



COUNCIL WORK SESSION STAFF REPORT

To: **Honorable Mayor and Members of the City Council**
 From: **Virgil Turner, Director, Innovation and Citizen Engagement**
 CC: **William E. Bell, City Manager**
 Date: **November 3, 2014**
 Subject: **Annual Energy Report (v2)**

Efficient use of energy and natural resources continues to be an important focus of the City of Montrose. This report highlights a number of examples of how our organization and our community as a whole are leading by example. These endeavors have direct and lasting benefits with regard to the quality of life we enjoy in our community.

Ameresco Monitoring Report

In April 2010, the City of Montrose entered into an Energy Performance Contract (EPC) with Ameresco (formerly Ennovate Corporation) to install a number of energy conservation measures (ECMs). As a part of this contract Ameresco monitored our energy usage and on an annual basis has provided a report of its findings. I have attached, for your review, a copy of the Year 3 report.

The City of Montrose has made great progress in reducing energy costs related to operating our facilities. These reductions in costs have come through increased awareness among our staff of the importance of energy efficiency and the implementation of energy conservation measures. The chart below (from Year 3 Ameresco report) reflects our success in reducing costs related to energy as of these efforts.

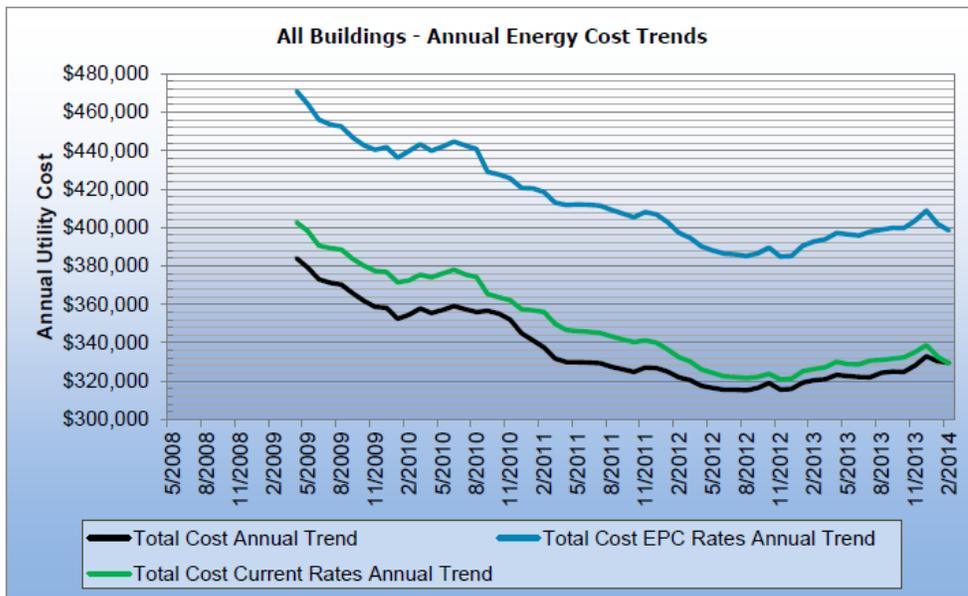


Figure 1: Annual Energy Cost Trends – City of Montrose Facilities

Street Lighting

Energy costs related to street lighting is a major percentage of ongoing energy costs for the City. The chart in Figure 2 shows a year by year comparison of the City's annual costs related to street lighting.

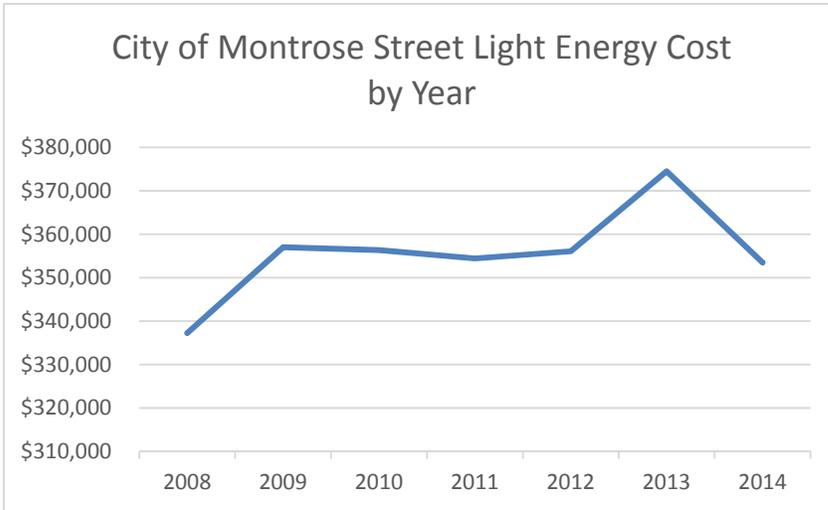


Figure 2: Graph comparing annual street light costs by year

On average over the past seven years the city has spent over \$350,000 annually for street lighting. Within the City we have over 1800 street lights which are owned and maintained by DMEA. Depending on the bulb type and wattage DMEA charges a monthly tariff amount for each street light between \$31.29 for a 400 watt mercury vapor lamp and \$6.64 for a 100 watt LED lamp. These tariff rates include both energy use and maintenance costs (lamp replacement). In addition to DMEA-owned street light, the City also uses metered decorative lights downtown, on recreation paths and in parks.

