# Burnsville
# Greenhouse Gas Inventory

## *City Operations Update for 2011*
## *May 2012*

**J. Michael Orange Environmental Consulting**

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## 1.0. Introduction:

This is an updated version of the original report prepared for the City of Burnsville (City) by CR Planning, Inc. and J. Michael Orange Environmental Consulting. Two types of changes are included:

- At the time of publication in 2010, 2009 data for vehicle miles traveled was not yet available so a forecasted amount was used based on the prior 8 years of data. Actual data is now included. Secondly, streetlights and signals were included in the City-operations analysis but inadvertently omitted from the community energy data. These two refinements result in a change of less than 1% of total greenhouse gas (GHG) emissions. The changes affected Attachments 1a, 2, and 7.

- Under a separate contract with the City, J. Michael Orange Environmental Consulting added 2011 data for the City Operations Assessment portion of this report. This additional information is reflected in Sections 9 to 15 and Attachments 1b, 14-16, 18, 19, and 21-24.

### 1.1. Background

The City of Burnsville is committed to improving its sustainability. The City has worked to shape private development to create a more walkable city, recognized the community interest in creating a sense of place, made innovative demand-side investments in stormwater infrastructure, developed programs to create value from materials that are typically treated as waste products, and incorporated natural resource systems into private and public development. Over the last the five years, the City adopted plans and policies that guide its sustainability efforts including an environmental end statement, the "Burnsville for the 21st Century Visioning Project" (7/25/06), and the "Sustainability Guide Plan" (Guide Plan, adopted February 2009). Under the Guide Plan's Best Practices Area, "Greenhouse Gas Reduction," are the following selected implementation actions:

- Establish a greenhouse gas (GHG) emission tracking procedure with annual reporting to gather baseline data.
- Develop a GHG emission reduction strategy based on collected baseline data and establish a reduction goal.

In May 2010, the City began a process of identifying a GHG assessment protocol and identifying criteria for setting reduction goals and strategy priorities. The inventory development process followed the ICLEI-Local Governments for Sustainability program protocols. Following the ICLEI protocols will allow the City to more easily join ICLEI in future years. The City's Sustainability Team set draft reduction goals and strategy priorities for consideration and adoption by the City Council.

The Inventory presents five estimates of the greenhouse gas (GHG) emissions:

- 2005 emissions from City operations;
- 2009 emissions from City operations;
- 2011 emissions from City operations;
- 2005 community-wide (public and private sector) emissions;
- 2009 community-wide emissions.



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The community-wide estimates show the emissions from the entire community including activities of residents, businesses, and visitors within the City's geographical boundaries. The Inventory thus allows the City to set a baseline year (2005) and to measure initial progress in reducing emissions for both City operations and community-wide emissions.

**Measuring is essential:** As described by Osborne and Gaebler in their book, *Reinventing Government* (1992), "If you don't measure results, you can't tell success from failure. If you can't see success, you can't reward it. If you can't see failure, you can't correct it." Completing the GHG inventory allows Burnsville to set reduction goals and measure success or failure in meeting those goals. The Inventory must be transparent and able to be replicated, updated, and compared with other similar baseline assessments. It includes all pertinent and available data for the two study years chosen by City staff: 2005 and 2009, and 2011 for City operations.

## 1.2. Benefits of Measurement

GHG emissions offer a unique way to compare the effectiveness of various energy and sustainability choices and their related costs. GHG emissions serve as a common denominator for the comparison of kilowatts, therms, and gallons of gas consumed; vehicle miles traveled; tons of waste processed; gallons of potable water produced; and dollars invested. Taking inventory of the GHG emissions at the city operational and community level provides the City a number of benefits:

- Identify the City's opportunities to mitigate climate change and manage risk.
- Assist in promoting public understanding of the City's effects on climate change.
- Set the stage for a broader sustainability effort. Implementing sustainability strategies will assist the City in meeting the guidelines for Minnesota's GreenStep Cities Program.
- Provide a benchmark for comparison with future baseline assessments and for estimating the effectiveness of energy efficiency and other sustainability measures at meeting GHG emission reduction goals.
- Improve the City's competitiveness for federal and state funding opportunities that are targeted to cities that have taken steps to measure and reduce their carbon footprints.
- Serve as a model for other Minnesota cities that will follow the City's example of environmental leadership.

Finally, the Inventory, emission reduction goals, and strategy priorities will help Burnsville contribute to meeting the State's energy efficiency and greenhouse gas reduction goals that are the heart of the Next Generation Energy Act.

### 1.3. The Minnesota Next Generation Energy Act of 2007[1]

Early in the 2007 legislative session, the Minnesota Legislature and Governor Pawlenty approved one of the nation's most environmentally progressive energy laws. The Next Generation Energy Act includes the following components:

- **Renewable Energy Standard, 25% by 2025:** The law required electric utilities produce at least 25% of their total energy from new, renewable sources—wind, solar, hydro, biomass—by the year 2025. The law required Xcel Energy, the state's largest utility, to reach 30% by 2020. Currently, about 5% of the state's power comes from renewable sources.

- **Global Warming Act, 80% by 2050:** The Legislature established nationally aggressive statewide greenhouse gas reduction goals (using 2005 as a baseline) of 15% by 2015, 30% by 2025, and 80% by 2050. Among other provisions, this legislation:
  - ✓ Transitions Minnesota electric utilities from energy efficiency spending goals to energy savings goals. The Demand Efficiency Act sets a savings goal of 1.5% annually (currently utility Conservation Improvement Programs for electricity and natural gas save about 0.5% annually), aiming to cut Minnesota's electricity and natural gas use by almost 25% by 2025.
  - ✓ Sets a State policy of reducing per-capita use of fossil fuel by 15% by the year 2015 through increased reliance on energy efficiency and renewable energy alternatives.
  - ✓ Sets a goal of 1,000 Energy Star Buildings or LEED buildings in Minnesota by 2010.
  - ✓ Expands and strengthens Minnesota's commitment to the development of locally owned renewable energy projects.

## 2.0. Summary of GHG Inventory Results

The Inventory examines GHG emission from two perspectives; emissions from City-operations; and community-wide emissions (public and private sectors). Each perspective looks at four sources for GHG emissions: electricity use, natural gas consumption, transportation fuel use, and waste management. The City operations inventory includes emissions from fuel consumption by emergency generators and transportation fuels used for employee commuting and business travel. The community-wide inventory is further sub-divided into the residential sector and the commercial and industrial sector.

Table 1 shows the GHG emissions for community-wide sources in 2005 and 2009 and City-operations sources in 2005, 2009, and 2011. Table 1 shows total emissions and the emission rates on a per-capita basis and a per-full-time-equivalent (FTE) employee basis.

[1] Source: http://www.nextstep.state.mn.us/res_detail.cfm?id=3970

**Table 1: Summary of Community-Wide and City-Operations GHG Emissions**

| Community-Wide Emissions (tonnes) | | 2005 (1) | 2009 | Percent Change |
|---|---|---|---|---|
| **Energy:** | | | | |
| | Electricity | 459,772 | 399,497 | -13% |
| | Natural gas | 435,839 | 368,496 | -15% |
| | Subtotal CO2e emissions | 895,611 | 767,994 | -14% |
| **Transportation** | | 393,857 | 373,624 | -5% |
| **Waste** | | 9,851 | 8,262 | -16% |
| **CO2e emissions total** | | **1,299,319** | **1,149,880** | **-12%** |
| **Weather-normalized CO2e** | | 1,310,116 | 1,167,706 | -11% |
| **Per-capita CO2e** | | **21.2** | **18.8** | **-11%** |
| **Notes:** | | | | |
| 1 | Xcel Energy data, which represents about 20% of the total electricity consumption, was for 2006 and 2009. CenterPoint Energy data is for 2007 and 2009. | | | |

| City-Operations Emissions (tonnes) | 2005 | 2009 | 2011 |
|---|---|---|---|
| **Buildings and facilities** | 5,092 | 6,441 | 5,545 |
| **Streetlights, signals and flashers** | 1,885 | 1,713 | 1,681 |
| **Water Utility** | 11,916 | 11,206 | 6,614 |
| **Transportation** | 3,147 | 3,358 | 3,948 |
| **Solid Waste** | 79 | 71 | 69 |
| **CO2e emissions total** | **22,120** | **22,788** | **17,856** |
| **Per-FTE CO2e** | 80 | 70 | 66 |

## 2.1. Summary of the Community-Wide Analysis

The sources of community-wide GHG emissions are described below.

- **Energy (electricity and natural gas):** Electricity consumption for the residential sector and the commercial and industrial sector in 2009 was 2% lower than in 2005 and the associated GHG emissions were 13% lower. However, in order to properly compare the two years, the results must be adjusted for weather differences between the two years. Summer cooling degree days were about 35% lower in 2009 than in 2005. After weather-normalizing the data, electric consumption for 2009 was actually 8% higher than in 2005.

  Weather changes create a similar situation when evaluating natural gas usage and associated GHG emissions. Natural gas consumption was 15% lower in 2009 than in 2006.[2] Accounting for temperature and the fact of 12% more heating degree-days in 2009, consumption in 2009 was actually 22% lower.

  GHG emissions, however, changed at a somewhat different rate than energy consumption.

[2] CenterPoint Energy provided data for 2006 and 2009.

Looking at both the gas and electric energy data, GHG emissions for both the residential and the commercial and industrial sectors were 14% lower in 2009 than in 2005. After normalizing for weather, the decline equaled 13% (prior to incorporating transportation and waste related emissions). As detailed below, reduced electricity emission factors explain why changes in energy consumption don't translate into comparable changes in GHG emissions.

- **Transportation:** Car and truck use, or vehicle miles traveled (VMT), account for most of the community's transportation-related GHG emissions (97%), with the City's share of the emissions associated with operations at the Minneapolis-St. Paul International (MSP) Airport and for river and rail operations accounting for the remaining 3% of emissions. VMT within the City from 2001 to 2009 averaged at about 583 million miles annually. VMT and associated GHG emissions have been declining since 2004, with a corresponding 5% decrease in GHG emissions since then.

- **Waste Management:** Waste-related GHG emissions, which result when municipal solid waste is incinerated or landfilled and fugitive emissions during the treatment of sanitary sewer discharges, comprise less than 1% of the total for the City.

- **Combined Emissions:** Overall, community-wide GHG emissions were 12% lower in 2009 than in 2005 and per-capita emissions were 11% lower. Figure 1 illustrates the percentage share of the total community GHG emissions in 2009 broken out by the 3 main fuels—electricity, natural gas, and transportation fuels—and for waste management.

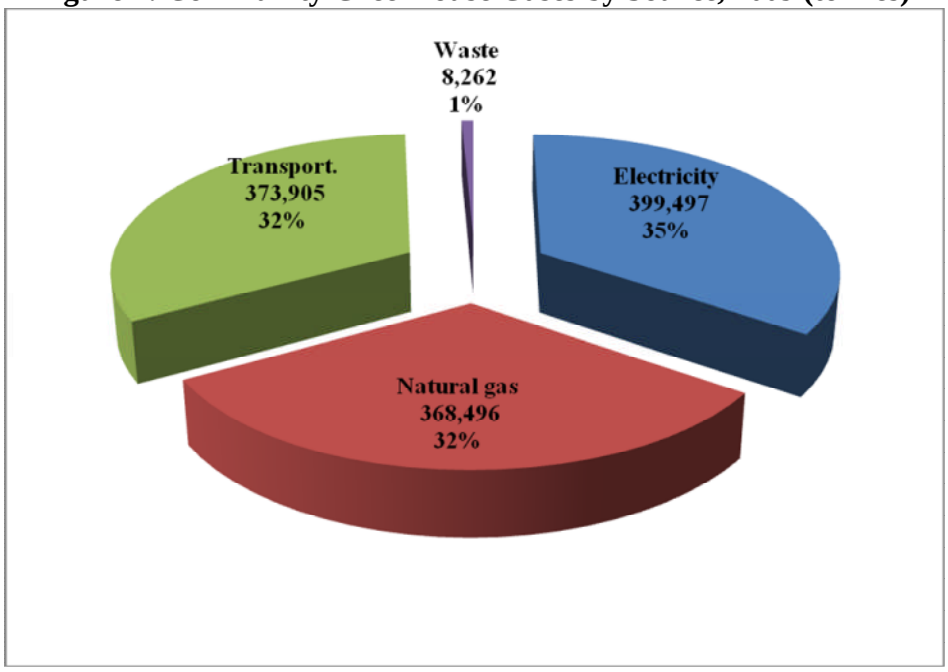
  Several factors explain the reduction in GHG emissions between 2005 and 2009:

  - ✓ **Economic downturn**. The recent economic downturn translated into reduced business hours, employment, and energy use associated with economic activities such as lighting, air conditioning, and heating. Economic pressure would also increase the incentive for energy conservation. Vehicle use would also be affected by the economic downturn.
  - ✓ **Reduced utility emission factors**. Two of the three utilities that provide electrical power to the City reduced their $CO_2$ emission factors significantly between 2005 and 2009. As such, a megawatt-hour (MWh) consumed in 2009 produced a smaller amount of $CO_2$ than in 2005. The reduced $CO_2$ emission factors translated the 8% increase in weather-normalized electricity consumption into a 13% decrease in GHG emissions.
  - ✓ **More efficient vehicles**. As older cars are replaced by newer cars, the overall gasoline efficiency increases and the emissions associated with each mile of vehicle travel decline.

- **Comparison with Other Cities:** In a comparison with recent baseline assessment for three other cities in the region (Minneapolis, Falcon Heights, and St. Louis Park), the City's 18.8-tonnes-per-capita rate for 2009 was the highest of the four

cities. Two factors account for Burnsville's high rate. First, the City has the highest per-capita rate for natural gas consumption at more than twice the average for the other three cities. Second, the City's VMT per-capita rate is the highest at 28% above the average for the other three cities. Burnsville has developed at a significantly lower density, making alternatives to single occupancy vehicles more difficult to use and increasing the length of trips for Burnsville residents. The other three cities also are much closer to the central city job centers and have better alternatives to automobile use.

**Figure 1: Community Greenhouse Gases by Source, 2009 (tonnes)**




- **Sensitivity Analysis:** The sensitivity analysis examined likely and worst case margins of error for the community-wide analysis and concluded that the likely margin of error is about ±4%, a number well within the range of acceptability.

## 2.2. Summary of the City Analysis

The summary of energy and GHG emissions for City operations is shown below, by category of operation.

- **Buildings and facilities:** Electricity consumption in City buildings and facilities was 36% higher in 2009 as compared to 2005. Accounting for the cooler summer in 2009 (35% cooler), the weather-normalized change increases to 52%. Natural gas consumption was also 36% higher in 2009 than in 2005. Accounting for the colder winter in 2009 (12% colder) brings the increase down to 25% in 2009. GHG emissions associated with building and facility energy use in 2009 (including electricity, diesel-powered emergency generators, and natural gas) were 26% higher than in 2005. The primary reason for the increase in 2009 is the new buildings; Performing Arts Center, the Heart of the City parking ramp, and other uses that

were not open in 2005. When the figures are normalized to account for weather differences and to exclude new uses from the 2009 base, GHG emissions are actually 5% lower in 2009 than in 2005. Electricity usage declined by 6%, and natural gas use by 7%, between 2005 and 2009 for those buildings and facilities were in use in 2005 and 2009.

Electricity consumption and the associated GHG emissions were lower in 2011 than in 2009 (31% and 25% lower respectively). Figures for natural gas consumption and its associated GHG emissions were virtually the same in 2011 as in 2009. Since approximately 80% of natural gas usage is for heating buildings, weather can be a significant factor for change. The seasonal cooling degree days in 2011 were very close to the number in 2009 (Attachment 14).

- **Streetlights, Signals, and Flashers:** While electricity consumption for streetlights stayed stable between the two study years, the City's program to replace its signals and flashers with high-efficiency LED fixtures resulted in a marked reduction in GHG emissions in 2009 (205 tonnes, 59% reduction) for this category of City operations.

- **Water Utility:** The wells, pumps, and the water treatment plant necessary to supply the almost 3 billion gallons of annual potable water demanded by community residents and businesses are by far the largest source of GHG emissions, accounting for more than half of City operations' total GHG emissions. Unlike other City operations, energy use and GHG emissions are a direct consequence of the amount of water used by residents and businesses. Water utility electricity consumption increased by 25% between 2005 and 2009 and the related GHG emissions increased by 3% (due to the utility's lower emission factors). Much of the increase is attributable to the treatment plant expansion and a new contract to sell water to the City of Savage (both on line in mid-2009). Excluding new sources, energy consumption was 9% higher in 2009 than 2005 and GHG emissions were 10% lower. Natural gas consumption is small by comparison and was significantly lower in 2009 (by 61%). The City's sanitary system of pumps and lift stations generate only 1% of City operations' total GHG emissions.

  Changes in electricity consumption at the Water Utility and especially the Water Treatment Plant (WTP) account for most of the reductions. About 63% of the overall reduction in consumption for all City operations in 2011 is attributable to reductions at the WTP. Another 29% is due to reductions at City wells and the remaining 9% is from reductions at the reservoir at 13009 Nicollet Ave. (Attachment 15). The notes in Attachment 15 list the efficiency improvements at the WTP responsible for these reductions.

- **Transportation, employee commute, and business travel**: Looking first at changes between 2005 and 2009, total GHG emissions related to Public Works and contracted services were slightly higher in 2009 than in 2005, a 4% increase. The City's use of an alternative fuel, E85, for some of the City fleet generated 62 fewer

tonnes of CO2 than if the vehicles had used gasoline. The estimate of the GHG emissions associated with employee commutes and business travel comprises only 3% of the City's emissions. Emissions associated with Public Works and contracted services were 24% higher in 2011 than in 2009 and 25% higher than in 2005.

Transportation-related emissions in 2011 were 18% higher in 2011 as in 2009. The increase can be attributed to emissions associated with Public Works operations (26% higher than in 2009) and private contractor activities (21% higher than in 2009).

- **Solid Waste:** The GHG emissions associated with treating the solid waste generated by City operations comprise less than 1% of the total emissions from City operations.

- **Combined:** GHG emissions associated with City operations were 3% greater in 2009 as in 2005 and 22% lower in 2011 as compared to 2009 (Attachment 1b and Figures 2a and 2b). To summarize the reasons for the overall 22% lower level of GHG emissions in 2011 compared to 2009, reductions in two important categories, Buildings and Facilities and the Water Utility, were significantly greater than the increases in the Transportation category:
  - ✓ Buildings and facilities, which comprise 31% of total emissions, were 14% lower than in 2009.
  - ✓ Streetlights, signals, and flashers, which comprise 10% of total emissions, were stable.
  - ✓ The Water Utility, which comprises 37% of total emissions, was significantly lower, 41% lower.
  - ✓ Transportation, which comprises 22% of total emissions, was higher by 18%.
  - ✓ Waste management, which comprises less than 1% of emissions, was stable.

  City GHG emissions equal about 2% of the community-wide emissions. Figure 2a provides a percentage breakout by category for 2011 and Figure 2b illustrates changes for the three study years.

