Colorado Climate Action Plan for the City of Fountain Utilities

The Fountain City Council passed a resolution on October 28, 2008 adopting and supporting the Climate Action Plan. This document provides baseline carbon emissions along with current and potential utility efforts for emission reductions.

Background

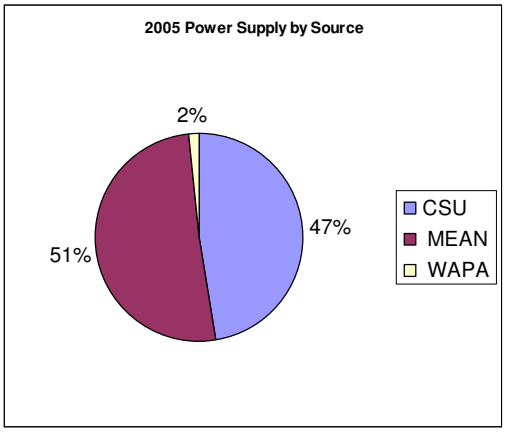
The City of Fountain is a Home Rule Municipality located in El Paso County, Colorado. Fountain is located just ten miles south of Colorado Springs and just east of Fort Carson. Fountain and the Colorado Springs suburbs Security and Widefield make up the "Fountain Valley" community. According to 2008 Census Bureau estimates, the population of the city is 22,078. In 1999, Fountain was chosen as "America's Millennium City" by the New York Times based on the city's proximity to national census statistics and qualitative research on what American life was actually like at the turn of the last century. Fountain was named an "All-American City" in 2002 by the National Civic League.

The City of Fountain Electric Department serves approximately 16,000 customers (44,600 residents) in the Security, Widefield and Fountain areas. The service area covers 32 square miles and the utility has 700 miles of electric lines. Fountain does not have generation capability and is a wholesale customer of the Municipal Energy Association of Nebraska (MEAN) along with a small amount of purchased power from the Western Area Power Administration (WAPA).

2005 Baseline Emissions

The total power consumption for the City of Fountain Utilities', 13,850 metered accounts, in 2005 was 209,642 megawatt-hours (MWh). A transition from a power supply contract with Colorado Springs Utilities to a new contract with MEAN began July 1, 2005. Amounts from Fountain's three sources of supply for 2005 were:

99,491 MWh Colorado Springs Utilities
106,705 MWh MEAN
3,446 MWh WAPA



Carbon intensities assigned to the various sources of power are shown in the following table:

Carbon Intensity – lbs/Kilowatt-hour (KWh)

Coal	2.2 lbs/KWh
Gas	0.8 lbs/KWh
Oil and Gas	1.2 lbs/KWh
Wind	0 lbs/KWh
Hydro	0 lbs/KWh
Nuclear	0 lbs/KWh

The 99,491 MWh purchased from Colorado Springs Utilities in 2005 included 80 percent generated from coal and 20 percent generated from gas. The carbon intensity from this source equals 95,511 tons/year.

The 106,705 MWh purchased from MEAN in 2005 included 68 percent generated from coal, 24 percent from nuclear, 6 percent generated from oil and natural gas, and 2 percent from wind and hydro. The carbon intensity, calculated by MEAN, from this source equals approximately 86,247 tons/year.

The 3,446 MWh purchased from WAPA is assumed all hydroelectric generation with no carbon emissions.

The total 2005 carbon intensity is summarized in the following table:

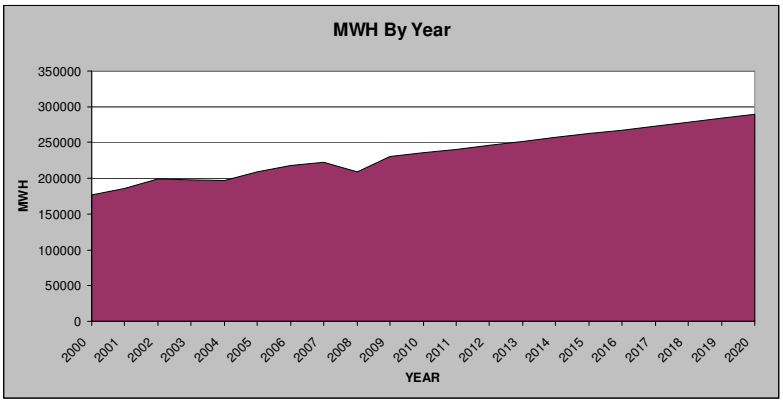
2005 Carbon Intensity

Source of Wholesale Supply	Carbon Intensity Tons/Year
Colorado Springs Utilities	95,511 tons/year
MEAN	86,247 tons/year
TOTAL	181,758 tons/year

The 2005 baseline emissions for the City of Fountain Utilities is a carbon intensity of 181,758 tons/year.