In 2012 the City of Montrose completed a project to convert all metered decorative lights to efficient LED lamps. With this conversion we have seen our overall electricity use for our Park department decline sharply. The chart in Figure 3 reflect this decline.

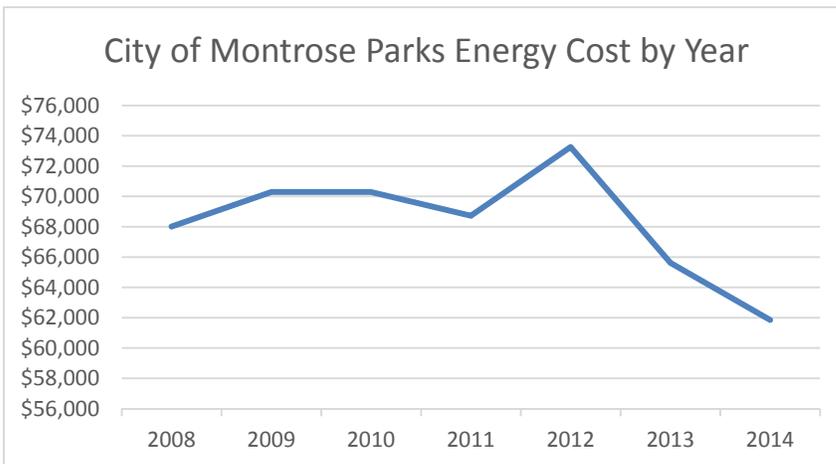


Figure 3: Annual Park Department Energy Cost by Year

For the past several years discussions between the staff of the City and DMEA have been underway to determine the best option to convert from legacy mercury vapor and high-pressure sodium street lighting to the more efficient LED technology. The costs involved with this conversion have continued to decline and have now stabilized as LED lamps have surpassed all other lamp types combined in new sales. It now appears the time may be right to undertake a wide scale conversion.

While additional study will be required before a recommendation can be made, progress is being made in this area. Once a full conversion to LED street lighting is made, it is likely we will realize a cost savings in this category by as much as 50%. One strategy being explored is to treat this conversion in a similar fashion as an energy performance contract. Capital costs for the conversion could be repaid over time with energy and decreased maintenance cost savings.

Greenhouse Gas (GHG) Emissions 5-Year Update Results

In 2010 the City of Montrose worked with the University of Colorado Denver, Center for Sustainable Infrastructure Systems, to complete a GHG Emissions Study based on data from the year 2008. This study provided important baseline data on how our entire community uses energy. GHG emissions provide a common metric across all energy consumption sectors. The 2008 report indicated Montrose had lower than average GHG emissions, when compared to per capita data from the nation, state and other similar Colorado communities (see Inset 1 below).

The City of Montrose's 2008 GHG emissions are compared with national data; the State of Colorado; Denver CO; Routt County, CO; and the Town of Eagle, CO. Since all of these areas have different populations and services, GHG emissions can be relatively compared on a per capita basis with **Montrose's 2008 per capita emissions being 23.59 mt-CO₂e**. The Town of Eagle emitted 25.2 mt-CO₂e/capita in 2005, Routt County emitted 39.8 mt-CO₂e/capita in 2005 (31.5 mt-CO₂e/capita using a visitor-adjusted population), Denver emitted 25.3 mt-CO₂e/capita in 2007, while the State of Colorado emitted 24.5 mt-CO₂e/capita and the nation emitted 25.2 mt-CO₂e/capita in 2005.

Inset 1: Key findings from 2010 GHG Emissions Study

Revisions to 2008 Municipal Solid Waste (MSW) Statistics

Starting in 2013 the City began weighing trucks to record accurate weights for solid waste collection. The original 2008 report used an estimate of MSW collected for the year based on national averages of 12,647 tons. We have revised the 2008 MSW collected to a new estimate of 7200 tons which are comparable to the total of MSW and recyclables collected in the last twelve month period. This revision accounts for a change from 23.6 to 23.2 mt-CO₂e/capita (metric tons of carbon dioxide emissions per capita) Since 2008 the City of Montrose has seen a significant reduction in greenhouse gas emissions. The per capita emissions have decreased from 23.2 to 18.8 mt-CO₂e/capita, a 19% reduction (see Figure 3 below). While no one change can be credited for this decrease in emissions, several initiatives during this period certainly can be credited as contributing factors in this decrease.