**Figure 2a: Greenhouse Gas Emissions from City Operations, 2011**

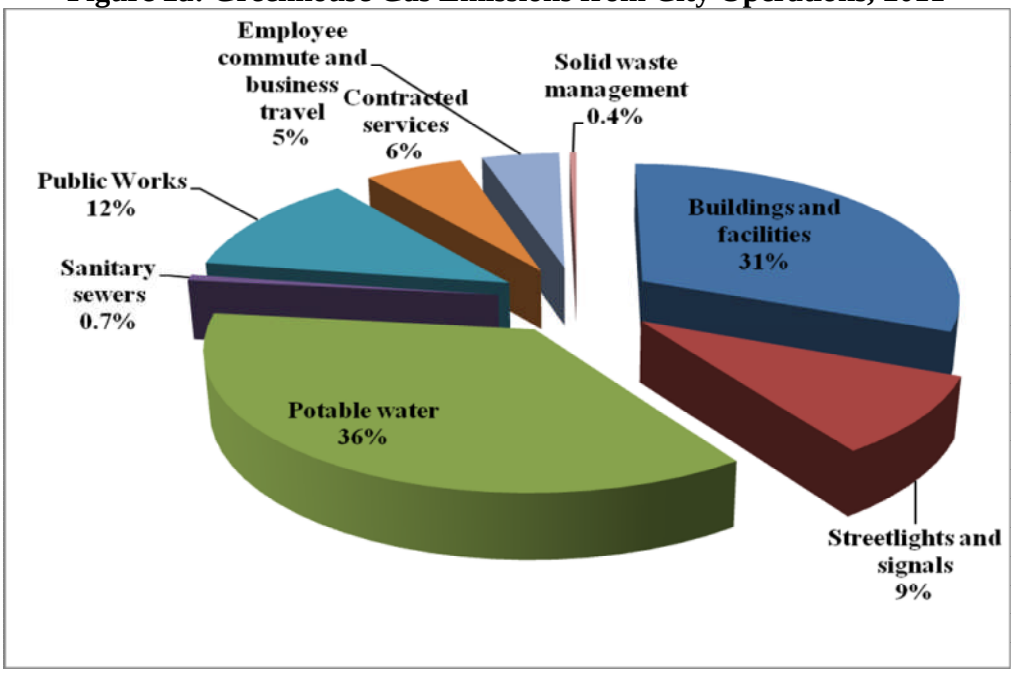
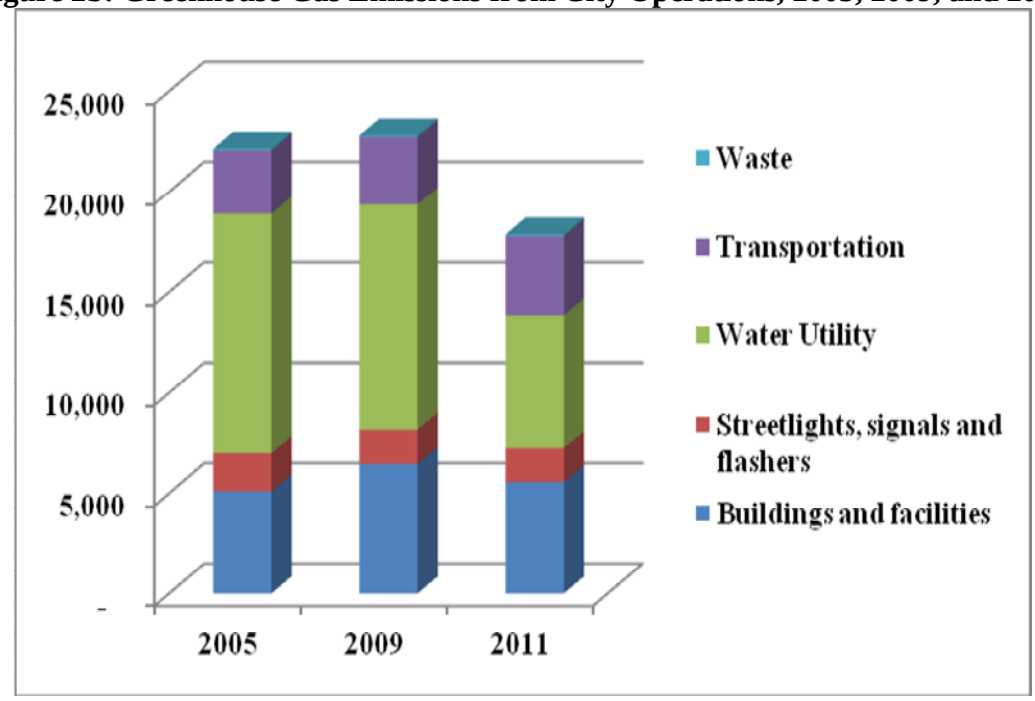



**Figure 2b: Greenhouse Gas Emissions from City Operations, 2005, 2009, and 2011**



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# 3.0. Inventory Design

## 3.1. Inventory Tasks

Based on the above-stated Inventory goal, the City and Consultant defined the non-administrative tasks listed below for the 2 study years, 2005 and 2009:

**Table 2: Inventory Tasks**

| | |
|---|---|
| **1.0** | **Community Analysis:** |
| 1.1 | On behalf of the City, Consultant requests community-wide energy-consumption data and emission factors from utilities that serve the City. Consultant compiles and evaluates data, identifies change factors, and calculates GHG emissions. |
| 1.2 | Consultant obtains data from MNDOT regarding VMT, compiles and evaluates data, and estimates GHG emissions. |
| 1.3 | Consultant estimates GHG emissions associated with the City's share of MSP airport use. |
| 1.4 | Consultant estimates GHG emissions associated with rail operations. |
| 1.5 | Consultant estimates GHG emissions associated with Minnesota River-based shipping. |
| 1.6 | Consultant estimates a) tons of waste generated, b) waste processing percentages (incinerated, landfilled [with and without methane recovery], composted and recycled). Consultant estimates associated with waste management. |
| 1.7 | City provides water production figures and Consultant estimates the City's share of fugitive GHG emissions associated with treating sanitary sewer discharges. |
| **2.0** | **City Government Analysis:** |
| 2.1 | City provides energy use data for facilities owned and leased for City operations (annual usage data for study years for electricity, natural gas, and other fuels). Consultant compiles and evaluates data, estimates associated GHG emissions, identifies change factors, and analyzes trends. |
| 2.2 | On behalf of City, Consultant requests utilities for electricity use data for streetlights, signals, flashers, and other public utility facilities. Consultant will calculate the GHG emissions. |
| 2.3 | City provides Consultant with potable water distribution data (gallons produced, purchased, processed, and distributed). Consultant estimates associated GHG emissions. |
| 2.4 | City provides transportation fuel usage data by fuel type for City transportation activities. City provides fuel consumption information regarding contracted services. Consultant calculates GHG emissions. |
| 2.5 | City provides commuting data for City employees and FTE data (FTE and part-time employee data with associated vehicle type and typical commute distance). Consultant calculates VMT and GHG emissions. City provides business travel data for City employees (VMT by mode and vehicle type). Consultant calculates GHG emissions. |
| 2.6 | Consultant calculates associated GHG emissions. Consultant estimates solid waste generation associated with City operations using per-FTE data from Dakota County. |

## 3.2. Estimation Methodology and Operational Boundaries

To estimate GHG emissions, this Inventory relies primarily on the *International Local Government Greenhouse Gas Emissions Analysis Protocol* (Protocol)[3] produced by the United Nations organization, ICLEI— Local Governments for Sustainability (ICLEI),[4] and The Climate Registry.[5] The Protocol provides guidance and emission factors essential for

[3] Refer to http://www.iclei.org/index.php?id=8154.

[4] According to its website, ICLEI is an international association of local governments as well as national and regional local government organizations that have made a commitment to sustainable development.

[5] According to its website, The Climate Registry is a nonprofit organization that provides meaningful information to reduce greenhouse gas emissions. The Climate Registry establishes consistent, transparent standards throughout North America for businesses and governments to calculate, verify, and publicly report their carbon footprints in a single, unified registry.

estimating GHG emissions produced by energy use, fugitive GHG emissions, and solid waste disposal.

The operational boundary of the community-wide part of this Inventory includes all of the major sources of GHG emissions within the City. The Protocol allows the exclusion of emission source categories that do not meet a *de minimis* threshold, such as those that together would represent less than 5% of the Inventory total. This Inventory includes the following categories that do not meet this 5% de minimis threshold: The City's share of the MSP Airport emissions, emissions associated with rail and river transportation, and emissions associated with the management of municipal solid waste and sanitary sewer discharges. Although small contributors, the inclusion of these emission sources increases the comprehensiveness of the analysis and confirms that these sources are, in fact, minor contributors. The City-operations part of the Inventory includes all of the emission sources normally included in a local government analysis.

### 3.3. Metric Tons Carbon Equivalents, Terms, and Source Documentation

The greenhouse gases of carbon dioxide ($CO_2$), nitrous oxide ($N_2O$), and methane ($CH_4$) are aggregated and reported as carbon dioxide equivalents, a commonly used unit that combines greenhouse gases of differing impact on the earth's climate into one weighted unit. Consistent with the recommendation from ICLEI, carbon dioxide equivalents ($CO_2e$) are expressed in metric tons (tonnes), which equal 1,000 kilograms, or 2,204.6 pounds.

The source information for the tables and charts included in the body of the report can be found in the detailed tables included in the attachments. City staff are the source for data that pertains to City operations unless otherwise noted. All of the sources of data for the Inventory are transparent, fully identified, verifiable, and reliable. They consist of City records and staff reports; utility records and reports to the Minnesota Public Utilities Commission; internationally recognized methodologies and published scientific papers regarding the calculation of GHG emissions; federal, state, and county agencies (USDOT, USEPA, MNDOT, MPCA, Metropolitan Council, Metropolitan Airports Commission, Dakota County); data from the Canadian Pacific and the Union Pacific and C&NW railroads; river operations data from barge companies and the Army Corps of Engineers, and other published sources.

## 4.0. GHG Emissions from Community-Wide Electricity and Natural Gas Consumption (Task 1.1)

Most of the electricity and natural gas consumption goes to heat, light, air condition, and power our buildings. This Inventory shows breakouts of community energy three ways for the 2 study years. Table 1 in the summary section shows energy consumption by fuel type (electricity and natural gas) for the community and the associated GHG emissions broken out by the two key sectors, the residential sector and the commercial and industrial sector. Table 3 below shows the GHG emissions associated with gas and electricity consumption combined. Attachment 1a provides additional detail by showing the change since 2005 and listing a brief description of the likely factors contributing to the changes.

### 4.1. Electricity

To serve the City's electricity needs, the following four utilities distribute electricity within the City and all but Dakota Electric Association generate the power they distribute:

- **Dakota Electric Association:** The Dakota Electric Association (DEA)[6] serves the majority of the City. DEA purchases wholesale electricity from Great River Energy, a generation and transmission cooperative in Maple Grove, Minn., and distributes electricity to homes, businesses and farms in parts of Dakota, Goodhue, Scott and Rice counties.

- **Xcel Energy:** Xcel Energy[7] distributes electricity in small portions in the north of the City. The company's local generation subsidiary, Northern States Power, generates the electricity. Xcel Energy provided data for 2006 and 2009.

- **Minnesota Valley Electric Cooperative:** The Minnesota Valley Electric Cooperative (MVEC)[8] distributes electricity to the northwest portion of the City. MVEC is a distribution cooperative that purchases wholesale power from two generation and transmission cooperatives, Great River Energy and Basin Electric Power Cooperative. MVEC provided data for 2005 and 2009.

- **Great River Energy:** According to its website, Great River Energy is a "not-for-profit electric cooperative owned by its 28 member cooperatives. We generate and transmit electricity for those members, located in the outer-ring suburbs of the Twin Cities up to the Arrowhead region of Minnesota and down to the farmland region in the southwestern portion of the state."[9] GRE provided data for 2005 and 2009.

The GHG emissions associated with electricity generation varies over time according to a variety of factors, most importantly type of generating facility, fuel mix, and percent of renewable and nuclear generation. In addition, utilities purchase electricity from other generators, which can have very different GHG emission rates. As such, the calculation of GHG emissions depends on both the consumption data (in MWh) from the above four utilities that distribute power and the specific emission factors for the three electric generation utilities for the 2 study years.

Attachment 2 shows that electricity consumption combined for the residential sector and the commercial and industrial sector was 2% lower in 2009 than in 2005 (residential sector consumption dropped 7% and the much larger non-residential sector increased slightly). The associated GHG emissions were 13% lower overall. The difference between change in consumption and change in emissions is explained by three factors:

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[6] According to the company's website, "Dakota Electric Association is a member-owned, not-for-profit electric utility founded by local farmers in 1937 with the help of the Rural Electrification Administration. With more than 100,000 members, Dakota Electric is the second largest electric cooperative in Minnesota and ranked among the 25 largest electric distribution cooperatives in the nation." https://www.dakotaelectric.com/

[7] http://www.xcelenergy.com/Minnesota/Company/Pages/Home.aspx

[8] http://www.mvec.net/

[9] http://www.greatriverenergy.com/aboutus/whoweare/

- **Weather effects consumption:** Electricity data from the three suppliers cover 2005, 2006, and 2009. The number of seasonal cooling degree-days (SCDD)[10] in 2009 was very close to the 118-year average for the Twin Cities (refer to Attachment 6). Since the number of SCDD in 2009 were about 30% lower than in 2005 and 2006, electricity consumption would also be expected to be lower in 2009 because air conditioning accounts for a significant portion of electrical use in buildings (up to 30%). When electricity consumption is normalized for the differences in weather, consumption for 2009 was actually higher by 8% than for 2005 (Attachment 2).

- **The economy effects consumption:** The economic downturn, the so-called "Great Recession" which began in early 2008, continued to have a significant dampening effect on commerce and people's pocketbooks throughout 2009. However, electricity consumption increased by 8% in 2009 over 2005 when normalized for the milder summer weather in 2009 (Attachment 2). Were it not for the economic downturn, consumption figures may have been even higher.

- **$CO_2$ emission factors effect emissions:** Two of the three utilities that provide electrical power to the City reduced their $CO_2$ emission factors significantly since 2005, by a blended rate of 9% (Attachment 5).[11] As such, a MWh of electricity consumed in 2009 produced a smaller amount of $CO_2$ than in 2005. The reduced $CO_2$ emission factors translated the 8% increase in weather-normalized consumption into a 13% decrease in GHG emissions in 2009.

### 4.2. Natural Gas

Calculating the GHG emissions associated with natural gas consumption is much more straightforward because of the relative consistency of the characteristics of natural gas, distributed by CenterPoint Energy, and its combustion. Multiplying consumption data (in decatherms, Dth) by the standard emission factor yields GHG emissions. Consumption and the associated GHG emissions were 15% lower in 2005 than in 2006.[12] Since the number of seasonal cooling degree-days in 2009 were 18% higher than in 2006, increased consumption would be expected under unchanged conditions. However, when normalized for weather, consumption in 2009 was actually 22% less than in 2006. The economic downturn translated into reduced business hours and increased conservation generally.

### 4.3. Sector Analysis

Attachment 2 shows that when the energy data is combined, GHG emissions for both the residential and the commercial and industrial sectors were 14% lower in 2009 than in 2005.

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[10] Normalized Standard Heating/Cooling Degree Days predicts the energy consumption based on the 118-year average SHDD/SCDD, not the actual amounts. For normalization purposes, air conditioning (a weather-dependent use) is assumed to be 25% of total electricity consumption. Heating buildings is assumed to be 80% of total natural gas use. Weather normalizing also corrects for using 2006 Xcel Energy data was for 2006 rather than the 2005 study year as was the case for the other two generators.

[11] For example, NSP Minnesota completed its Metropolitan Emission Reduction Project that replaced the coal-burning plants at its High Bridge and Riverside facilities with much more efficient natural gas plants. Also, the company increased its purchases of both wind and hydroelectric power, neither of which generate $CO_2$ emissions when producing power.

[12] CenterPoint Energy provided data for 2006 and 2009.

However, when normalized for weather, the gap shrank somewhat to an overall decline of 13%, which was comprised of an 5% decrease in the residential sector and a 17% decrease in the commercial and industrial sector.

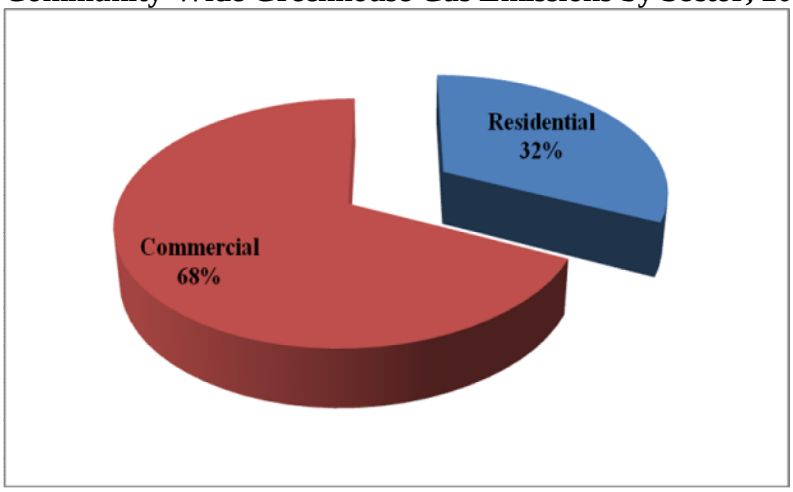
Table 3 groups the GHG emissions associated with community-wide electricity and natural gas consumption by the two sectors—residential, and commercial and industrial. The last row shows the GHG emissions on a per-capita basis. The figures for 2009 are substantially lower than for 2005 for the reasons described above.

**Table 3: Greenhouse Gas Emissions (tonnes) from Community-Wide Energy Consumption**

| Sector | 2005 | 2009 | Change from 2005 | Percent Change |
|---|---|---|---|---|
| Residential | 268,772 | 245,333 | (23,439) | -9% |
| Commercial & industrial | 626,839 | 522,661 | (104,178) | -17% |
| Total | 895,611 | 767,994 | (127,617) | -14% |
| Weather-normalized total | 906,408 | 785,820 | (120,587) | -13% |

Figure 2 illustrates that 68% of the community's GHG emissions from electricity and natural gas usage stems from the commercial sector and 32% from the residential sector in 2009.

**Figure 3: Community-Wide Greenhouse Gas Emissions by Sector, 2009**




## 5.0. GHG Emissions from Community-Wide Transportation

Table 4 provides an overview of the respective GHG shares from the four transportation components—vehicle miles traveled (VMT), airport emissions, railroad, and river-related sources. Emissions related to VMT dominate the transportation category and account for 97% of the total. Overall, the transportation uses account for about 30% of the total emissions in the City (Attachment 1a). GHG emissions associated with transportation uses were slightly lower in 2009 than in 2005. Most of the decrease, 80%, is attributable to reduced VMT and another 19% to decreased airport emissions, both of which are primarily due to the economic recession.

**Table 4: Greenhouse Gas Emissions from Transportation**

| Transportation Mode | 2005 | | 2009 | | GHG Change from 2005 | | |
|---|---|---|---|---|---|---|---|
| | GHG (tonnes) | % of Total GHG | GHG (tonnes) | % of Total GHG | GHG (tonnes) | % Change | % of Total Change |
| VMT | 381,374 | 96.3% | 363,012 | 97.1% | (18,362) | -4.8% | 83% |
| MSP Airport share | 13,716 | 3.5% | 10,251 | 2.7% | (3,466) | -25.3% | 16% |
| Rail | 611 | 0.2% | 450 | 0.1% | (161) | -26.4% | 1% |
| River | 206 | 0.05% | 192 | 0.05% | (14) | -6.8% | 0.1% |
| Total | 395,908 | 100.0% | 373,905 | 100.0% | (22,003) | -5.6% | 100.0% |
| Per-capita GHG | 6.5 | | 6.1 | | (0.3) | -5.2% | |

### 5.1. GHG Emissions from Vehicle Miles Traveled (Task 1.2)

Consistent with the usual protocol for estimating roadway-related emissions, this Inventory accounts for all vehicle trips—calculated as vehicle miles traveled (VMT)—that occurred within the City boundaries. Fortunately, The Minnesota Department of Transportation (MNDOT) has developed reliable data for total VMT for all Minnesota communities from 2001 to 2009.[13] Table 5 shows the VMT and per-capita VMT within the City boundaries from 2001 to 2009 plus the associated per-capita GHG emissions. Attachment 7 includes additional detail regarding this matter and all of the sources of information. Total VMT within the City from 2001 to 2009 averaged at about 583 million miles annually and varied over this period by about ±3%. VMT and associated GHG emissions have been declining since 2004.