Population and Load Forecast

Fountain's Zip Code, 80817, is the third fastest growth area in El Paso County. With growth driven primarily by the expansion of the Fort Carson Army Base, Fountain is expected to double in population over the next two decades. This growth in population and associated energy usage will present challenges when moving forward with our commitment to reduce 2005 baseline emission.



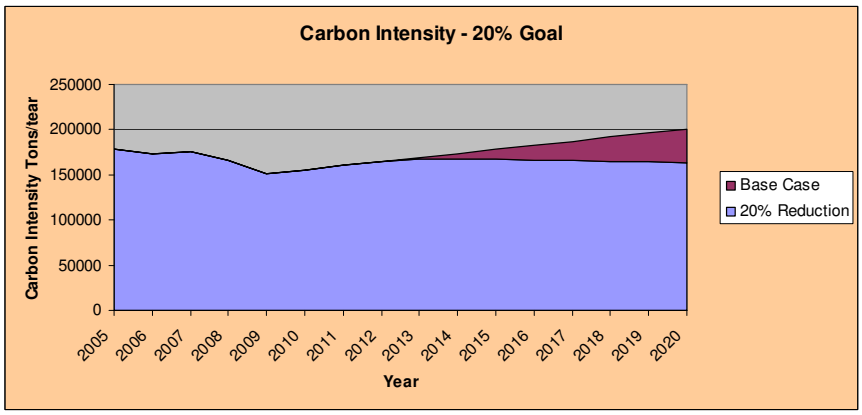
It is anticipated that energy usage will increase to 289,400 MWh by the year 2020. This represents a 23 percent increase over the 2005 baseline year. This projected growth in usage assumes similar usage per capita, and fairly consistent population growth.

Meeting the 2020 Goal

Fountain is in a unique position given that it is a wholesale purchaser of power that is entirely produced outside of the State of Colorado. This results in no direct impact on emissions reductions with the State. In spite of this, the City of Fountain is committed to building a sustainable future that includes a commitment to renewable energy and emissions reductions.

Fountain Utilities has been working with its primary wholesale energy provider, MEAN, on increasing the power generated by wind. The development of the Kimball Wind Farm in Kimball, Nebraska has increased the percentage of power supplied by wind to ten percent in 2009 for all MEAN member loads. The power supplied by MEAN, not including Fountain's WAPA and wind resources, includes a 24 percent portion supplied by nuclear, and 2 percent from MEAN's share of wind and hydro.

The increase in wind generation has had a positive impact, in the reduction of emissions over the past four years. However, the increase in load will result in a gap of 71,788 MWh to meet the 20 percent reduction goal of 145,406 tons/year by the year 2020. The projected change in carbon intensity and the projected gap are illustrated on the following chart.



Alternatives related to emissions reduction include additional development of the following:

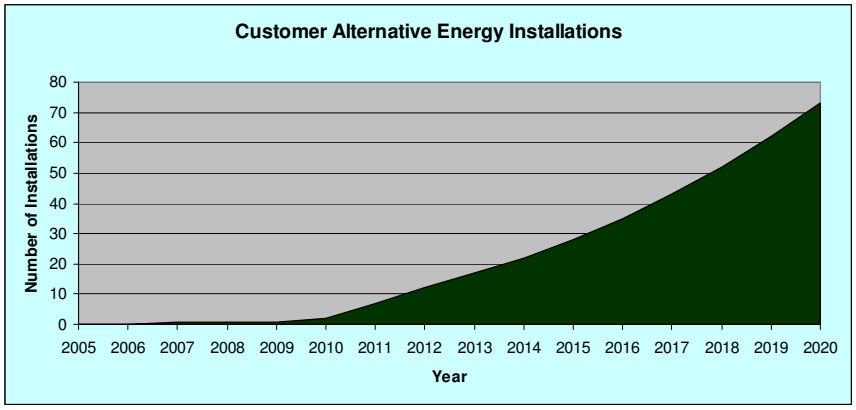
Nuclear
Hydro
Solar
Wind Power
Natural Gas Generators

Nuclear and Hydro Generation

Meeting the short term goal of the 20 percent reduction by the year 2020, with development of additional nuclear or hydro power, would be impractical given the time require for feasibility studies, permitting, and construction of these facilities. Fountain does not anticipate that an increase in nuclear or hydro power will occur by the year 2020.

