilities Residential Survey



View up-to-date comparisons of rates for residential, small commercial, large commercial, and industrial on the Utilities How We Compare webpage at https://www.fcgov.com/utilities/residential/rates/electric/how-we-compare.

Figure 14. Fort Collins Utilities Blended Retail Rate and Wholesale Rate



Looking Ahead

By 2020, Fort Collins Utilities (in collaboration with PRPA) will add 20 MW of solar, 165 MW of wind and 2 MW of battery storage. In 2020, Fort Collins Utilities will also work on aligning the Energy Policy and the Climate Action Plan to further integrate goals and activities.

Programs

Programs include:

- Business Energy Efficiency
  - Efficiency Works (for businesses and multi-family residences)
  - Integrated Design Assistance Program
  - Building Energy and Water Scoring
- Residential Energy Efficiency
  - Efficiency Works (for homes and online store)
  - Appliance Rebates
  - Refrigerator and Freezer Recycling
- Renewable Energy
  - Commercial and Residential Solar Rebates
  - Community Solar
- Demand Response
  - Peak Partners

View more information about the Energy Policy and programs at www.fcgov.com/what-we-do.

Thank You

We would like to share our thanks to the hundreds of contractors, consultants, residents and business partners that make our programs successful.

If you have any questions about the Energy Policy or this report, please contact us at energyservices@fcgov.com.