To estimate the GHG emissions associated with VMT, this Inventory relies upon the GHG-per-VMT generation rates developed as part of the countywide carbon baseline assessment prepared by Dakota County.[14] Since population in the City is very stable, the range of GHG emissions on a per-capita basis matched this change. Figures 4 and 5 graph VMT and per-capita GHG emissions respectively and show the dashed trend lines, which are trending lower slightly. Figure 6, which shows per-capita GHG emissions associated with VMT, reflects this same trend.

The declines in all of the figures from 2008 to 2009 are probably attributable primarily to the shrinking economy. Since the national fleet mix gets more efficient and cleaner each

[13] MNDOT traffic engineers use a variety of devices to collect traffic data including permanently installed loop detectors every half mile on metro area freeways, Automatic Traffic Recorders (ATRs) permanently installed in key locations throughout the state, and tube counts. The biggest share of the statewide counts comes from road tubes that are placed on the roadway for a 48-hour period. These counts are then adjusted to annual average daily traffic (AADT) by using factors that are derived from continuous counting sites. Historically, MNDOT has collected traffic data on all state roads on a two-year cycle, on all county state aid roads, county roads, and municipal state aid streets on a two or four-year cycle. Once MNDOT engineers obtain the AADT for each segment of roadway, they can compute VMT by multiplying the AADT by the segment length. To get an AADT estimate for a year that a road was not counted, engineers use growth factors that are derived from ATRs and from other roads that are counted that year. For lower level roads that are not counted, engineers estimate the traffic volume.

[14] The County relied on the Clean Air Climate Protection (CACP) software developed by ICLEI. The software combines the US Department of Transportation's "Mobile 5" computer program, which takes into account the national fleet mix and national rates of fuel consumption for a variety of transportation fuels, with the GHG emission factors by fuel type and VMT.

year, this is another factor that accounts for the steeper decline in per-capita GHG emissions

**Table 5: Greenhouse Gas Emissions from Vehicle Miles Traveled**

| Year | Total VMT (millions) | GHG Emissions (tonnes) | Per-Capita GHG Emissions |
|---|---|---|---|
| 2001 | 562.6 | 342,724 | 5.7 |
| 2002 | 579.5 | 348,968 | 5.7 |
| 2003 | 577.4 | 343,912 | 5.6 |
| 2004 | 593.9 | 350,140 | 5.7 |
| 2005 | 589.2 | 344,203 | 5.6 |
| 2006 | 587.5 | 340,067 | 5.6 |
| 2007 | 590.1 | 339,407 | 5.5 |
| 2008 | 587.0 | 335,725 | 5.5 |
| 2009 | 578.9 | 363,012 | 5.9 |

**Figure 4: Vehicle Miles Traveled (millions), 2001 to 2009**

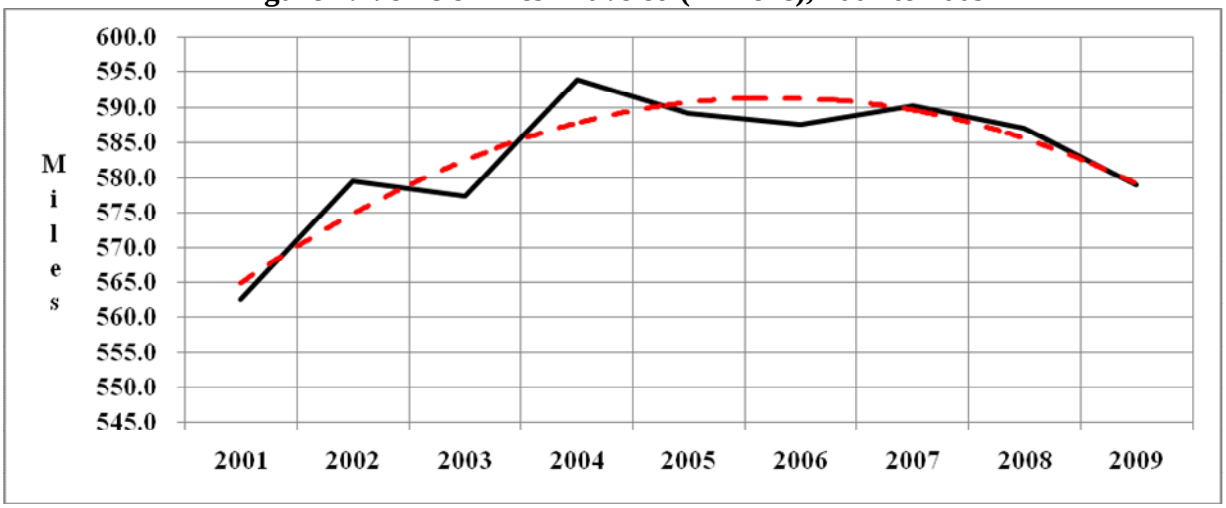



**Figure 5: Per-Capita Vehicle Miles Traveled, 2001 to 2009**

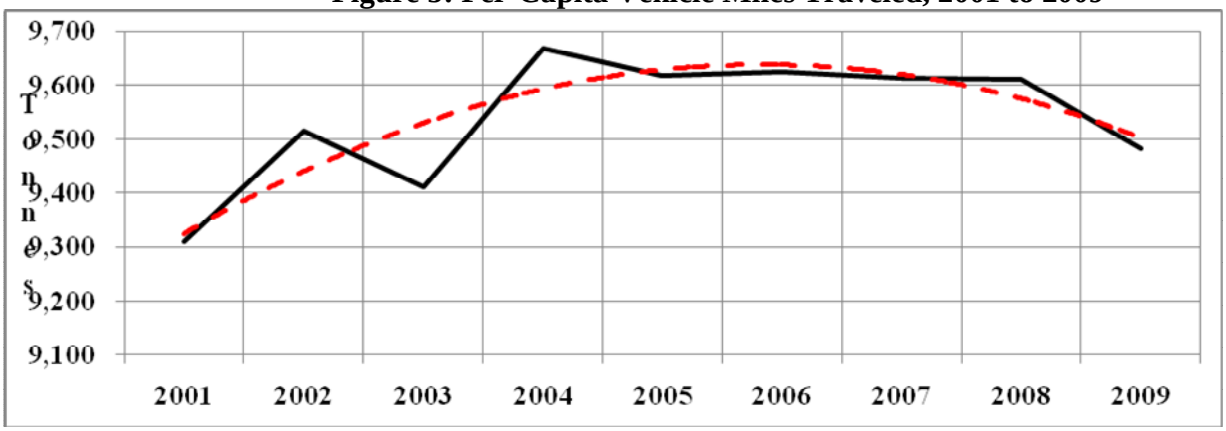





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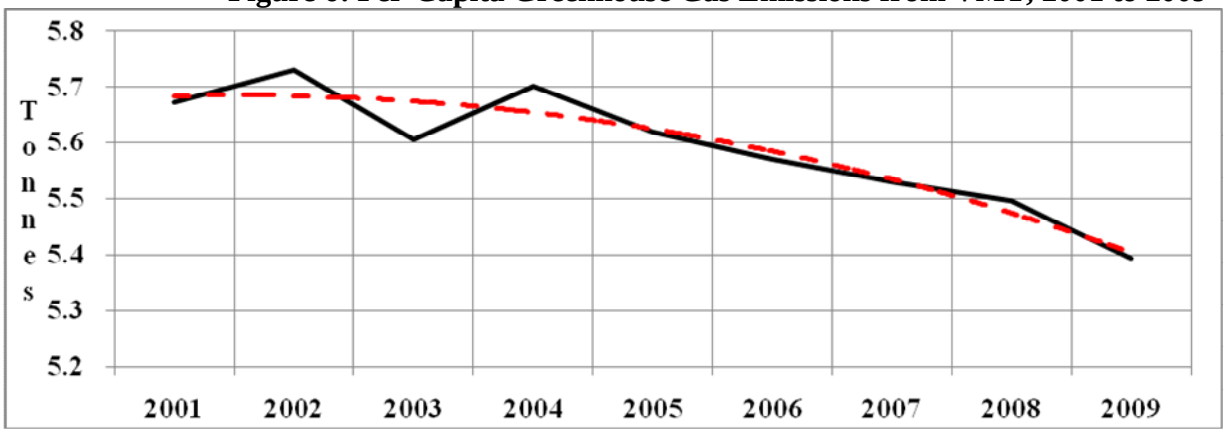
**Figure 6: Per-Capita Greenhouse Gas Emissions from VMT, 2001 to 2009**




### 5.2. City Share of GHG Emissions from the Minneapolis Saint Paul International Airport (Task 1.3)

Although the Minneapolis Saint Paul International (MSP) Airport is not located within the City, its operations are significant contributors to the region's GHG emissions. This Inventory accounts for the City's share of these emissions on a per-capita basis. As such, about 2% of MSP emissions are attributable to the City to match its share of the region's population (Attachment 8).

At the direction of the Metropolitan Airports Commission (MAC), the local consulting firm, Wenck Associates, Inc., prepared a carbon footprint analysis for the MSP Airport titled, *Greenhouse Gas Report, Metropolitan Airports Commission, December 2008*. The report states that the focus of the study was "to calculate the annual $CO_2$ emissions from MAC-owned and controlled sources at MSP, with the geographic footprint defined as the MSP property. The analysis went on to determine the $CO_2$ emissions footprint for MSP as a whole, including the emissions from other sources located at MSP, namely the airlines and other tenants, and the general public's use of MSP."[15] The study defined the boundary of the analysis as MSP-owned property and the above-ground-level airspace up to 3,000 feet. Using this boundary definition, the 2005 and 2007 $CO_2$ footprints for emissions actually released at MSP Airport were determined to be 535,000 and 482,000 metric tons respectively.[16]

Attachment 8 includes an estimate of what share of these total airport-related emissions are most appropriately attributable to the City. The first step was to estimate 2009 emissions

[15] From the MAC study: "The approach to calculating $CO_2$ emissions relies on methods and/or data published by the Intergovernmental Panel on Climate Change (IPCC), the United States Environmental Protection Agency (US EPA), the World Resource Institute (WRI), the World Business Council for Sustainable Development (WBCSD), the International Council for Local Environmental Initiatives (ICLEI), the Climate Registry, and the Minnesota Pollution Control Agency (MPCA)." This protocol was used to assess carbon emissions for Denver International Airport as well.

[16] The report states further: "The analysis went even further to quantify the overall aviation-related $CO_2$ emissions footprint, which added the emissions based on the fuel dispensed at MSP, but released outside the MSP airspace. . . . The main source of CO2 emissions associated with MSP is fuel combustion from aircraft above 3,000 feet AGL. Though these emissions actually occur away from MSP, such as happens with international flights around the world, they are identified as a method to account for the fuel dispensed at MSP and to account for the total CO2 footprint. . . . The emissions data reported for operations above 3000 feet AGL are beyond the realm of the Airport environment and are identified for informational purposes only."

from the airport data (which only included 2005 and 2007). Linear regression analysis and averaging produced reasonable results based on GHG emissions per type of aircraft operation. The extensive carbon footprint analysis prepared for the City and County of Denver also included the Denver International Airport and found that the City of Denver's share of the airport's 2006 emissions was approximately equal to Denver's share of the regional population.[17] Since the Denver metropolitan area is of comparable size to the Twin Cities metropolitan area, this Inventory assumes this same relationship applies here as well. As stated above, this Inventory accounts for the City's share of these emissions on a per-capita basis. Airport-related emissions constitute about 2.5% of transportation-related GHG emissions (Table 4).

### 5.3. GHG Emissions from Railroad Operations (Task 1.4)

Two railroads operate within the City: the Canadian Pacific, which includes the Soo Line and Milwaukee Road railroads, and the Union Pacific, which includes the Chicago and Northwestern Railroad. Attachment 9 provides the detail regarding the GHG emissions from these operations. The total constitutes only a sliver of the GHG emissions from transportation, approximately 0.2% (Table 4).

### 5.4. GHG Emissions from River Operations (Task 1.5)

Attachment 10 details the operations and associated GHG emissions for barge traffic on the Minnesota River. Resulting GHG emissions are halved because the City shares these emissions with its neighboring city on the north side of the river, Bloomington. Like railroad emissions, river-related GHG emissions are only a small part of the transportation sources, 0.06% (Table 4).

## 6.0. GHG Emissions from Solid Waste Management (Task 1.6)

The City has an "open" policy for waste management and it licenses several haulers to collect solid waste materials in the City. The City does not compile comprehensive waste management data, but rather licensed haulers report collection data to Dakota County. Since haulers in an open system do not as a rule segregate data according to municipal boundaries, only county boundaries, it is not possible to disaggregate municipal data from the county totals.

Attachment 11 includes an estimate of City collection amounts based on the assumption that, on a per-capita basis, collections in the City will be comparable to those elsewhere in the County. GHG emissions for municipal solid waste (MSW) depend on how the waste was managed. Attachment 11 includes GHG emission rates for the portions of the waste stream that were incinerated and land filled. No emissions are assumed for waste that is composted or recycled. These emission rates take into account the percent of methane recovery at landfills and solid waste composition (Attachment 12). GHG emissions associated with waste management constitute a very small percentage of the overall emission estimate, less than 1%.

[17] Source: *Greenhouse Gas Inventory for the City and County of Denver*, May 2007).

## 7.0. Fugitive GHG Emissions Associated with the Treatment of Sanitary Sewer Waste (Task 1.7)

Attachment 21 includes date regarding water use in the City. Using winter consumption rates as a base, it includes an average monthly estimate of the portion of the water consumed that is drained into the City's sanitary sewer system. This way, summertime activities such as irrigation and outdoor washing of vehicles are excluded from the estimate. The City's share of fugitive GHG emissions associated with treatment of sanitary sewer waste represents a tiny fraction of the City's overall emissions (0.02%). Emissions associated with the consumption of electricity and natural gas needed to pump the sanitary sewer waste to the regional treatment facilities are captured in the energy portions of the Inventory.

## 8.0. Community-Wide Totals and Comparisons with Other Cities

GHG emissions totaled to about 1.15 million tonnes in 2009, an amount that was 12% lower than in 2005. Since population did not change substantively, per-capita GHG rates were 11% lower in 2009 compared to 2005; 21.2 tonnes per capita in 2008 and 18.8 tonnes in 2009. Normalizing for weather accounts not only for the weather variations between study years but also addresses the fact that the two utilities that could not provide data for the 2005 study year (2006 data for Xcel Energy and 2007 data for CenterPoint Energy). When energy use is normalized for weather differences, total emissions for both study years were slightly higher but the difference shrank slightly. The primary causes for the decreases are likely the shrinking economy and the other factors mentioned above (refer to the listing of the reasons on Attachment 1a).

Attachment 26 compares the key data for the City with baseline assessments prepared recently for three other metro cities, Minneapolis, Falcon Heights, and St. Louis Park. At 18.8 tonnes per-capita in 2009, the City has the highest rate among the four cities. Two factors are important:

- **Natural gas:** The City has the highest per-capita rate for natural gas consumption; in fact, at 111 Dth per capita, it is more than twice the average for the other three cities, which have an average of 48 Dth per-capita.

- **VMT:** The City's VMT per-capita rate is the highest, 28% above the average for the other three cities. When focusing on freeway VMT, the City has nearly twice the average of the other three cities. Even at the level of local streets, the City has the highest per-capita rate, 38% above the average of the other three cities. These figures reflect the effects of low-density development on VMT because the other three cities are more densely populated and, due to their close proximity to the central city job centers, have better alternatives to the automobile.

Attachment 27 includes the land use map for the City.

## 9.0. City Operations: Introduction

This part of the Inventory examines GHG emissions associated with City buildings and facilities; streetlights, signals, and flashers; potable water production and distribution; sanitary sewer discharge treatment; transportation sources including those from Public Works and contractor services, employee commutes, and business travel; and waste management for City operations.

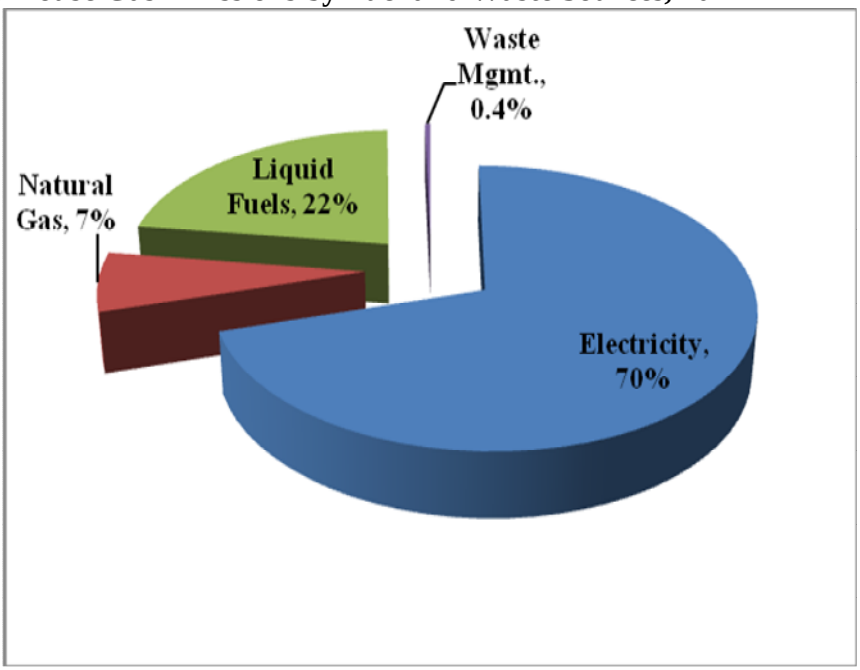
The City has numerous buildings, parks, wells, pumps, streetlights and signals that consume electricity and natural gas. The City's accounting and facility management staff must deal with over 200 electricity accounts with 3 companies, nearly 40 natural gas accounts with CenterPoint Energy, and a diesel fuel account for emergency generators. Of course, most facilities have multiple accounts. Attachments 15 and 16 provide detailed energy consumption data for all of the City's buildings and facilities. Since three different electrical generation utilities supply power to City facilities, the GHG emissions were generated using the emission factors unique to each utility for each of the 240 accounts. Attachment 14 consolidates the data and Attachment 24 normalizes the data for differences in weather conditions and the availability of uses between the 2005 and 2009 study years.

Table 6 provides a summary of the associated GHG emissions.

**Table 6: Greenhouse Gas Emissions from City Operations, 2011**

| Source | Electricity | Natural Gas | Liquid Fuels | Waste Management | Total | % of Total |
|---|---|---|---|---|---|---|
| Buildings and facilities | 4,796 | 701 | 47 | | 5,545 | 31% |
| Streetlights and signals | 1,681 | | | | 1,681 | 9% |
| Potable water | 5,963 | 528 | | | 6,491 | 36% |
| Sanitary sewers | 123 | 0.3 | | | 123 | 1% |
| Public Works | | | 2,124 | | 2,124 | 12% |
| Contracted services | | | 1,024 | | 1,024 | 6% |
| Employee commute and business travel | | | 801 | | 801 | 4% |
| Solid waste management | | | | 69 | 69 | 0.4% |
| **Total** | **12,563** | **1,230** | **3,995** | **69** | **17,856** | **100%** |
| Percent of total | 70% | 7% | 22% | 0% | 100% | |

**Figure 7: Greenhouse Gas Emissions by Fuel and Waste Sources, 2011**



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## 10.0. City Buildings and Facilities (Task 2.1)

This section of the Inventory focuses on energy consumption (electricity, natural gas, and diesel fuel for emergency generators) and the associated GHG emissions for City buildings and facilities. Attachment 1b shows that City buildings and facilities constituted about a quarter of the total GHG emissions from City operations (see also Figure 2). Attachment 14 provides detailed information regarding energy consumption and GHG emissions. The figures in the middle of the table show the subtotals for City buildings and facilities (which includes park, recreation, and other facilities plus associated on-site lighting and emergency generation).