Tri-State Generation and Transmission Association, Inc. Fuel Mix

Our local electric cooperative, DMEA, purchases 95% of its power from Tri-State G&T. Tri-State over the past five years has changed its fuel mix to include additional renewables and fuels which produce fewer GHG emissions. In turn, these changes to the fuel mix have contributed to the decreased per capita GHG emissions for the City of Montrose.

Local Generation of Renewable Energy

In the past five years we have seen an increase in local generation of renewable energy. Two 10 kilowatt photovoltaic solar electric arrays were installed by DMEA, and shares in the generation of these arrays have been fully leased by members. DMEA, in partnership with the Uncompahgre Valley Water Users Association has constructed a 6-7 megawatt hydroelectric plant on the South Canal. These projects have served to reduce GHG emissions in Montrose.

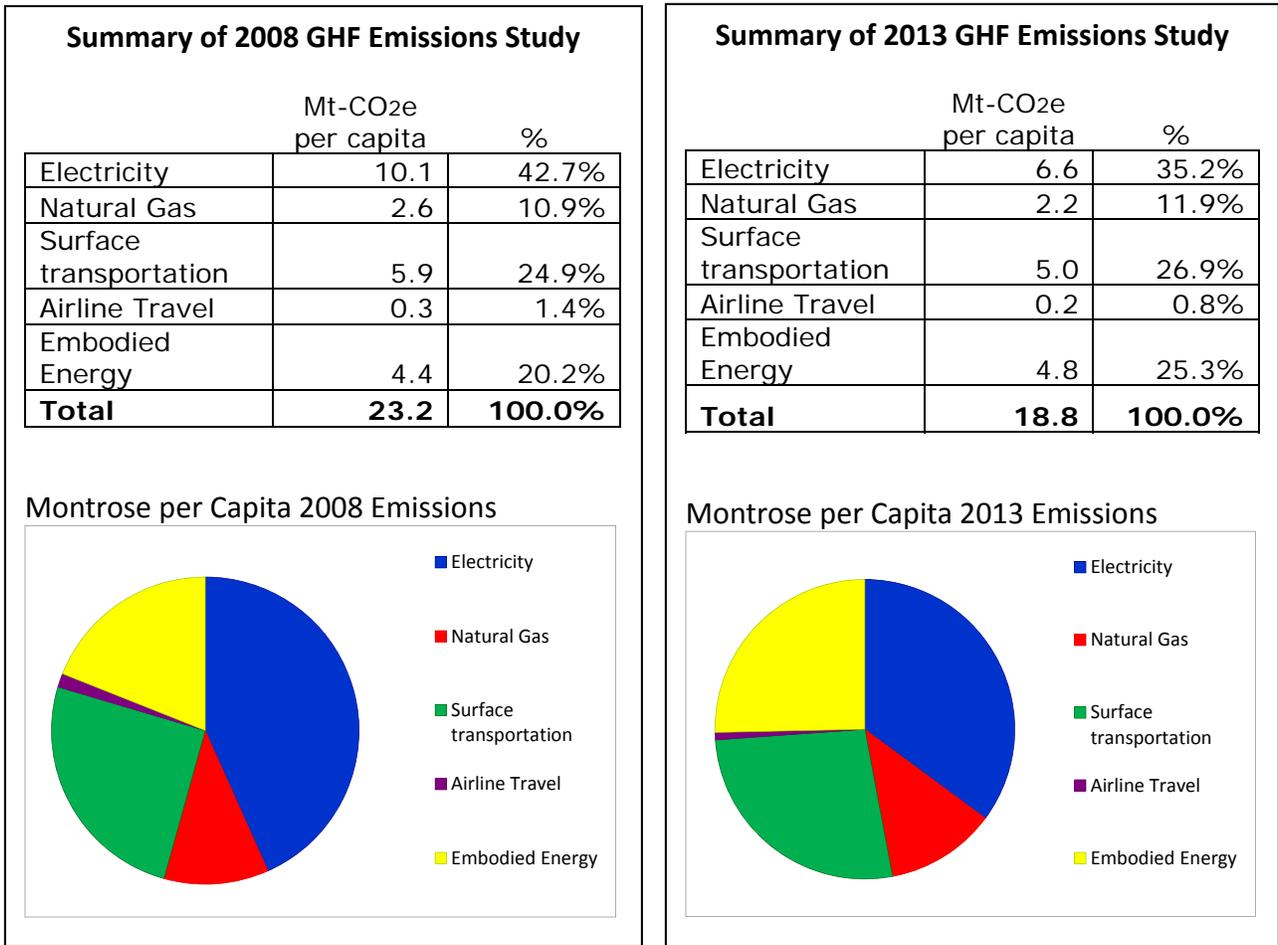


Figure 3: Side by side comparison of summary 2008 and 2013 GHG data