Solar Power Generation

Fountain is in the process of launching rebates and incentives that will include customer alternative energy solar grid-tie systems. The incentives, along with newly developed financing alternatives, will lead to an increase in the number of customers that install solar systems. For Fountain Utilities, we expect that the trend will lead to 70 to 80 customers with solar systems by the year 2020. This would result in a 0.3 percent reduction in overall load.



Wind Generation

Fountain is heavily invested in wind, currently at 10 percent, with plans to work with MEAN on potential increases in wind generation. One option to meet the 2020 goal would be through replacing power from coal generation with an equivalent amount of wind power. Meeting the needed emission reduction target with wind generation would increase Fountain's wind percentage from ten percent to 32 percent, replacing 22 percent of the power now generated by coal. Given the existing constraints associated with the transmission grid, Fountain is concerned that 32 percent wind would not be feasible in providing a stable source of supply. It remains a challenge to forecast what improvements our industry will see over the next decade, as it relates to transmission improvements.

Natural Gas Generation

The replacement of coal fired generation, with a carbon intensity of 2.2 lbs/KWh with gas fired generation at 0.8 lbs/KWh, would provide a reduction in emissions. Currently the supply from MEAN includes a small amount of gas fired generation. Fountain will work with MEAN, as its supplier of wholesale power, on any future plans related to gas generation.

The most probable scenario that would allow Fountain to achieve the 2020 emission reduction goal would be a combination of additional wind power, power from gas fired generation, and a small savings through customer alternative energy and demand side management. This combination would result in a supply portfolio that would include an increase from 10 percent wind to 20 percent wind along with an increase from no gas generation to 16 percent gas generation.

Potential Barriers to Implementation

As a municipal utility with no generation, the City of Fountain Utilities will be in a position to work indirectly through wholesale providers on emission reductions.

The primary barriers to the implementation of emission reduction include:

Timeframe to implement
Transmission System Constraints
Cost of Implementation and Operation

Estimated Costs of Implementing Emissions Reduction Measures

A migration from coal fired generation to gas or wind generation would have the following impact on wholesale rates that would be passed on the customers:

- Gas Fired Generation - 33 percent cost increase over the 16 percent that had been generated with coal. This results to an increase of $886,000/year to our customers in energy charges (based on 2009 rates).

- Wind Generation - 25 percent cost increase over the 10 percent that had been generated with coal. This results in an increase of $420,000/year to our customers in energy charges (based on 2009 rates).

The end results of the changes in sources of supply would be an energy charge component that would cost the typical customer approximately $70/year using 2009 rates. The cost per customer of any recovery of capital investment by our wholesale supplier would be difficult to quantify.

Meeting the 2050 Goal

It is anticipated that by the year 2050 the City of Fountain will double in population, and possibly double in energy load over the 2005 levels. This adds to the challenge of achieving the 2050 goal of achieving an 80 percent emissions reduction over the 2005 levels.

Given the longer timeframe to achieve the goal, Fountain will be able to respond on several fronts.

- Aggressive demand side management including the application of Smart Grid technologies.

- Increase in customer alternative energy installations.

- Increase in renewable energy generation supported by a stronger transmission system.

- Application of carbon sequestration technologies at coal fired facilities.

Summary

The City of Fountain is committed to the creation of a sustainable future. This commitment includes a reduction in carbon footprint that includes the energy strategies discussed.

- Fountain is a supporter of its neighbor, Fort Carson related to the Army Base's commitment to sustainability. The goal is to provide a neighboring community that mirrors the sustainability concepts practiced by the army base to create regional sustainability.

- Fountain is moving ahead with a proposal for Advanced Metering Infrastructure that will support Smart Grid technologies for both electric and water customers.

- Fountain has been moving ahead with the development community on implementation of Low Impact Development (LID) guidelines.

- The next decade will present considerable challenges related to the development and implementation of additional water supplies. Fountain has been working in partnership with others in El Paso County, on water supply alternatives that meet future goals while minimizing, when possible, the energy requirements to deliver water from source to tap.

Fountain appreciates this opportunity to collaborate with others on meeting the goals outlined in the Climate Action Plan.