### 10.1. Electricity consumption and GHG emissions

Electricity consumption was 36% higher in 2009 as compared to 2005. Two major reasons account for most of this apparent increase—new uses and weather. Attachment 17 lists several new uses that were not in existence in 2005 including the Performing Arts Center and the Heart of the City parking ramp that were not open in 2005. Attachment 24 takes this into account and includes a normalized 2009 base that excludes these new uses.[18] The result shows a 6% decline in electricity consumption. Attachment 24 also accounts for the second factor, weather, and the fact that cooling degree-days were 35% lower in 2009 than in 2005 (Attachment 1b). In sum, what at first appeared to be a major increase in electrical consumption (36%), shrinks to only 4% when the numbers are normalized for new uses and weather.

Attachment14 tallies the sources of GHG emissions for buildings and facilities, including the emergency power generators (which are detailed in Attachment 18). Attachment 24 includes this data and adds normalizing calculations for new uses and weather differences as described above. Before normalizing, the attachment shows that GHG emissions in 2009 were 25% higher than in 2005.[19] The attachment also shows that, when the base is adjusted to exclude the new uses, GHG emissions are actually 14% lower in 2009 as compared to 2005. When further normalized for milder-than-normal weather, the 2009 GHG emissions are 5% lower in 2009 than 2005.

The City increased its production of potable water in 2011 by 25% over 2009 levels (Attachment 21). It also significantly increased its sales of water to other communities (from 5% of total production in 2009 to 19% in 2011). The electricity consumption figures account for this by calculating net sales for water consumed within the City only. Although the City produced 8% more potable water for City consumers in 2011 compared to 2009, it used 54% less electricity to do it.

After a 7% increase in 2009 over 2005 levels, electricity consumption for all City operations was 25% lower in 2011 as compared to 2009 (Attachment 14) and the associated GHG emissions were 30% lower in 2011 (Attachments 13). Changes in consumption at the Water Utility and especially the Water Treatment Plant (WTP) account for most of the

[18] The goal here is to track change from 2005 to 2009 for only those facilities that were in place in 2005.

[19] Note that before normalizing, electricity consumption was 36% higher in 2009 than in 2005 but GHG emissions were only 25% higher. The difference is due to the lower GHG emission factors for electricity generation in 2009, which is explained in detail in Section 4.1.

reductions in electricity consumption. About 63% of the overall reduction in consumption for all City operations in 2011 is attributable to reductions at the WTP. Another 29% is due to reductions at City wells and the remaining 9% is from reductions at the reservoir at 13009 Nicollet Ave. (Attachment 15). The notes in Attachment 15 list the efficiency improvements at the WTP responsible for these reductions.

### 10.2. Natural gas consumption and GHG emissions

There is a similar story for natural gas consumption in 2009 and 2005. Attachment 24 shows that natural gas consumption, like electricity, was 36% higher in 2009 than in 2005. When accounting for a normalized base that excludes the new uses as described above, Attachment 24 shows consumption increased by 7%. However, seasonal heating degree-days were 12% higher in 2009 compared to 2005 (Attachment 1b) so weather-normalized consumption of the 2009 base that excludes the new uses actually shows a 7% decrease in 2009.

As described above for electricity, Attachment 24 includes GHG emission data that are normalized to account for new uses and weather differences. Before normalization, GHG emissions were 36% higher in 2009 than in 2005.[20] After normalizing for both new uses and weather (seasonal heating degree-days were 12% higher in 2009 compared to 2005, Attachment 1b), Attachment 24 shows that GHG emissions were 2% lower in 2009 than in 2005.

Figures for natural gas consumption and its associated GHG emissions were virtually the same in 2011 as in 2009. Since approximately 80% of natural gas usage is for heating buildings, weather can be a significant factor for change. The seasonal cooling degree days in 2011 were very close to the number in 2009.

## 11.0. Streetlights, Signals, and Flashers (Task 2.2)

Attachment 14 provides the electricity consumption figures and associated GHG emissions for streetlights, signals, and flashers for 2005, 2009, and 2011 (Attachment 15 includes the details by account). While electricity consumption by streetlights stayed relatively stable between 2005 and 2009, the City's program to replace its signals and flashers with high-efficiency LED fixtures resulted in a marked reduction in GHG emissions in 2009 (205 tonnes, 59% reduction). Consumption and the associated GHG emissions continued to be stable in 2011. This category accounted for about 8% of the total GHG emissions from City operations (Attachment 1b).

The City added a significant amount of new streetlights, signals, and flashers by 2009. Attachment 24 accounts for this and shows that, when normalized for these new uses, electricity consumption was 9% lower in 2009 compared to 2005 and the associated GHG emissions were 20% lower.

[20] Unlike electricity generation, the GHG emission factor for natural gas is very stable so percentage changes between the study years for consumption and associated GHG emissions will match. The percentage changes under the "Normalized % Change (4)" column do not consistently follow this same match-up because the denominators vary in response to there being new natural gas uses only for the "Buildings" and the Water Utility" categories and not the other categories.

## 12.0. Water Utility (Task 2.3)

The wells, pumps, and the water treatment plant necessary to produce potable water are by far the largest consumer of energy and source of GHG emissions and they account for more than half of the GHG emissions from City operations (Attachment 1b and Figure 2). While electricity consumption increased significantly in 2009 (by 25%), the related GHG emissions only increased by 3% due to the above-mentioned decrease in utility emission factors. The City's water treatment plant expansion, which came on line in mid-2009, was the primary reason for the large increase in electricity consumption. Attachment 24 accounts for this and shows that when this new source is excluded, consumption was 9% higher in 2009 than 2005 and GHG emissions were 10% lower. Natural gas consumption, which is small by comparison, was significantly lower in 2009 (by 61%). Attachment 14 shows that the combined figure for GHG emissions from both fuel sources was 1% lower in 2009 than in 2005.

Section 10.1 describes the changes in energy consumption and associated GHG emissions in 2009 and 2011, and Attachment 15 provides additional detail regarding this important issue.

The City's system of pumps and lift stations for the sanitary sewer system result in a very small amount of GHG emissions, only 1% of the City's total emissions (Attachment 1b).

## 13.0. City Transportation

Transportation-related GHG emissions in 2011 were 18% higher in 2011 as in 2009. The increase can be attributed to emissions associated with Public Works operations (26% higher than in 2009) and private contractor activities (21% higher than in 2009).

City transportation includes the two sub-categories described below. Together, City transportation constituted about 15% of the City emission total in 2005 and 2009, and 22% in 2011 (Attachment 1b and Figure 2).

### 13.1. Public Works and Contracted Services (Task 2.4)

Attachment 19 provides a breakout of the factors needed to estimate the GHG emissions associated with Public Works operations and private contractors that perform tasks and complete construction projects that are the normal domain of the City. The table combines the City fuel consumption data by vehicle type (gas, diesel, and E85 gasohol) with the GHG emission factors for each fuel.

The City's contractors provided conversion factors that accounted for gallons per contract dollar and construction mile, and the fuel mix (diesel v. gasoline). Attachment 1b shows that GHG emissions that stem from fuel consumption by Public Works activities decreased by 4% in 2009 over 2005 but increased by 26% in 2011 over the 2009 figure. The City's use of an alternative fuel, E85 (which emits 29% fewer GHG emissions than gasoline) for some of the City fleet generated 62 fewer tonnes of $CO_2$ than if the vehicles has used gasoline. Emissions from contractor activities increased by 22% in 2009 and by another 21% in 2011 (Attachment 1b and Figure 2).

### 13.2. Employee Commute and Business Travel (Task 2.5)

The City conducted a survey of employee commuting habits in 2010. Of the 277 current FTE employees, 86 completed the survey. Attachment 20 details how VMT was estimated for the respondents and then projected as a viable sample for the entire employee populations for 2009 and 2005. The survey took into account both normal and alternative modes of travel and the normal round-trip commuting distance. For part-time employees, the survey allocated a percentage of the round-trip distance based on whether the employee worked half time or less. The average estimate of 5,300 miles per employee annually compares with the analysis prepared by Dakota County in 2009 that found an average of 7,100 miles per County employee.

By estimating the annual VMT for the 86 employees who answered the survey out of the possible 277 FTE City employees, the sample results have a 95% confidence level with a confidence interval of 9. Put differently, the sample size was sufficiently large to assert with 95% statistical confidence that the annual VMT for all of the City employees will be within ±9% of the survey results.[21]

The attachment also lists the expected mileage for business travel including airline travel. Attachment 19 includes an estimate of the associated GHG emissions for employee commutes and business travels, which together equal about 3% of the total for the City (Attachment 1b). Since the business travel and employee commute data were for 2011 and 2010 respectively, the same data were used for the 2011 update.

## 14.0. Solid Waste (Task 2.6)

Attachment 22 includes an estimate of the municipal solid waste (MSW) generated by City operations based on the assumption that a City job will generate MSW at a rate comparable to a job elsewhere in Dakota County. This approach yielded an estimate of slightly more than 1 ton of waste per FTE job in the City. Dakota County's analysis of the actual waste per County employee in 2009 was 0.24 tons per FTE employee. To be conservative, this analysis relies on the larger estimate.

## 15.0. Total GHG Emissions from City Operations

GHG emissions associated with City operations were 3% higher in 2009 than in 2005 and 22% lower in 2011 than in 2009 (Attachment 1b) for the reasons described above. Attachment 24 accounts for new uses and weather differences between the 2005 and 2009. If new uses are excluded from the analysis, GHG emissions are 10% lower in 2009 than in 2005. If also normalized for the milder weather in 2009, emissions are 9% lower than in 2005.

To summarize the reasons for the overall 22% lower level of GHG emissions in 2011 compared to 2009, reductions in two important categories, Buildings and Facilities and the Water Utility, were significantly greater than the increases in the Transportation category:

- ✓ Buildings and facilities, which comprise 31% of total emissions, were 14% lower than in 2009.
- ✓ Streetlights, signals, and flashers, which comprise 10% of total emissions, were stable.

[21] Statistical calculations from this source: http://www.surveysystem.com/sscalc.htm

- ✓ The Water Utility, which comprises 37% of total emissions, was significantly lower, 41% lower.
- ✓ Transportation, which comprises 22% of total emissions, was higher by 18%.
- ✓ Waste management, which comprises less than 1% of emissions, was stable.

Emissions associated with City operations equal about 2% of the community-wide emissions. This is typical for carbon baseline assessments.

**Table 7: Emissions from City Operations, 2005 to 2011**

| City-Operations Emissions (tonnes) | 2005 | 2009 | 2011 | Change | Percent Change | Percent of Total Change |
|---|---|---|---|---|---|---|
| **Buildings and facilities** | 5,092 | 6,441 | 5,545 | (896) | -14% | 18% |
| **Streetlights, signals and flashers** | 1,885 | 1,713 | 1,681 | (32) | -2% | 1% |
| **Water Utility** | 11,916 | 11,206 | 6,614 | (4,592) | -41% | 93% |
| **Transportation** | 3,147 | 3,358 | 3,948 | 590 | 18% | -12% |
| **Waste** | 79 | 71 | 69 | (3) | -4% | 0.1% |
| **CO2e emissions total** | **22,120** | **22,788** | **17,856** | **(4,932)** | **-22%** | **100%** |

## 16.0. Sensitivity Analysis

The community-wide and the City-operations analyses account for the GHG emissions associated with all of the major sources of energy consumption, uses of transportation fuels, and waste management methods that are normally included in carbon baseline assessments.[22]

As fully described in this Inventory and accompanying attachments, all of the sources of data for the Inventory are transparent, fully identified, verifiable, and reliable. They consist of City records and staff reports; utility records and reports to the Minnesota Public Utilities Commission; internationally recognized methodologies and published scientific papers regarding the calculation of GHG emissions; federal, state, and county agencies (USDOT, US EPA, MNDOT, MPCA, Metropolitan Council, Metropolitan Airports Commission, Dakota County); data from the Canadian Pacific and the Union Pacific and C&NW railroads; river operations data from barge companies and the Army Corps of Engineers, and other published sources.

The data used to develop the Inventory were specific to the GHG emission categories for the City with one important exception.[23] To derive the community-wide GHG emissions from vehicle use, the Inventory relies on the USDOT Mobile 5 computer model and scientifically determined GHG emission factors to derive an annual ratio of GHG emissions per vehicle miles traveled nationally. The model relies on the national fleet mix and driving characteristics. Local fleet mix and driving

[22] The above description applies to the information scoped into the Inventory. Carbon inventories prepared for other cities vary somewhat regarding data included. For example, the inventory developed for the City of Denver accounted for the GHG emissions associated with concrete production for public works projects. Other inventories, in contrast, ignore solid waste, sanitary sewer treatment, railroads, river, and airport-related emissions.

[23] The Inventory relies on a second non-local data source—waste management. However, the category accounts for a mere 0.3% of the total emissions so its margin of error is insignificant. Counties are the primary governmental keepers of waste management data. Since haulers generally report their collections based on county boundaries, not municipal ones, there is no complete data set specific to the City. As such, the GHG estimation for the City relies on the assumption that, on a per-capita basis, waste management within the City is comparable to that of the County as a whole.

habits could vary somewhat from the national average. For example, the state's fleet mix may be newer and thus more efficient than the national average because Minnesota's colder-than-average winters and reliance on road salt could combine with the state's higher-than-average household income to rust out and retire older, less-efficient vehicles faster. In this case, the national average would overestimate the City's emissions. On the other hand, this same colder climate results in less efficient vehicle operation in the winter than the national average, which may balance matters out. There is no comparable data set for the State of Minnesota or Dakota County with which to derive these important estimates for the City. As detailed in the transportation section of this report, the second part of the GHG calculation relies on the annual VMT calculations completed since 1988 by MNDOT engineers. This data set is very reliable and accurate.

Attachment 25 includes a sensitivity analysis that estimates the margin of error in the Inventory. It approaches the matter from two directions:

- **Worst-case scenario:** Since the GHG-per-VMT ratio accounts for a significant part of the total community-wide GHG calculation (30% in 2009), the sensitivity analysis first incorporated very high margins of error for all of the other major data sources in the community-wide analysis to determine the maximum allowable margin of error for the GHG-per-VMT ratio. The attachment's fourth column shows these figures. The conclusion was ±17%. In other words, even if all of the other major data sources are off the mark by very large margins, the GHG-per-VMT ratio could still be off by up to ±17% and still yield a final GHG estimate that was within the acceptable ±10% of the actual number. The attachment's fifth column derives these figures. A margin of error greater than ±10% would be unacceptable.

- **Most likely case:** It is highly unlikely that all of the primary data sources have margins of error as calculated in the worst-case scenario. Rather, the data sources are extremely reliable and the variation between the national fleet mix and the local fleet mix will probably not be substantial. This more reasonable case yields a likely margin of error that is about ±4%, a number well within the range of acceptability. The attachment's last column derives these figures.

## Summary of Community-Wide GHG Emissions and Change Factors

Updated: 5/19/12

| Categories | 2005 | | 2009 | | Change in Emissions from Prior Study Year | | Reasons for Change from 2005 | % of Total Change |
|---|---|---|---|---|---|---|---|---|
| | GHG Emissions (tonnes) | % of Total Community/ City | GHG Emissions (tonnes) | % of Total Community/ City | Amount | Percent | | |
| **Community Analysis** | | | | | | | | |
| **Community Energy:** | | | | | | | | |
| Total Community electricity (Xcel Energy data from 2006 and 2009) | 459,772 | 35% | 399,497 | 35% | (60,275) | -13% | **Reasons for decreases: When normalized for weather, electricity consumption increased 8%, but the blended CO2e emission factors were 9% lower.** | **40%** |
| Residential | 180,994 | 14% | 150,893 | 13% | (30,101) | -17% | | |
| Commercial & Industrial | 278,777 | 21% | 248,604 | 22% | (30,173) | -11% | | |
| Street and highway lighting, 2006 and 2009 | 292 | 0.02% | 245 | 0.02% | (47) | -16% | **NSP Minnesota emission factor 23% lower in 2009.** | |
| Total Community natural gas (2007 & 2009) | 435,839 | 34% | 368,496 | 32% | (67,343) | -15% | | |
| Residential | 87,777 | 7% | 94,439 | 8% | 6,662 | 8% | **Reason: When normalized for 2007 and 2009 weather, the 8% residential gas increase changes to a 1% decrease.** | **45%** |
| Commercial & Industrial | 348,062 | 27% | 274,057 | 24% | (74,005) | -21% | **Reason: "Great Recession."** | |
| **Subtotal Community Energy** | **895,611** | **69%** | **767,994** | **67%** | **(127,617)** | **-14%** | | |
| Normalized for weather | 906,408 | | 785,820 | | (120,587) | -13% | | |
| | | | | | | | | |
| **Community Transportation:** | | | | | | | | |
| Vehicle miles traveled | 381,374 | 29% | 363,012 | 32% | (18,362) | -5% | **Reason: 1) VMT down 5% due to "Great Recession." 2) Cleaner fleet: 3% lower fleet emissions.** | **12%** |
| Share of MSP Airport | 11,665 | 1% | 9,970 | 1% | (1,696) | -15% | **Reason: "Great Recession."** | **1%** |
| Rail transportation | 611 | 0.05% | 450 | 0.04% | (161) | -26% | | |
| Share of Minnesota River transportation | 206 | 0.02% | 192 | 0.02% | (14) | -7% | | |
| **Subtotal Community Transportation** | **393,857** | **30%** | **373,624** | **32%** | **(20,233)** | **-5%** | | |
| | | | | | | | | |
| **Community Waste (Solid and Sanitary)** | | | | | | | | |
| Estimated total MSW managed | 9,605 | 0.7% | 8,017 | 0.7% | (1,588) | -17% | | |
| Fugitive GHG emissions from sanitary sewage treatment | 247 | 0.02% | 246 | 0.02% | (0.9) | -0.4% | | |
| **Subtotal Community Waste** | **9,851** | **0.8%** | **8,262** | **0.7%** | **(1,589)** | **-16%** | **Reason: "Great Recession."** | **1%** |
| | | | | | | | | |
| **Community Emissions Total:** | **1,299,319** | **100%** | **1,149,880** | **100%** | **(149,439)** | **-12%** | | **100%** |
| Per-capita Community emissions | 21.2 | | 18.8 | | (2.4) | -11% | | |
| **Weather-normalized emissions** | 1,310,116 | | 1,167,706 | | (142,410) | -11% | | |
| Weather-normalized per-capita emissions | 21.4 | | 19.1 | | (2.3) | -11% | | |
| **Other Factors:** | | | | | | | | |
| City population | | 61,262 | | 61,047 | (215) | -0.4% | | |
| Seasonal cooling degree days | | 1,001 | | 647 | (354) | -35% | | |
| Seasonal heating degree days | | 6,974 | | 7,780 | 806 | 12% | | |

## Summary of GHG Emissions from City Operations

Updated: 5/30/12

| Categories | 2005 | | 2009 | | Change in Emissions from Prior Study Year | | | 2011 | | Change in Emissions | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | GHG Emissions (tonnes) | % of Total City | GHG Emissions (tonnes) | % of Total City | Amount | Percent | Reasons for Change from 2005 | GHG Emissions (tonnes) | % of Total City | Amount | Percent |
| **City Analysis** | | | | | | | | | | | |
| **Buildings and Facilities (99 accounts in 2011)** | | | | | | | | | | | |
| Buildings (incl. on-site lighting and emergency generators) | 4,622 | 21% | 5,914 | 26% | 1,291 | 28% | Refer to Attachment 24 | 5,019 | 28% | (894) | -15% |
| Park and Recreation facilities (incl. on-site lighting and sprinkling) | 342 | 2% | 407 | 2% | 65 | 19% | | 444 | 2% | 37 | 9% |
| Other facilities | 128 | 0.6% | 120 | 1% | (8) | -6% | | 81 | 0% | (39) | -33% |
| **Subtotal Buildings and Facilities** | **5,092** | **23%** | **6,441** | **28%** | **1,348** | **26%** | | **5,545** | 31% | (896) | -14% |
| **Streetlights (33 accounts in 2011)** | **1,540** | **7%** | **1,572** | **7%** | **33** | **2%** | | **1,560** | 9% | (12) | -1% |
| **Signals and Flashers (49 accounts in 2011)** | **345** | **2%** | **141** | **1%** | **(205)** | **-59%** | Converted numerous traffic signals and flashers to the far more efficient LED bulbs. As a result, GHG associated with the "signals and flashers" category were 205 tonnes lower. | **121** | 1% | (20) | -14% |
| **Water Utility (99 accounts in 2011)** | | | | | | | | | | | |
| Potable water | 11,774 | 53% | 11,093 | 49% | (681) | -6% | | 6,491 | 36% | (4,602) | -41% |
| Sanitary sewers | 143 | 1% | 113 | 0% | (29) | -21% | | 123 | 1% | 10 | 9% |
| **Subtotal Water Utility** | **11,916** | **54%** | **11,206** | **49%** | **(710)** | **-6%** | | **6,614** | **37%** | **(4,592)** | **-41%** |
| **Transportation:** | | | | | | | | | | | |
| Public Works | 1,745 | 8% | 1,682 | 7% | (62) | -4% | Use of an alternative fuel, E85 (which emits 29% fewer greenhouse gasses than gasoline) for some of the City fleet generated 71 fewer tonnes of CO2 than if they had consumed gasoline. | 2,124 | 12% | 442 | 26% |
| Contracted services | 696 | 3% | 849 | 4% | 153 | 22% | | 1,024 | 6% | 175 | 21% |
| Business travel (based on 2011) | 9 | 0.04% | 9 | 0.04% | - | 0% | | 9 | 0.04% | - | 0% |
| Employee commute (based on 2010) | 697 | 3% | 817 | 4% | 121 | 17% | | 791 | 4% | (26) | -3% |
| **Subtotal City Transportation** | **3,147** | **14%** | **3,358** | **15%** | **211** | **7%** | | **3,948** | **22%** | 590 | 18% |
| | | | | | | | | | | | |
| **Solid Waste Management** | **79** | **0.4%** | **71** | **0.3%** | **(8)** | **-10%** | | **69** | **0.4%** | **(3)** | **-4%** |
| | | | | | | | | | | | |
| **City Emissions Total:** | | | | | | | | | | | |
| Total GHG emissions | **22,120** | **100%** | **22,788** | **100%** | **669** | **3%** | | **17,856** | **100%** | **-4,932** | **-22%** |
| Per-FTE CO2e | 80 | | 70 | | -10 | -12% | | 66 | | **(4)** | **-6%** |
| City emissions as a % of Community emissions | | 2% | | 2% | | | | | Not available | | |
| Total GHG emissions normalized for weather and new uses | 21,970 | | 19,932 | | (2,038) | -9% | Refer to Attachment 24 | | | | |
| **Other Factors:** | | | | | | | | | | | |
| City population | | 61,262 | | 61,047 | (215) | -0.4% | | | 61,110 | 63 | 0.1% |
| Seasonal cooling degree days | | 1,001 | | 647 | (354) | -35% | | | 1,061 | 414 | 64% |
| Seasonal heating degree days | | 6,974 | | 7,780 | 806 | 12% | | | 7,709 | (71) | -1% |

# Burnsville Greenhouse Gas Inventory

## Community-Wide Energy

Updated: 5/15/12

| | 2005-2007 | | | 2009 | | | Change in CO2e from Prior Year | |
|---|---|---|---|---|---|---|---|---|
| | Residential | Non-Residential | Total | Residential | Non-Residential | Total | Amount | % Change |
| **Electricity** | | | | | | | | |
| Dakota Electric Association (DEA), 2005 and 2009 (1) | | | | | | | | |
| Consumption (MWh) | 161,860 | 204,989 | 366,849 | 150,234 | 212,831 | 363,065 | (3,784) | -1% |
| GHG Emissions (tonnes) | 147,173 | 186,389 | 333,562 | 125,671 | 178,033 | 303,704 | (29,858) | -9% |
| Percent of total GHG emissions | | | 73% | | | 76% | | 3% |
| Xcel Energy, 2006 and 2009 (3) | | | | | | | | |
| Wind (4) | 176 | - | 176 | 281 | 32 | 314 | 138 | 78% |
| Non-Windsource power | 41,610 | 105,133 | 146,743 | 39,238 | 99,673 | 138,911 | (7,832) | -5% |
| Street and highway lighting, 2006 and 2009 (MWh) (3) | | 405 | 405 | | 444 | 444 | 39 | 10% |
| Total consumption (MWh) | 41,786 | 105,538 | 147,324 | 39,519 | 100,150 | 139,669 | (7,655) | -5% |
| GHG Emissions (tonnes) | 30,105 | 76,036 | 106,141 | 21,631 | 55,209 | 76,840 | (29,301) | -28% |
| Percent of total GHG emissions | | | 23% | | | 19% | | -4% |
| Minnesota Valley Electric Cooperative (MVEC), 2005 and 2009 (5) | | | | | | | | |
| Consumption (MWh) | 4,474 | 19,687 | 24,161 | 4,324 | 18,494 | 22,819 | (1,342) | -6% |
| GHG Emissions (tonnes) | 3,716 | 16,353 | 20,068 | 3,592 | 15,362 | 18,954 | (1,115) | -6% |
| Percent of total GHG emissions | | | 4% | | | 5% | | 0.4% |
| **Electricity Totals** | | | | | | | | |
| Weighted emission factor | | | 0.86 | | | 0.78 | (0.08) | -9% |
| Consumption (MWh) | 208,120 | 330,214 | 538,334 | 194,078 | 331,475 | 525,553 | (12,781) | -2% |
| **GHG Emissions (tonnes)** | **180,994** | **278,777** | **459,772** | **150,893** | **248,604** | **399,497** | **(60,275)** | **-13%** |
| **Normalizing for weather (2)** | | | | | | | | |
| Consumption | 194,969 | 309,349 | 504,318 | 201,652 | 344,411 | 546,063 | 41,745 | 8% |
| Consumption normalized for weather, change by sector | | | | 3% | 11% | 8% | | |
| CO2e | 169,558 | 261,162 | 430,720 | 156,782 | 258,306 | 415,088 | (15,632) | -4% |
| | | | | | | | | |
| **Natural Gas** | | | | | | | | |
| CenterPoint Energy, 2007 and 2009 (6) | | | | | | | | |
| Consumption (Dth) | 1,608,461 | 6,378,023 | 7,986,484 | 1,730,543 | 5,021,926 | 6,752,469 | (1,234,015) | -15% |
| **GHG Emissions (tonnes)** | **87,777** | **348,062** | **435,839** | **94,439** | **274,057** | **368,496** | (67,343) | -15% |
| Normalized for weather (2) | 95,802 | 379,885 | 475,687 | 95,012 | 275,720 | 370,732 | (104,955) | -22% |
| Change in weather-normalized CO2e | | | | -1% | -27% | -22% | | |
| | | | | | | | | |
| **Total Energy** | | | | | | | | |
| **GHG Emissions (tonnes)** | **268,772** | **626,839** | **895,611** | **245,333** | **522,661** | **767,994** | **(127,617)** | **-14%** |
| Normalized for weather (2) | 265,360 | 641,047 | 906,408 | 251,794 | 534,026 | 785,820 | (120,587) | -13% |
| Consumption normalized for weather, change by sector | | | | -5% | -17% | -13% | | |

**Notes:**

1. The Dakota Electric Association (DEA) serves the majority of the City of Burnsville. DEA purchases wholesale electricity from Great River Energy, a generation and transmission cooperative in Maple Grove, Minn., and distributes electricity to homes, businesses and farms in parts of Dakota, Goodhue, Scott and Rice counties.
2. Normalized Standard Heating/Cooling Degree Days predicts the energy consumption based on the 118-year average SHDD/SCDD, not the actual amounts. For electricity, it is assumed 25% of electricity consumption is for air conditioning. For natural gas, it is assumed 80% is for heating buildings.
3. Xcel Energy distributes electricity in portions of Burnsville. Xcel Energy could provide 2006 data but not 2005 data. DEA and MVEC include consumption date for street and highway lighting, signals, and flashers with the "Non-residential" category.
4. The wind turbines that are used for the Windsource program are treated as separate assets. They are not part of the regular system supply and they do not count toward Xcel Energy's target under Minnesota's renewable energy standards.
5. Minnesota Valley Electric Cooperative distributes electricity in portions of Burnsville. MVEC is a distribution cooperative that purchases wholesale power from two generation and transmission cooperatives, Great River Energy and Basin Electric Power Cooperative.
6. CenterPoint Energy provided data for 2007 and 2009.

## Electricty Consumption Data from Xcel Energy, 2006 and 2009

| 2006 | ELECTRIC ONLY PREMISE COUNT | GAS ONLY PREMISE COUNT | GAS AND ELECTRIC PREMISE COUNT | TOTAL PREMISE COUNT | TOTAL ELECTRIC ENERGY CONSUMED (MWh) | ELECTRIC ENERGY GENERATED BY WIND | XCEL ENERGY'S MINNESOTA ELECTRIC EMISSION FACTOR (Tons CO2/MWh) | TONS OF CO2 FROM ELECTRIC CONS. (TOTAL ELECTRIC MINUS WIND) | XCEL ENERGY'S MINNESOTA GAS EMISSION FACTOR (Tons CO2/DTh) | TOTAL TONS OF CO2 FROM CONS. |
|---|---|---|---|---|---|---|---|---|---|---|
| Residential | 5,588 | - | - | 5,588 | 41,454 | - | 0.652 | 27,028 | 0.0595 | 27,028 |
| Res Windsource | 55 | - | - | 55 | 333 | 176 | 0.652 | 102 | 0.0595 | 102 |
| C&I | 1,132 | - | - | 1,132 | 105,133 | - | 0.652 | 68,547 | 0.0595 | 68,547 |
| C&I Windsource | - | - | - | - | - | - | 0.652 | - | 0.0595 | - |
| Pub St & Hwy Ltg | - | - | - | - | 405 | - | 0.652 | 264 | 0.0595 | 264 |
| | 6,775 | - | - | 6,775 | 147,324 | 176 | | 95,940 | | 95,940 |

| 2009 | ELECTRIC ONLY PREMISE COUNT | GAS ONLY PREMISE COUNT | GAS AND ELECTRIC PREMISE COUNT | TOTAL PREMISE COUNT | TOTAL ELECTRIC ENERGY CONSUMED (MWh) | ELECTRIC ENERGY GENERATED BY WIND | XCEL ENERGY'S MINNESOTA ELECTRIC EMISSION FACTOR (Tons CO2/MWh) | TONS OF CO2 FROM ELECTRIC CONS. (TOTAL ELECTRIC MINUS WIND) | XCEL ENERGY'S MINNESOTA GAS EMISSION FACTOR (Tons CO2/DTh) | TOTAL TONS OF CO2 FROM CONS. |
|---|---|---|---|---|---|---|---|---|---|---|
| Residential | 5,576 | - | - | 5,576 | 39,048 | - | 0.603 | 23,546 | 0.0595 | 23,546 |
| Res Windsource | 66 | - | - | 66 | 471 | 281 | 0.603 | 114 | 0.0595 | 114 |
| C&I | 1,161 | - | - | 1,161 | 99,673 | - | 0.603 | 60,103 | 0.0595 | 60,103 |
| C&I Windsource | 2 | - | - | 2 | 32 | 32 | 0.603 | - | 0.0595 | - |
| Pub St & Hwy Ltg | - | - | - | - | 444 | - | 0.603 | 268 | 0.0595 | 268 |
| | 6,805 | - | - | 6,805 | 139,669 | 314 | | 84,031 | | 84,031 |

**Notes:**

| CenterPoint Energy: Annual Usage, 2007 and 2009 | | | |
|---|---|---|---|
| | | | |
| **Billing Class** | | **2007 (therms)** | **2009 (therms)** |
| 00003827 | Commercial/Industrial Gas | 63,780,232 | 50,219,259 |
| 00003827 | Residential Service Gas | 16,084,606 | 17,305,430 |
| 00003827 | Result | 79,864,838 | 67,524,689 |
| **Totals** | | **79,864,838** | **67,524,689** |
| Source: CenterPoint Energy | | | |

## Utility Emission Factors

Updated: 5/22/12

| Utilities | 2005 GHG Emission Factors | 2005 Global Warming Potential | 2005 CO2e per MWh (7) | 2009 GHG Emission Factors | 2009 Global Warming Potential | 2009 CO2e per MWh (7) | % Change in Emission Factor 2005 to 2009 | 2011 GHG Emission Factors | 2011 Global Warming Potential | 2011 CO2e per MWh (7) | % Change in Emission Factor 2009 to 2011 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Electric Power Generators** | | | | | | | | | | | |
| **Great River Energy (1)** | | | | | | | | | | | |
| CO2 (lbs/MWh) | 1,993.0 | 1 | 1,993.0 | 1,833.0 | 1 | 1,833.0 | | 1,764.0 | 1 | 1,764.0 | |
| N2O (lbs/MWh) | 0.035 | 310 | 10.9 | 0.0340 | 310 | 10.5 | | 0.035 | 310 | 10.9 | |
| CH4 (lbs/MWh) | 0.034 | 21 | 0.7 | 0.0290 | 21 | 0.6 | | 0.190 | 21 | 4.0 | |
| Total CO2e (lbs/MWh) | | | 2,004.6 | | | 1,844.1 | | | | 1,778.8 | |
| **Total CO2e (tonnes/MWh)** | | | **0.909** | | | **0.837** | **-8%** | | | **0.807** | **-4%** |
| **Xcel Energy/NSP (2)** | | | | | | | | | | | |
| CO2 (lbs/MWh) (3) | 1,579.0 | 1 | 1,579.0 | 1,206.0 | 1 | 1,206.0 | | 1,161.6 | 1 | 1,161.6 | |
| N2O (lbs/MWh) (4) | 0.0280 | 310 | 8.7 | 0.0280 | 310 | 8.7 | | 0.024 | 310 | 7.4 | |
| CH4 (lbs/MWh) (4) | 0.0307 | 21 | 0.6 | 0.0307 | 21 | 0.6 | | 0.027 | 21 | 0.6 | |
| Total CO2e (lbs/MWh) | | | 1,588.3 | | | 1,215.3 | | | | 1,169.6 | |
| **Total CO2e (tonnes/MWh)** | | | **0.720** | | | **0.551** | **-23%** | | | **0.531** | **-4%** |
| **Minnesota Valley Electric Coop (5)** | | | | | | | | | | | |
| CO2 (lbs/MWh) | 1,821.84 | 1 | 1,821.8 | 1,821.84 | 1 | 1,821.8 | | 1,628.60 | 1 | 1,628.6 | |
| N2O (lbs/MWh) (4) | 0.028 | 310 | 8.7 | 0.03 | 310 | 8.7 | | 0.024 | 310 | 7.4 | |
| CH4 (lbs/MWh) (4) | 0.031 | 21 | 0.6 | 0.03 | 21 | 0.6 | | 0.027 | 21 | 0.6 | |
| Total CO2e (lbs/MWh) | | | 1,831.2 | | | 1,831.2 | | | | 1,636.6 | |
| **Total CO2e (tonnes/MWh)** | | | **0.831** | | | **0.831** | **0%** | | | **0.742** | **-11%** |
| **Natural Gas Distributor** | | | | | | | | | | | |
| **CenterPoint Energy (6)** | | | | | | | | | | | |
| CO2 (kg/therm) | 5.302 | 1 | 5.3 | 5.302 | 1 | 5.3 | | 5.302 | 1 | 5.3 | |
| N2O (kg/therm) (4) | 0.0005 | 310 | 0.2 | 0.0005 | 310 | 0.2 | | 0.0005 | 310 | 0.2 | |
| CH4 (kg/therm) (4) | 0.00001 | 21 | 0.0 | 0.00001 | 21 | 0.0 | | 0.00001 | 21 | 0.0 | |
| Total CO2e (kg/therm) | | | 5.5 | | | 5.5 | | | | 5.5 | |
| Total CO2e (tonnes/Dth) | | | **0.055** | | | **0.055** | **0%** | | | **0.055** | **0%** |

**Notes:**

1 The emission factors listed for 2011 are actually for 2010, the most recent data available. From Great River Energy: "Great River Energy's (GRE's) Greenhouse Gas (GHG) emissions intensity data represents the non-biogenic GHG emissions from all of our power generating units as well as estimated emissions associated with all purchased energy including renewable energy. The emission calculations were done in general accordance with protocols established by The Climate Registry." The Dakota Electric Association (DEA) serves the majority of the City. DEA purchases wholesale electricity from Great River Energy, a generation and transmission cooperative in Maple Grove, Minn., and distributes electricity to homes, businesses and farms in parts of Dakota, Goodhue, Scott and Rice counties.

2 Xcel emission factor for CO2 is for Xcel's wholly owned generating company, NSP (Source: Xcel Energy). Refer to table below.

3 Source for 2005 data: Refer to following table. Source for 2009 data: Email dated 8/13/10 from David Chapman to Justin Miller: "Xcel Energy's Corporate Responsibility Report published a value of 1,206 Lbs. CO2 / MWh ( CRR p.55, i.e., 547 Kg CO2 / MWh) for the NSP system; 2009. This value includes CO2 emissions from combustion of both fossil and biomass in all electric generation applications from both owned and purchased power sources divided by total system net generation.
http://www.xcelenergy.com/Minnesota/Company/AboutUs/CorporateResponsibility/Pages/CorporateResponsibilityReport.aspx

## Utility Emission Factors

Updated: 5/22/12

| | |
|---|---|
| 4 | Emission factors for CH4 and N2O are from the USEPA eGRID for Midwest Regional Organization West. Factors do not include emissions from transmission and distribution losses. Latest data is for 2009. Source: http://www.epa.gov/cleanenergy/energy-resources/egrid/index.html |
| 5 | The Minnesota Valley Electric Cooperative (MVEC) distributes electricity to the northwest portion of the City. MVEC is a distribution cooperative that purchases wholesale power from two generation and transmission cooperatives, Great River Energy and Basin Electric Power Cooperative. In 2012, company representatives stated that purchases are through the Midwest Independent Transmission System Operator (MISO) and that the US EPA's eGrid figures would most accurately represent the utility's emission factor. The eGrid's most current figures are for 2009. Source: http://www.epa.gov/cleanenergy/documents/egridzips/eGRID2012V1_0_year09_GHGOutputrates.pdf |
| 6 | Source: Table G.1 and G3, Local Government Operations Protocol, for the Quantification and Reporting of Greenhouse Gas Emissions Inventories, Version 1.1, May 2010. The therm (symbol thm) is a unit of heat energy equal to 100,000 British thermal units (BTU). It is approximately the energy equivalent of burning 100 cubic feet (often referred to as 1 hcf) of natural gas. A million BTUs (MMBTU) equals a decatherm (10 therms). Natural gas emission factors do not vary substantially over time. |
| 7 | Carbon dioxide equivalents ($CO_2e$) are expressed in metric tonnes, which equal 1,000 kilograms, or 2,204.6 pounds. |

## CO2 Emission from Xcel Energy Facilities

CO2 Pounds / MWh (Owned and Purchased)

| Company | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 |
|---|---|---|---|---|---|---|
| **Xcel Energy** | **1,716** | **1,607** | **1,579** | **1,546** | **1,540** | **1,473** |
| NSP | 1,412 | 1,330 | 1,295 | 1,304 | 1,332 | 1,275 |
| PSCo | 1,979 | 1,869 | 1,851 | 1,825 | 1,737 | 1,626 |
| SPS | 1,899 | 1,741 | 1,699 | 1,616 | 1,636 | 1,596 |

Source: Statement from Xcel Energy, 2/23/09: "This year, we adopted a new methodology for calculating $CO_2$ emissions based on the recently issued reporting protocols of the Climate Registry, of which Xcel Energy is a founding reporter. Although emissions from facilities providing power for our customers have not changed, the new accounting methodology has changed our reported $CO_2$ intensity and mass numbers. Xcel Energy has recalculated historical data to reflect the same reporting methodology so that trends analysis and comparisons can be clearly made. $CO_2$ reporting is a relatively new practice. We expect it to continue to evolve and will adjust our reported $CO_2$ emissions accordingly."

## Seasonal Cooling and Heating Degree Days, 2005 to 2010, and Normalizing Factors

Updated: 2/29/12

| Period | HDD (2) | CDD | Normalizing Factor (4) | |
|---|---|---|---|---|
| | | | HDD (2) | CDD |
| 2005 | 6,974 | 1,001 | 112% | 75% |
| 2006 | 6,611 | 1,051 | 119% | 71% |
| 2007 | 7,035 | 1,070 | 111% | 70% |
| 2008 | 7,937 | 787 | 99% | 95% |
| 2009 | 7,780 | 647 | 101% | 116% |
| 2010 | 7,006 | 1,000 | 112% | 75% |
| 2011 | 7,709 | 1,061 | 102% | 70% |
| Ave. (3) | 7,839 | 748 | 100% | 100% |

**Notes:**

(1) Source: http://climate.umn.edu/text/historical/mspcooldd.txt

(2) Heating degree day data includes the winter months prior to the listed year.

(3) Derived over 121 years of data.

(4) Energy consumption for cooling or heating should be changed by this amount to be normalized for the average temperature.

## Community Vehicle Miles Traveled

Updated: 5/15/12

| Roadway Classification | Miles of Roadway (1) | Annual Vehicle Miles Traveled (1) | | | | | | | | | 2001-2009 Average | % Change from 2001 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | | |
| Interstate (ISTH) | 8.0 | 214,625,110 | 210,569,595 | 214,359,755 | 220,111,668 | 221,705,380 | 220,640,675 | 220,640,675 | 220,929,312 | 221,427,250 | | |
| US Trunk Highway (USTH) | 0.0 | | | | | | | | | | | |
| Minnesota Trunk Highway (MNTH) | 5.9 | 78,280,455 | 76,520,060 | 77,897,205 | 82,078,428 | 82,672,500 | 81,208,850 | 81,208,850 | 78,732,456 | 78,839,270 | | |
| County State Aid Highway (CSAH) | 18.8 | 137,895,905 | 148,688,955 | 144,175,365 | 147,977,094 | 139,146,395 | 139,428,540 | 136,604,535 | 136,019,874 | 127,126,580 | | |
| Municipal State Aid Street (MSAS) | 44.1 | 86,711,590 | 96,555,275 | 94,251,760 | 95,995,944 | 98,099,590 | 98,586,865 | 95,014,245 | 93,724,548 | 94,028,745 | | |
| Municipal Streets (MUN) | 190.2 | 45,113,270 | 47,140,115 | 46,690,435 | 47,711,760 | 47,540,885 | 47,625,565 | 56,629,750 | 57,636,582 | 57,516,700 | | |
| Total VMT | 267.1 | 562,626,330 | 579,474,000 | 577,374,520 | 593,874,894 | 589,164,750 | 587,490,495 | 590,098,055 | 587,042,772 | 578,938,545 | 582,898,262 | 2.9% |
| Percent change from previous year | | | 3.0% | -0.4% | 2.9% | -0.8% | -0.3% | 0.4% | -0.5% | -1.4% | 0.4% | |
| GHG emission rate (tonnes/million VMT) (2) | | 674.9 | 667.3 | 660.0 | 653.3 | 647.3 | 638.1 | 634.0 | 630.4 | 627.0 | 648.0 | -7.1% |
| **GHG emissions (tonnes)** | | **379,735** | **386,656** | **381,054** | **387,954** | **381,374** | **374,863** | **374,133** | **370,073** | **363,012** | **377,651** | **-4.4%** |
| | | | | | | | | | | | | |
| **Per-capita rates:** | | | | | | -100.00% | | | | -100.00% | | |
| Population | | 60,434 | 60,900 | 61,355 | 61,425 | 61,262 | 61,048 | 61,393 | 61,081 | 61,047 | 61,105 | 1.0% |
| Per-capita VMT | | 9,310 | 9,515 | 9,410 | 9,668 | 9,617 | 9,623 | 9,612 | 9,611 | 9,483 | 9,539 | 1.9% |
| Percent change from previous year | | | 2.2% | -1.1% | 2.7% | -0.5% | 0.1% | -0.1% | 0.0% | -1.3% | 0.2% | |
| Per-capita GHG emissions (tonnes) | | 6.3 | 6.3 | 6.2 | 6.3 | 6.2 | 6.1 | 6.1 | 6.1 | 5.9 | 6.2 | -5.4% |
| Percent change from previous year | | | 1.0% | -2.2% | 1.7% | -1.4% | -1.4% | -0.8% | -0.6% | -1.9% | -0.6% | |

**Notes:**

(1) Source for 2001 to 2008: Minnesota Department of Transportation. http://www.dot.state.mn.us/roadway/data/reports/vmt.html. Miles of roadway vary slightly over time as designations of roads change. Listed in 2008 mileages.

(2) The rates were derived using the Clean Air Climate Protection software from ICLEI--Local Governments for Sustainability. The software uses the national fleet mix and vehicle occupancy rates generated annually by the US Environmental Protection Agency (see: http://www.icleiusa.org/action-center/tools/cacp-software). Consistent with the protocol established by the carbon baseline assessment produced for Dakota County, GHG emission rates generated by the CACP software are reduced by 3% for 2006-2010 to account for the state requirement that all gasoline and diesel fuels sold in the state include 10% and 5% ethanol respectively, and by 2.5% from 2001-2005 to account for the use of 10% ethanol (B5 diesel was introduced state-wide in late 2005).

## Estimate of Per-Capita Share of Emissions Attributable to the Minneapolis Saint Paul International Airport Operations

Updated: 5/19/12

| | | 2005 | 2006 | 2007 | 2008 | 2009 |
|---|---|---|---|---|---|---|
| Aircraft operations (1) | | | | | | |
| | Non-military | 530,009 | 472,958 | 450,753 | 447,929 | 430,498 |
| | Military | 2,230 | 2,040 | 2,289 | 2,115 | 1,897 |
| | Total | 532,239 | 474,998 | 453,042 | 450,044 | 432,395 |
| Measured CO2 emissions (tonnes) (2) | | 535,111 | n/a | 482,312 | n/a | n/a |
| Measured CO2 per total aircraft operations (tonnes) (3) | | 1.005 | | 1.065 | | |
| Assumed CO2 per total aircraft operation (tonnes) (4) | | 1.005 | 1.005 | 1.065 | 1.065 | 1.065 |
| Estimated CO2 emissions (tonnes) | | 535,111 | 477,561 | 482,312 | 479,120 | 460,331 |
| City allocation of airport emissions (tonnes) (5) | | | | | | |
| | Regional population (millions) | 2,810,179 | 2,821,779 | 2,769,433 | 2,785,272 | 2,818,758 |
| | Burnsville population | 61,262 | 61,048 | 61,393 | 61,081 | 61,047 |
| | Burnsville as a % of the regional population | 2.2% | 2.2% | 2.2% | 2.2% | 2.2% |
| | **Burnsville share of MSP emissions** | **11,665** | **10,332** | **10,692** | **10,507** | **9,970** |

**Notes:**

| | |
|---|---|
| 1 | An aircraft operation consists of the take-off or landing of an aircraft. Source: http://www.mspairport.com/msp/stats/ops_reports.aspx |
| 2 | Source for the CO2 emissions for 2005 and 2007: *Greenhouse Gas Report, Metropolitan Airports Commission, December 2008* . The analysis measured both aircraft operations within the defined airspace of the airport and on-site movements by aircraft and vehicles. |
| 3 | The report, *Greenhouse Gas Report, Metropolitan Airports Commission, December 2008,* did not account for military operations (Minnesota Air National Guard, 133rd Airlift Wing, and the United States Air Force Reserve, 934th Airlift Squadron), which total only about 0.4% of total operations. Assumes GHG emissions associated with military operations are approximately equal to non-military operations. |
| 4 | Assumes the per-operation CO2 emissions for 2006 equals the measured rate for 2005, and that the 6% higher rate measured in 2007 is more representative for 2008 and 2009 due to the more current increased passenger loading practices. |
| 5 | The extensive carbon footprint analysis prepared for the City and County of Denver found that the City of Denver's share of the Denver International Airport (DIA) emissions was approximately equal to the City's share of the regional population. Since the Denver metropolitan area is comparable in population and size to the Twin Cities metropolitan area, Burnsville's share of the Twin Cities' regional population is a reasonable surrogate to estimate the City's share of emissions associated with operations at MSP Airport. |

## GHG Emissions Associated with Rail Operations

Updated: 10/22/10

| Railroad | Fuel Cons. per Mile (gal diesel) | Length (Miles) | End Points (see Notes) | Annual Fuel Consumption | CO2 (tonnes) (5) |
|---|---|---|---|---|---|
| **2009** | | | | | |
| CP Rail (and Soo Line and Milwaukee Road) (1) | 9.1 | 2.5 | 3 | 23 | 0.2 |
| Union Pacific (and C & NW) (2) | 7,633 | 5.9 | 4 | 44,731 | 450 |
| **Freight rail subtotal** | | **8.4** | | **44,754** | **450** |
| | | | | | |
| **2005** | | | | | |
| CP Rail (which bought Soo Line and Milwaukee Road) (1) | 9.1 | 2.5 | 3 | 23 | 0.2 |
| Union Pacific and C & NW (2) | 10,368 | 5.9 | 4 | 60,756 | 611 |
| **Freight rail subtotal** | | **8.4** | | **60,779** | **611** |

**Notes:**

| | |
|---|---|
| 1 | The Bass Lake Spur had 0.01 MGT of traffic in 2007, which translates into an annual fuel use value of 9.12 gallons per route mile. Source: Mathew Harrell, email dated 9/23/10. Fuel consumption is assumed to be relatively stable from year to year. CP Rail contacts: Michelle Bergin, michelle.bergin@ dnr.ga.us; Mathew Harrell, Matthew.Harrell@Illinois.gov, Denise Bassett, denise_bassette@cpr.ca; Grete Bridgewater, grete_bridgewater@cpr.ca; Ken Roberge, ken_roberge@cpr.ca. |
| 2 | Union Pacific data is the basis for the contact is Jon Germer, mjgermer@up.com |
| 3 | CP Rail (Bass Lake Spur): From border of Savage/Burnsville, Scott/Dakota counties on northwest at 132 St (extended) in Burnsville to 160th St. on the south |
| 4 | UP: From border of Savage/Burnsville, Scott/Dakota counties on northwest just north of MN Hwy 13 to border with Eagan just west of MN Hwy 77 on the northeast. |

## GHG Emissions Associated with Minnesota River Operations

Updated: 10/22/10

| | Length (mi) | Trips | Tons | Ton-Miles | Fuel consumption (3) | CO2e (tonnes) |
|---|---|---|---|---|---|---|
| **2005** | | | | | | |
| **U.S. Salt trip components: (1)** | | | | | | |
| Towboat with loaded barge from St. Paul to staging area (2) | 5.0 | 30 | 1,500 | 225,000 | 438 | |
| Towboat with loaded barge from staging area to U.S. Salt | 0.5 | 30 | 1,500 | 22,500 | 44 | |
| Towboat return to staging area | 0.5 | 30 | | | 22 | |
| Towboat to U.S. Salt, towboat plus empty barge to St. Paul | 5.0 | 30 | | | 219 | |
| Total | 11.0 | 30 | | | 722 | 7.4 |
| **Other river traffic, 2005** | | | | | | |
| Tons of cargo moved by river barge along Burnsville (5) | 5.85 | | 3,018,613 | 17,658,886 | | |
| Ton-miles of empty barges moved by river barge along Burnsville (5) | | | | 2,688,000 | | |
| Total | | | | 20,346,886 | 39,585 | 405.6 |
| **Total CO2e** | | | | | | 413 |
| **CO2e Attributable to Burnsville (tonnes) (6)** | | | | | | **206** |
| **2009** | | | | | | |
| **U.S. Salt trip components: (1)** | | | | | | |
| Towboat with loaded barge from St. Paul to staging area (2) | 5.0 | 30 | 1,500 | 225,000 | 438 | |
| Towboat with loaded barge from staging area to U.S. Salt | 0.5 | 30 | 1,500 | 22,500 | 44 | |
| Towboat return to staging area | 0.5 | 30 | | | 22 | |
| Towboat to U.S. Salt, towboat plus empty barge to St. Paul | 5.0 | 30 | | | 219 | |
| Total | 11.0 | 30 | | | 722 | 7.4 |
| **Other river traffic, 2009** | | | | | | |
| Tons of cargo moved by river barge along Burnsville (5) | 5.85 | | 2,777,677 | 16,249,410 | | |
| Ton-miles of empty barges moved by river barge along Burnsville (5) | | | | 2,688,000 | | |
| Total | | | | 18,937,410 | 36,843 | 377.5 |
| **Total CO2e** | | | | | | 385 |
| **CO2e Attributable to Burnsville (tonnes) (6)** | | | | | | **192** |

| **Emission Factors for Ships and Boats (4)** | **GHG Emission Factors** | **Global Warming Potential** | **CO2e (g per gal)** |
|---|---|---|---|
| CO2 (g/gal) | 10,150 | 1 | 10,150.0 |
| N2O (g/gal) | 0.26 | 310 | 80.6 |
| CH4 (g/gal) | 0.74 | 21 | 15.5 |
| Total (g/gal) | | | 10,246 |

| Notes: | |
|---|---|
| 1 | Source: Conversation with Hokan Miller, U.S. Salt C. (6/28/10). Assumes one towboat per barge and average of 30 trips with loaded barges to U.S. Salt per year. Average loaded barge weight is 1,500 tons. |
| 2 | The staging area of salt-laden barges is about 1/2 mile up river, within the Burnsville city limits. |
| 3 | Fuel consumption at 514 ton-miles per gallon. Source: *Environmental Impacts of a Modal Shift* , Minnesota Department of Transportation, January, 1991. Assumes towboat displacement approximately equal to a loaded barge (1,500 tons) and that ton-miles per gallon will double in this case and when there is a towboat plus empty barge. |
| 4 | Source: Table G.9 and Table G.14: *International Local Government Greenhouse Gas Emissions Analysis Protocol.* |
| 5 | Source: Richard Lambert, Ports and Waterways, Minnesota Department of Transportation, emails dated 8/6/10 and 9/8/10. |
| 6 | Since the Minnesota River forms the border between the cities of Burnsville and Bloomington, only half of the CO2e emissions are attributable to each city. |

## Community Solid Waste Management

Updated: 5/19/12

Municipal solid waste (MSW) in tons unless otherwise noted. Greenhouse gas (GHG) emissions are in metric tonnes.

| | 2005 | 2009 | 2011 |
|---|---|---|---|
| **Dakota County (1)** | | | |
| Population (thousands) | 381.3 | 401.7 | 398.6 |
| Total MSW managed (Form II, Line 6, thousands of tons) (2) | 421.2 | 454.5 | 463.8 |
| Per-capita MSW managed | 1.10 | 1.13 | 1.16 |
| Processing/disposal methods: (2) | | | |
| MSW processed at resource recovery facilities (Form II, Line 2, thousands of tons) | 46.6 | 44.5 | 35.6 |
| Processed as a % of total MSW managed | 11% | 10% | 8% |
| Total recycled (Form II, Line 1, thousands of tons) | 172.3 | 229.5 | 239.6 |
| Recycled as a % of total MSW managed (3) | 41% | 51% | 52% |
| Land disposal of MSW (Form II, Line 3, thousands of tons) | 199.8 | 173.1 | 180.5 |
| Land disposal as a % of total MSW managed | 47% | 38% | 39% |
| **Methane recovery calculation: (4)** | | | - |
| Land disposal of MSW (Form II, Line 3, thousands of tons) | 199.8 | 173.1 | 180.5 |
| Unprocessed MSW to landfills with methane recovery (5) | 199.8 | 173.1 | 180.5 |
| Methane recovery factor (6) | 75% | 75% | 75% |
| **Burnsville (7)** | | | - |
| Population | 61,262 | 61,047 | 61,110 |
| Estimated total MSW managed | 67,668 | 69,069 | 71,111 |
| Per-capita MSW managed | 1.10 | 1.13 | 1.16 |
| Processing/disposal methods: | | | |
| Estimated MSW processed via incineration | 7,494 | 6,756 | 5,451 |
| Estimated processed as a % of MSW managed | 11% | 10% | 8% |
| Estimated MSW recycled | 27,679 | 34,885 | 36,744 |
| Estimated recycled as a % of MSW managed | 41% | 51% | 52% |
| Estimated land disposal of MSW | 32,105 | 26,312 | 27,670 |
| Estimated land disposal as a % of MSW managed | 47% | 38% | 39% |
| **GHG emission estimates (tonnes) (7)** | | | |
| GHG emission rate for incineration (tonnes per ton incinerated) (8) | 0.236 | 0.236 | 0.236 |
| Emissions from incinerating MSW | 1,769 | 1,594 | 1,286 |
| GHG emission rate for landfilling (tonnes per ton landfilled) (8) | 0.244 | 0.244 | 0.244 |
| Emissions from landfilling MSW | 7,836 | 6,422 | 6,754 |
| **Total estimated GHG emissions** | **9,605** | **8,017** | **8,040** |
| Per-capita GHG emissions | 0.2 | 0.1 | 0.1 |

**Notes:**

1. Source: County Certification/Annual Report, 2005 and 2009 for Dakota County.
2. The total of the 3 selected processing/disposal methods (incineration, recycling, and landfilling) do not equal the "Estimated total MSW managed" because the CERT reports require certain small fractions of the waste stream to be added or subtracted (Process Residuals and Problem Materials). The disposal, recycling, or processing of these fractions are not significant sources of GHG emissions.
3. When estimating total recycling, the SCORE reports show a 5% credit for composting waste in the county. Waste collected for composting is not counted in the MSW totals. It is not a factor for estimating GHG emissions because proper composting of organic materials generates a net zero amount of GHG emissions.
4. To estimate the GHG emissions from landfilled waste, methane recovery must be accounted for because methane is the primary GHG emission from landfills.
5. All waste landfilled in Minnesota went to landfills with methane recovery plus waste that went to the Central Disposal facility in Iowa and the waste that went to Wisconsin landfills.
6. Staff from the MPCA recommended using a 75% methane recovery rate for unprocessed MSW in a landfill with methane recovery. The "Methane recovery rate" figure is derived by multiplying the percent of the total landfilled waste that is deposited in landfills with methane recovery times the MPCA average recovery rate of 75% for methane.
7. Estimated tons for the city are calculated as a percent of the total tons of MSW collected in the County. The results are the same if per-capita rates are used instead.
8. The Clean Air Climate Protection (CACP) software, developed by ICLEI--Local Governments for Sustainability, estimates the GHG emissions resulting from landfilling and from the incineration of the MSW collected for processing. The software incorporates the waste composition percentages from the 2000 MPCA waste composition study and calculates the GHG emissions based on the following: y= -976.3x + 976.3 where y=GHG emissions and x=% Methane Recovery Factor. The emission rates for landfilling and incineration do not change for the two study years.

## Waste Composition

Updated: 6/24/10

| Category (5) | 2000 MPCA Study (1) | 2005 Iowa Study (2) | Change |
|---|---|---|---|
| Paper products | 34.2% | 33.0% | -1.2% |
| Food waste (3) | 12.9% | 13.0% | 0.1% |
| Plant debris | 2.9% | 3.1% | 0.2% |
| Wood/textiles (4) | 11.4% | 12.9% | 1.5% |
| All other waste | 38.6% | 38.0% | -0.6% |
| Total | 100.0% | 100.0% | |

**Notes:**

(1) Source: Final Report, *Statewide MSW Composition Study: A Study of Discards in the State of Minnesota* , Solid Waste Management Coordinating Board, Minnesota Pollution Control Agency, March 2000.

(2) Iowa Statewide Waste Characterization Study, Iowa Department of Natural Resources, February 2006, http://www.iowadnr.gov/waste/sw/files/wastechar05.pdf

(3) Includes diapers

(4) Includes "other organic material"

(5) CACP refers to the Clean Air Climate Protection software developed by ICLEI--Local Governments for Sustainability. The 2000 waste composition study by the MPCA is the most recent study of its kind in Minnesota. Since the more recent 2005 Iowa waste composition study did not vary more than 1.5% from the older Minnesota study, the MPCA study was used to estimate GHG emissions.

## City Energy Use

Updated: 5/22/12

| Category (1) | 2005 | | 2009 | | Change from 2005 | | 2011 | | Change from 2009 | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Amount | CO2e | Amount | CO2e | CO2e | % Change | Amount | CO2e | CO2e | % Change |
| **Buildings and Facilities (99 accounts in 2011)** | | | | | | | | | | |
| Buildings, incl. on-site lighting: | | | | | | | | | | |
| Electricity (12 accounts) | 4,183,566 | 3,807 | 5,760,259 | 4,838 | 1,031 | 27% | 5,350,184 | 4,317 | (521) | -11% |
| Natural gas (10 accounts) | 142,288 | 776 | 195,059 | 1,064 | 288 | 37% | 120,054 | 655 | (409) | -38% |
| Emergency power generators (gal. diesel, 1 account for 5 to 6 generators) | 3,826 | 39 | 1,075 | 11 | (28) | -72% | 4,595 | 47 | 36 | 327% |
| Subtotal CO2e | | 4,622 | | 5,914 | 1,291 | 28% | | 5,019 | (894) | -15% |
| Park and Recreation Facilities, incl. on-site lighting and sprinkling: | | | | | | | | | | |
| Electricity (52 accounts) | 346,947 | 309 | 459,173 | 367 | 58 | 19% | 517,578 | 398 | 31 | 9% |
| Natural gas (11 accounts) | 5,900 | 32 | 7,306 | 40 | 8 | 24% | 8,421 | 46 | 6 | 15% |
| Subtotal CO2e | | 342 | | 407 | 65 | 19% | | 444 | 37 | 9% |
| Other Facilities: | | | | | | | | | | |
| Electricity (11 accounts) | 138,603 | 126 | 142,966 | 120 | (6) | -5% | 100,047 | 81 | (39) | -33% |
| Natural gas (2 accounts) | 424 | 2 | 14 | 0.1 | (2) | -97% | 19 | 0.1 | 0 | 36% |
| Subtotal CO2e | | 128 | | 120 | (8) | -6% | | 81 | (39) | -33% |
| **Subtotal Buildings and Facilities** | | **5,092** | | **6,441** | **1,348** | **26%** | | **5,545** | **(896)** | **-14%** |
| **Streetlights (incl. sprinklers on light pole) (33 accounts)** | 1,785,510 | **1,540** | 2,031,962 | **1,572** | 33 | 2% | 2,078,099 | **1,560** | (12) | **-1%** |
| **Signals and flashers (49 accounts)** | 390,417 | **345** | 179,147 | **141** | (205) | -59% | 163,694 | **121** | (20) | **-14%** |
| **Water Utility, Potable Water (41 accounts in 2011):** | | | | | | | | | | |
| Electricity (29 accounts) | 14,404,255 | 11,147 | 17,945,296 | 11,441 | 294 | 3% | 11,587,449 | 7,320 | (4,122) | -36% |
| Percent of water sales to other cities | 0.3% | | 5.2% | | | | 18.5% | | | 13% |
| Net electricity (2) | 14,355,422 | 11,109 | 17,009,678 | 10,845 | | | 9,440,330 | 5,963 | (4,881) | -45% |
| Natural gas (12 accounts) | 122,157 | 667 | 47,985 | 262 | | | 118,759 | 648 | | |
| Net natural gas (2) | 121,743 | 664 | 45,483 | 248 | (416) | -63% | 96,753 | 528 | 280 | 113% |
| Subtotal CO2e | | 11,774 | | 11,093 | (681) | -6% | | 6,491 | (4,602) | -41% |
| **Water Utility, Sanitary Sewers (21 accounts in 2011):** | | | | | | | | | | |
| Electricity (20 accounts) | 150,403 | 135 | 145,331 | 119 | (16) | -12% | 191,465 | 150 | 31 | 26% |
| Percent of water sales to other cities | 0.3% | | 5.2% | | | | 18.5% | | | |
| Net electricity (2) | 149,893 | 135 | 137,754 | 113 | | | 155,987 | 123 | 10 | 8% |
| Natural gas (1 account) | 1,449 | 8 | - | - | | | 67 | 0.4 | 0 | |
| Net natural gas (2) | 1,444 | 8 | | | (8) | -100% | 55 | 0.3 | | |
| Subtotal CO2e | | 143 | | 113 | (29) | -21% | | 123 | 10 | 9% |
| **Totals (243 accounts)** | | | | | | | | | | |
| Net electricity (206 accounts in 2011) | 21,350,359 | 17,371 | 25,720,938 | 17,996 | 625 | 3.6% | 17,805,919 | 12,563 | (5,433) | -30% |
| Natural gas (36 accounts) | 271,799 | 1,483 | 247,862 | 1,353 | (131) | -9% | 225,302 | 1,230 | (123) | -9% |
| Diesel fuel for generators (1 account) | | 39 | | 11 | (28) | -72% | | 47 | 36 | 327% |
| **Total CO2e** | | **18,894** | | **19,359** | **466** | **2.5%** | | **13,839** | **(5,520)** | **-29%** |

**Notes:**

1 Electricity amounts are in kWh, natural gas amounts in therms, diesel amounts in gal.

2 Figures for electricity and natural gas consumption to produce potable water and manage sanitary sewer discharges are reduced by the percent of potable water sold to other cities.

## Electricity Consumption by City Operations

Updated: 5/21/12

| Categories | Account # | City Fund | Utility | 2005 Consumption (kWh) | 2005 CO2e Rate (tonnes per kWh) | 2005 CO2e (tonnes) | 2009 Consumption (kWh) | 2009 CO2e Rate (tonnes per kWh) | 2009 CO2e (tonnes) | Change in CO2e Tonnes | Change in CO2e % Change |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Buildings (incl. on-site lighting):** | | | | | | | | | | | |
| 100 CIVIC CENTER PKWY - MISC STREET LIGHTING - CITY HALL PARKING LOT LIGHTS | 101-4634-43601 | | Xcel | not metered | | | not metered | | | | |
| City Garage/Youth Center - 13101 NICOLLET AVE / 75 CIVIC CTR PKWY | 1128610 - Prem #10384 | 101-4155-436.01 | DEA | 163,200 | 0.00091 | 148.5 | 143,210 | 0.00084 | 120.3 | (28.2) | -19% |
| CIVIC CENTER, CITY HALL - 100 CIVIC CTR PKWY | 1990639- Prem #65703 | 101-4151-436.01 | DEA | 1,008,576 | 0.00091 | 917.8 | 848,736 | 0.00084 | 712.9 | (204.9) | -22% |
| FIRE STATION I - 14011 BURNHAVEN DR | 1012780- Prem #883 | 101-4159-436.01 | DEA | 152,640 | 0.00091 | 138.9 | 124,240 | 0.00084 | 104.4 | (34.5) | -25% |
| FIRE STATION II - 12155 PARKWOOD DR | 1971209 - Prem #64234 | 101-4153-436.01 | DEA | 102,880 | 0.00091 | 93.6 | 163,280 | 0.00084 | 137.2 | 43.5 | 47% |
| FIRE TRAINING FACILITY, 12321 RIVER RIDGE BLVD | 302869531 | 101-4161-436.01 | Xcel | 1,256 | 0.00072 | 0.9 | 1,886 | 0.00055 | 1.0 | 0.1 | 15% |
| ICE CENTER - 251 CIVIC CTR PKWY | 1251891 - Prem #17250 | 603-4760-436.01 | DEA | 2,162,304 | 0.00091 | 1,967.7 | 2,080,224 | 0.00084 | 1,747.4 | (220.3) | -11% |
| ICE CENTER - 251 CIVIC CTR PKWY | 4609566 - Prem #116038 | 603-4760-436.01 | DEA | New meter, 2010 | | | New meter in 2010 | | | | |
| MAINTENANCE FACILITY - 13713 Frontier Court (expanded 2008) | 2144533- Prem #77500 | 101-4164-436.01 | DEA | 561,600 | 0.00091 | 511.1 | 548,928 | 0.00084 | 461.1 | (50.0) | -10% |
| MVTA PARK & RIDE - 12293 NICOLLET AVE S - | 2148393 - Prem #77691 | 101-4635-436.01 | DEA | 22,450 | 0.00091 | 20.4 | 9,810 | 0.00084 | 8.2 | (12.2) | -60% |
| PARKING RAMP HEART OF THE CITY - 12751 PILLSBURY AVE | 3724960 - Prem #108345 | 101-4166-436.01 | DEA | Opened mid 2009 | | | 422,016 | 0.00084 | 354.5 | 354.5 | |
| Performing Arts Center (2) | 444448-5 | | DEA | Opened 1/09 | | | 1,399,680 | 0.00084 | 1,175.7 | 1,175.7 | |
| PAC parking deck LIGHT - 101 TRAVELERS TRAIL/PILLSBURY AVE | 4422663 - Prem #115268 | 101-4166-436.01 | DEA | | | | 13,879 | 0.00084 | 11.7 | 11.7 | |
| XMAS TREE LIGHTS CIVIC CTR / NICOLLET AVE | 2712669- Prem #94674 | 101-4155-436.01 | DEA | 8,660 | 0.00091 | 7.9 | 4,370 | 0.00084 | 3.7 | (4.2) | -53% |
| **Subtotal (12 accounts in 2011)** | | | | **4,183,566** | | **3,806.8** | **5,760,259** | | **4,838** | **1,031.3** | **27%** |
| **Park and Recreation Facilities (incl. on-site lighting and sprinkling): (3)** | | | | | | | | | | | |
| SIOUX TRAIL ICE RINK, TENNSIOUX PARK LIGHTING, 2701 RIVER HILLS DR | 302579932 | | Xcel | 712 | 0.00072 | 0.5 | 1,970 | 0.00055 | 1.1 | 0.6 | 111% |
| 2701 RIVER HILLS DR ICE RINK TENNSIOUX PARK LIGHTING | 304203402 | 101-4720-43601 | Xcel | | | | | | | | |
| ALIMAGNET PARK - ALIMAGNET AVE | 3209137 - Prem #101744 | 101-4720-436.01 | DEA | 22,509 | 0.00091 | 20.5 | 17,959 | 0.00084 | 15.1 | (5.4) | -26% |
| ALIMAGNET PARK - CTY RD 11 | 1392364 - Prem #27607 | 101-4154-436.01 | DEA | 1,570 | 0.00091 | 1.4 | 2,827 | 0.00084 | 2.4 | 0.9 | 66% |
| ALIMAGNET PARK (BASEBALL FIELD)- CTY RD 11 | 1589928 - Prem #41645 | 101-4720-436.01 | DEA | Didn't exist | | | 26,480 | 0.00084 | 22.2 | 22.2 | |
| ALIMAGNET PARK OFFICE - 1200 ALIG. PKWY | 1044908 - Prem #3681 | 101-4154-436.01 | DEA | 16,433 | 0.00091 | 15.0 | 10,477 | 0.00084 | 8.8 | (6.2) | -41% |
| ALIMAGNET YOUTH CTR SHED - CTY RD 11 | 1098227 - Prem #7887 | 101-4720-436.01 | DEA | 10,330 | 0.00091 | 9.4 | 9,660 | 0.00084 | 8.1 | (1.3) | -14% |
| BALLFIED LIGHTS/IRRIGATION, 12702 VINCENT AVE S | 303172340 | | Xcel | 1,207 | 0.00072 | 0.9 | 1,405 | 0.00055 | 0.8 | (0.1) | -11% |
| BALLFIELD ALIMAGNET PARK - ALIMAGNET PARKWAY | 2710846 - Prem #94608 | 101-4720-436.01 | DEA | Didn't exist | | | 20,800 | 0.00084 | 17.5 | 17.5 | |
| BALLFIELD LIGHTS # 1 & IRRIGATION, 12700 VINCENT AVE S | 302194651 | | Xcel | 5,635 | 0.00072 | 4.1 | 5,110 | 0.00055 | 2.8 | (1.2) | -31% |
| BALLFIELD # 2 @ 12700 VINCENT AVENUE | 302636752 | 101-4720-43601 | Xcel | | | | | | | | |
| BICENTENNIAL GARDENS - 130TH & NICOLLET | 1423664 - Prem #30079 | 101-4720-436.01 | DEA | 12,400 | 0.00091 | 11.3 | 11,060 | 0.00084 | 9.3 | (2.0) | -18% |
| BIRNAMWOOD GOLF COURSE | 1018175 - Prem #1339 | 605-4780-436.01 | DEA | 19,189 | 0.00091 | 17.5 | 17,786 | 0.00084 | 14.9 | (2.5) | -14% |
| BLACKDOG PK - LIGHTING, 10945 TERRITORIAL DR | 302498371 | | Xcel | 552 | 0.00072 | 0.4 | 371 | 0.00055 | 0.2 | (0.2) | -49% |
| BLACKDOG PK, 10950 TERRITORIAL DR | 303870430 | | Xcel | 8,560 | 0.00072 | 6.2 | 5,680 | 0.00055 | 3.1 | (3.0) | -49% |
| CIVIC CENTER PARK HOCKEY RINK - 260 CIVIC CTR PKWY | 1296581 - Prem #20087 | 101-4720-436.01 | DEA | 4,080 | 0.00091 | 3.7 | 3,920 | 0.00084 | 3.3 | (0.4) | -11% |
| CROSSTOWN W PARK/401 TRVLRS TRAIL E | 3585288 - Prem #106500 | 101-4720-436.01 | DEA | 43,542 | 0.00091 | 39.6 | | 0.00084 | | | |
| CRYSTAL LAKE BEACH HOUSE-15350 LAC LAVON DRIVE | 1379668 - Prem #26549 | 101-4720-436.01 | DEA | 19,610 | 0.00091 | 17.8 | 13,090 | 0.00084 | 11.0 | (6.8) | -38% |
| DOG PARK -1200 ALIMAGNET AVE | 3930583 - Prem #112204 | 101-4720-436.01 | DEA | Didn't exist | | | 26,973 | 0.00084 | 22.7 | 22.7 | |
| ECHO HILLS PK TENNIS COURT -1400 140TH ST E | 1369735 - Prem #25765 | 101-4720-436.01 | DEA | 1,080 | 0.00091 | 1.0 | | 0.00084 | | | |
| FIELD #5 LIGHTS - 12700 VINCENT AVE S LIGHTS | 303996826 | | Xcel | Didn't exist | | | 12,800 | 0.00055 | 7.0 | 7.0 | |
| FIREMUSTER CONCESSIONS - NICOLLET AVE | 1623503 - Prem #44079 | 101-4720-436.01 | DEA | 560 | 0.00091 | 0.5 | 1,000 | 0.00084 | 0.8 | 0.3 | 65% |
| FOUNTAIN, RESTROOMS NICOLLET COMMONS PARK - 126TH/NIC AVE | 4488318 - Prem #114466 | 101-4168-436.01 | DEA | Didn't exist | | | 40,839 | 0.00084 | 34.3 | 34.3 | |
| GOLF COURSE - 12424 PARKWOOD DR | 2079713 - Prem #72412 | 605-4780-436.01 | DEA | 5,590 | 0.00091 | 5.1 | 6,270 | 0.00084 | 5.3 | 0.2 | 4% |
| ICE RINK - 13512 KNOB HILL RD | 1108935 - Prem #8829 | 101-4720-436.01 | DEA | 4,708 | 0.00091 | 4.3 | 4,886 | 0.00084 | 4.1 | (0.2) | -4% |
| ICE RINK - TIMBERLAND KNOLLS ACRES | 1093475 - Prem #1093475 | 101-4720-436.01 | DEA | 3,650 | 0.00091 | 3.3 | 5,920 | 0.00084 | 5.0 | 1.7 | 50% |
| ICE RINK - TIMBERLAND KNOLLS ACRES | 1093475 - Prem #7506 | 101-4720-436.01 | DEA | New meter in 2010 | | | New meter in 2010 | | | | |
| ICE RINK NORTHVIEW PARK - 150TH & CTY RD 5 | 1108968 - Prem #8832 | 101-4720-436.01 | DEA | 4,250 | 0.00091 | 3.9 | 4,700 | 0.00084 | 3.9 | 0.1 | 2% |
| IRRIGATION GOLF COURSE - 12424 PARKWOOD DR - | 1018050 - Prem #1329 | 605-4780-436.01 | DEA | 21,398 | 0.00091 | 19.5 | 20,055 | 0.00084 | 16.8 | (2.6) | -13% |
| LAC LAVON SHELTER - 15501 LAC LAVON DR | 2004760 - Prem #66312 | 101-4720-436.01 | DEA | 1,209 | 0.00091 | 1.1 | 1,076 | 0.00084 | 0.9 | (0.2) | -18% |
| NEIL PARK LIGHTING - BURNS PARKWAY/UPTON | 2175701 - Prem #79378 | 101-4720-436.01 | DEA | 33,400 | 0.00091 | 30.4 | 31,584 | 0.00084 | 26.5 | (3.9) | -13% |
| NEILL PARK SHELTER - OLIVER AVE S | 1207208 - Prem #15000 | 101-4720-436.01 | DEA | Not metered | | | Not metered | | | | |
| NEILL PARK TENNIS COURTS - UPTON AVE | 1265412 - Prem #17955 | 101-4720-436.01 | DEA | Not metered | | | Not metered | | | | |
| NICOLLET COMMONS PARK - 12520 NICOLLET AVE | 3577780 - Prem #107912 | 101-4168-436.01 | DEA | Didn't exist | | | 26,809 | 0.00084 | 22.5 | 22.5 | |
| NICOLLET COMMONS PARK - 12520 NICOLLET AVE-(SPCL EVNT ELECT) | 4250239 - Prem #114753 | 101-4168-436.01 | DEA | Didn't exist | | | 2 | 0.00084 | 0.0 | 0.0 | |
| NICOLLET COMMONS PARK IRRIGATION, 12520 NICOLLET AVE | 302359925 | | Xcel | Didn't exist | | | 4 | 0.00055 | 0.0 | 0.0 | |
| NORTH RIVER HILLS PARK, 11501 19TH AVE S | 303445032 | | Xcel | 14,160 | 0.00072 | 10.2 | 32,640 | 0.00055 | 18.0 | 7.8 | 76% |
| PAHA SAPA ICE RINK - 15016 CHICAGO AVE S | 1354240 - Prem #24500 | 101-4720-436.01 | DEA | 14,000 | 0.00091 | 12.7 | 10,974 | 0.00084 | 9.2 | (3.5) | -28% |
| PARK LIGHT - SHELLY LANE | 2008282 - Prem #66541 | 101-4720-436.01 | DEA | 10 | 0.00091 | 0.0 | 10 | 0.00084 | 0.0 | (0.0) | -8% |
| PARKING LOT - LAC LAVON | 1587906 - Prem #41447 | 101-4720-436.01 | DEA | 10,660 | 0.00091 | 9.7 | 12,500 | 0.00084 | 10.5 | 0.8 | 8% |
| RED OAK PARK - 12030 R.H. DR | 1587724 - Prem #41430 | 101-4720-436.01 | DEA | 36,624 | 0.00091 | 33.3 | 41,664 | 0.00084 | 35.0 | 1.7 | 5% |
| SECURITY LIGHT - NORTHVIEW PK (Tennis Court) COUNTY RD 5 | 1546829 - Prem #38516 | 101-4720-436.01 | DEA | 980 | 0.00091 | 0.9 | 360 | 0.00084 | 0.3 | (0.6) | -66% |
| SECURITY LITE - ALIMAGNET PARK COUNTY RD 11 | 1595644 - Prem #41881 | 101-4720-436.01 | DEA | 3,870 | 0.00091 | 3.5 | 5,360 | 0.00084 | 4.5 | 1.0 | 28% |
| SECURITY LITE - WOOD PARK PARKING LOT | 1656115 - Prem #45987 | 101-4720-436.01 | DEA | 1,400 | 0.00091 | 1.3 | 640 | 0.00084 | 0.5 | (0.7) | -58% |

**Electricity Consumption by City Operations**

Updated: 5/21/12

| Categories | Account # | City Fund | Utility | 2005 Consumption (kWh) | 2005 CO2e Rate (tonnes per kWh) | 2005 CO2e (tonnes) | 2009 Consumption (kWh) | 2009 CO2e Rate (tonnes per kWh) | 2009 CO2e (tonnes) | Change in CO2e Tonnes | Change in CO2e % Change |
|---|---|---|---|---|---|---|---|---|---|---|---|
| SPRINKLER - 134 E TRAVELERS TRAIL E | 3634037 - Prem #109177 | 101-4165-436.01 | DEA | 2,387 | 0.00091 | 2.2 | 4 | 0.00084 | 0.0 | (2.2) | -100% |
| SPRINKLER - 600 NICOLLET BLVD E | 3921632 - Prem #112075 | 101-4720-436.01 | DEA | 50 | 0.00091 | 0.0 | 50 | 0.00084 | 0.0 | (0.0) | -8% |
| SPRINKLER ON LIGHT POLE -14250 JUDICIAL RD | 2144574 - Prem #77504 | 101-4635-436.01 | DEA | 12 | 0.00091 | 0.0 | 60 | 0.00084 | 0.1 | 0.0 | 362% |
| SPRINKLER (on light pole - HOC) HAROLD/NICOLLET | 2786903 - Prem #95852 | 101-4165-436.01 | DEA | 40 | 0.00091 | 0.0 | 64 | 0.00084 | 0.1 | 0.0 | 48% |
| SPRINKLER METER, 150 1/2 E 125TH ST | 303225795 | | Xcel | Not metered | | | Not metered | 0.00055 | | | |
| SUNSET POND METER, 13675 W Preserve Blvd - W | 00 8945 4410 - 13675 W Preserve Blvd- Walking | | MVEC | 120 | 0.00083 | 0.1 | 120 | 0.00083 | 0.1 | - | 0% |
| TERRACE OAKS W PARK SHELTER - 12801 CTY 11 | 1646165 - Prem #45513 | 101-4720-436.01 | DEA | 4,930 | 0.00091 | 4.5 | 3,790 | 0.00084 | 3.2 | (1.3) | -29% |
| TUXEDO PARK/JERRARD POND - 3159 BVILLE PKWY | 1925825 - Prem #61558 | 607-4660-436.01 | DEA | 3,853 | 0.00091 | 3.5 | 2,505 | 0.00084 | 2.1 | (1.4) | -40% |
| VISTA VIEW ICE RINK, 1501 CIRCLE LN | 303721368 | | Xcel | 3,178 | 0.00072 | 2.3 | 6,113 | 0.00055 | 3.4 | 1.1 | 47% |
| WARMING HOUSE - 12650 PARK DR/TERR OAKS E | 2011096 - Prem #66804 | 101-4720-436.01 | DEA | 5,330 | 0.00091 | 4.9 | 7,136 | 0.00084 | 6.0 | 1.1 | 24% |
| WARMING HOUSE - S RIVER HILLS PK | 1918820 - Prem #61164 | 101-4720-436.01 | DEA | 3,881 | 0.00091 | 3.5 | 5,640 | 0.00084 | 4.7 | 1.2 | 34% |
| **Subtotal (52 accounts in 2011)** | | | | **346,947** | | **309.4** | **459,173** | | **367.1** | **57.7** | **19%** |
| **Other Facilities:** | | | | | | | | | | | |
| CIVIL DEFENSE SIREN - 2401 HIGHLAND VIEW | 1498047 - Prem #35790 | 101-4460-436.01 | DEA | Not metered | | | Not metered | | | | |
| CIVIL DEFENSE SIREN - BUCK HILL RD | 1497197 - Prem #35732 | 101-4460-436.01 | DEA | Not metered | | | Not metered | | | | |
| CIVIL DEFENSE SIREN - BURNSVILLE PKWY W | 1578285 - Prem #40750 | 101-4460-436.01 | DEA | Not metered | | | Not metered | | | | |
| CIVIL DEFENSE SIREN - CHESTNUT CIR | 1498054 - Prem #35791 | 101-4460-436.01 | DEA | Not metered | | | Not metered | | | | |
| CIVIL DEFENSE SIREN - JUDICIAL RD | 1497189 - Prem #35731 | 101-4460-436.01 | DEA | Not metered | | | Not metered | | | | |
| CIVIL DEFENSE SIREN - PARK DR | 1285477 - Prem #19435 | 101-4460-436.01 | DEA | Not metered | | | Not metered | | | | |
| RADIO -COLONIAL HILLS (13525 RYANT LANE) | 1080902 - Prem #6473 | 101-4157-436.01 | DEA | 19,150 | 0.00091 | 17.4 | 21,580 | 0.00084 | 18.1 | 0.7 | 4% |
| RADIO COMM BLDG - 13500 HEATHER HILLS | 1563451 - Prem #39620 | 101-4157-436.01 | DEA | 103,623 | 0.00091 | 94.3 | 103,826 | 0.00084 | 87.2 | (7.1) | -8% |
| RADIO COMM BLDG - 15410 BUCK HILL RD | 2249803 - Prem #84326 | 101-4157-436.01 | DEA | 15,830 | 0.00091 | 14.4 | 17,560 | 0.00084 | 14.8 | 0.3 | 2% |
| SIREN - 630 134TH ST E | 2745370 - Prem #95473 | 101-4460-436.01 | DEA | Not metered | | | Not metered | | | | |
| SIREN - 911 140TH ST W | 2745347 - Prem #95464 | 101-4460-436.01 | DEA | Not metered | | | Not metered | | | | |
| UNMETERED MUNICIPAL SIREN, 14709 W BURNSVILLE PKWY | 00 8945 3610 - 14709 W Burnsville Pkwy | | MVEC | Not metered | | | Not metered | | | | |
| **Subtotal (11 accounts in 2011)** | | | | **138,603** | | **126.1** | **142,966** | | **120.1** | **(6.0)** | **-5%** |
| **Streetlights (incl. sprinklers on light pole) (3):** | | | | | | | | | | | |
| 12920 UPTON AVE S lighting | 303113501 | | Xcel | 2,806 | 0.00072 | 2.0 | 3,448 | 0.00055 | 1.9 | (0.1) | -6% |
| 13112 COUNTY ROAD 5 lighting | 303322145 | | Xcel | 233 | 0.00072 | 0.2 | 220 | 0.00055 | 0.1 | (0.0) | -28% |
| 300 HIGHWAY 13 E lighting | 302617584 | | Xcel | 3,671 | 0.00072 | 2.6 | 1,521 | 0.00055 | 0.8 | (1.8) | -68% |
| ARTS CENTER LIGHTS - 1200 ALIMAGNET PKWY | 4162137 - Prem #114380 | 101-4720-436.01 | DEA | 16,890 | 0.00091 | 15.4 | 16,998 | 0.00084 | 14.3 | (1.1) | -7% |
| CEDAR BRIDGE, 2820 HAYES DR lighting | 304157705 | | Xcel | Didn't exist | | | 573 | 0.00055 | 0.3 | 0.3 | |
| CITY OWNED LIGHTS N SIDE OF TRAVELERS TRAIL | 3936416 - Prem #112435 | 101-4165-436.01 | DEA | 3,672 | 0.00091 | 3.3 | 24,499 | 0.00084 | 20.6 | 17.2 | 516% |
| CTY RD 5 & CTY RD 34, 12755 CO RD 5 - lighting | 302628434 | | Xcel | 2,868 | 0.00072 | 2.1 | 2,985 | 0.00055 | 1.6 | (0.4) | -20% |
| FESTOON/RECEPTICLES, 3 E BURNSVILLE PKWY lighting | 303666823 | | Xcel | 8,307 | 0.00072 | 6.0 | 8,375 | 0.00055 | 4.6 | (1.4) | -23% |
| HAYES, 10903 27TH AVE S Lighting | 302999395 | | Xcel | 392 | 0.00072 | 0.3 | 400 | 0.00055 | 0.2 | (0.1) | -22% |
| INTERSECTION LIGHTING | 00 8945 1010 - Street Lights | | MVEC | 58,848 | 0.00083 | 48.9 | 62,124 | 0.00083 | 51.6 | 2.7 | 6% |
| LIGHTS - 1/S RIVER HILLS, 3/ALIG., 1/SKYLINE | 1525039 - Prem #37489 | 101-4720-436.01 | DEA | Not metered | | | Not metered | | | | |
| LIGHTS - 126th/PILLSBURY | 1073998 - Prem #106668 | 101-4634-436.01 | DEA | 11,051 | 0.00091 | 10.1 | 13,196 | 0.00084 | 11.1 | 1.0 | 10% |
| LIGHTS - 140TH ST W/ BURNHAVEN DR | 4394235 - Prem #115414 | 101-4634-436.01 | DEA | Didn't exist | | | 22,544 | 0.00084 | 18.9 | 18.9 | |
| LIGHTS - 14251 NEWTON AVE | 3959285 - Prem #112717 | 101-4634-436.01 | DEA | Didn't exist | | | 1,912 | 0.00084 | 1.6 | 1.6 | |
| LIGHTS - 143 ST W /BURNHAVEN DR | 4394227 - Prem #115413 | 101-4634-436.01 | DEA | Didn't exist | | | 37,588 | 0.00084 | 31.6 | 31.6 | |
| LIGHTS - 15501 LAC LAVON DRIVE - Athletic field | 4460218 - Prem #115680 | 101-4720-436.01 | DEA | Didn't exist | | | 19,968 | 0.00084 | 16.8 | 16.8 | |
| LIGHTS - BURNHAVEN DR TO BUCKHILL ON SOUTHCROSS DR | 4063525 - Prem #113432 | 101-4634-436.01 | DEA | Didn't exist | | | 66,479 | 0.00084 | 55.8 | 55.8 | |
| LIGHTS - COUNTY RD 42/COUNTY RD 5 | 4426524 - Prem #115494 | 101-4634-436.01 | DEA | Didn't exist | | | 26,268 | 0.00084 | 22.1 | 22.1 | |
| LIGHTS - CRYSTAL LAKE/BURNSVILLE DR | 4527883 - Prem #115751 | 101-4634-436.01 | DEA | Didn't exist | | | 2,878 | 0.00084 | 2.4 | 2.4 | |
| LIGHTS - NICOLLET/130TH | 2014900 - Prem #67165 | 101-4635-436.01 | DEA | 15,616 | 0.00091 | 14.2 | 4,589 | 0.00084 | 3.9 | (10.4) | -73% |
| LIGHTS - PLEASNT/BVLL PKWY | 4263620 - Prem #114809 | 101-4165-436.01 | DEA | Didn't exist | | | 40,356 | 0.00084 | 33.9 | 33.9 | |
| LIGHTS - PORTLAND/BURSVILLE PKWY | 4494290 - Prem #115709 | 101-4720-436.01 | DEA | Didn't exist | | | 3,459 | 0.00084 | 2.9 | 2.9 | |
| LIGHTS - SOUTHCROSS/EARLEY | 4394219 - Prem #115412 | 101-4634-43601 | DEA | Didn't exist | | | 19,466 | 0.00084 | 16.4 | 16.4 | |
| OVERHEAD INTERSECTION LIGHT - COUNTY RD 42/IRVING AVE S | 2009082 - Prem #66618 | 101-4635-436.01 | DEA | 3,652 | 0.00091 | 3.3 | 3,620 | 0.00084 | 3.0 | (0.3) | -9% |
| PROTECTIVE LIGHTING, 12101 RIVER RIDGE BLVD | 302939395 | | Xcel | 850 | 0.00072 | 0.6 | 868 | 0.00055 | 0.5 | (0.1) | -22% |
| SOUTHCROSS/EARLEY LIGHTS | 4394219 (NA) | 101-4634-436.01 | DEA | | 0.00091 | - | | 0.00084 | - | - | |
| STREET LIGHT (EAST OF 35W BRIDGE, SOUTH OF CR42) - COUNTY RD 42 | 3128436 - Prem #100004 | 101-4634-436.01 | DEA | 28,910 | 0.00091 | 26.3 | 22,350 | 0.00084 | 18.8 | (7.5) | -29% |
| STREET LIGHT (BY RED LOBSTER ON CR-42) - COUNTY RD 42 | 3128410 - Prem #100003 | 101-4634-436.01 | DEA | 51,430 | 0.00091 | 46.8 | 50,284 | 0.00084 | 42.2 | (4.6) | -10% |
| STREET LIGHT-NICOLLET AVENUE | 2822997 - Prem #96005 | 101-4165-436.01 | DEA | 13,054 | 0.00091 | 11.9 | 11,204 | 0.00084 | 9.4 | (2.5) | -21% |
| STREET LIGHTS (1,500 lights) | 1114107- Prem #9263 | 101-4634-436.01 | DEA | 1,001,000 | 0.00091 | 910.9 | 997,056 | 0.00084 | 837.5 | (73.4) | -8% |
| STREET LIGHTS E SIDE OF 35W ON PKWY - 300 BURNSVILLE PKWY | 2605020 - Prem #91706 | 101-4165-436.01 | DEA | 81,360 | 0.00091 | 74.0 | 43,832 | 0.00084 | 36.8 | (37.2) | -50% |
| STREET LIGHTS W SIDE 35W ON PKWY - ALDRICH/BURNSVILLE PKWY | 1045855 - Prem #91585 | 101-4165-436.01 | DEA | 13,517 | 0.00091 | 12.3 | 12,382 | 0.00084 | 10.4 | (1.9) | -15% |
| STREET LIGHTS-NICOLLET/CIVIC CNTR PKWY | 2823060 - Prem #96004 | 101-4165-436.01 | DEA | 26,700 | 0.00091 | 24.3 | 26,370 | 0.00084 | 22.2 | (2.1) | -9% |
| STREET LIGHTS-NICOLLET/TRAVELER'S TRAIL | 2823037- Prem #96003 | 101-4165-436.01 | DEA | 35,893 | 0.00091 | 32.7 | 39,920 | 0.00084 | 33.5 | 0.9 | 3% |
| Public street and highway lighting (4) | | | Xcel | 404,790 | 0.00072 | 291.4 | 444,230 | 0.00055 | 244.3 | (47.1) | -16% |
| **Subtotal (33 accounts in 2011)** | | | | **1,785,510** | | **1,539.6** | **2,031,962** | | **1,572.1** | **32.5** | **2%** |
| **Signals and flashers (3):** | | | | | | | | | | | |
| 151 E Hwy 13 Highway signs | 303665849 | no charge for this usage | Xcel | New in 2010 | | | New in 2010 | | | | |
| 10901 SOUTHVIEW DR UNIT SIGNAL | 302775322 | | Xcel | 2,827 | 0.00072 | 2.0 | 3,499 | 0.00055 | 1.9 | (0.1) | -5% |
| 12659 Nicollet Ave S - signal light | 304244986 | 101-4635-43601 | Xcel | New in Jul 2011 | | | New in Jul 2011 | | | | |

## Electricity Consumption by City Operations

Updated: 5/21/12

| Categories | Account # | City Fund | Utility | 2005 Consumption (kWh) | 2005 CO2e Rate (tonnes per kWh) | 2005 CO2e (tonnes) | 2009 Consumption (kWh) | 2009 CO2e Rate (tonnes per kWh) | 2009 CO2e (tonnes) | Change in CO2e Tonnes | Change in CO2e % Change |
|---|---|---|---|---|---|---|---|---|---|---|---|
| FLASHER - 140TH & CTY RD 11 | 1460773 - Prem #33270 | 101-4635-436.01 | DEA | 936 | 0.00091 | 0.9 | 645 | 0.00084 | 0.5 | (0.3) | -36% |
| FLASHER - BURNSVILLE PKWY & IRVING | 1219153 - Prem #15662 | 101-4635-436.01 | DEA | 16,961 | 0.00091 | 15.4 | 8,307 | 0.00084 | 7.0 | (8.5) | -55% |
| SIGNAL - 141st Street/Burnhaven Drive | 4676623 - Prem #116191 | 101-4635-436.01 | DEA | New on Nov 2011 | | | New on Nov 2011 | | | | |
| SIGNAL - 138TH & NICOLLET AVE | 1727213 - Prem #50226 | 101-4635-436.01 | DEA | 2,986 | 0.00091 | 2.7 | 3,054 | 0.00084 | 2.6 | (0.2) | -6% |
| SIGNAL - 143RD & BURNHAVEN | 1887009 - Prem #58848 | 101-4635-436.01 | DEA | 17,243 | 0.00091 | 15.7 | 3,741 | 0.00084 | 3.1 | (12.5) | -80% |
| SIGNAL - 15510 LAC LAVON DR | 2117968 - Prem #75553 | 101-4635-436.01 | DEA | 2,100 | 0.00091 | 1.9 | 3,190 | 0.00084 | 2.7 | 0.8 | 40% |
| SIGNAL - 35E & CTY RD 42 E | 1527845 - Prem #37698 | 101-4635-436.01 | DEA | 4,435 | 0.00091 | 4.0 | 4,700 | 0.00084 | 3.9 | (0.1) | -2% |
| SIGNAL - 35E & CTY RD 42 W | 1527787 - Prem #37692 | 101-4635-436.01 | DEA | 2,282 | 0.00091 | 2.1 | 2,255 | 0.00084 | 1.9 | (0.2) | -9% |
| SIGNAL - 35W & BVILLE PKWY/EAST 35W BRIDGE (356 Bville Pkwy) | 1326628 - Prem #22378 | 101-4635-436.01 | DEA | 23,849 | 0.00091 | 21.7 | 11,692 | 0.00084 | 9.8 | (11.9) | -55% |
| SIGNAL - 850 BURNSVILLE PKWY/WEST 35W BRIDGE | 1462951- Prem #33466 | 101-4635-436.01 | DEA | 23,182 | 0.00091 | 21.1 | 11,866 | 0.00084 | 10.0 | (11.1) | -53% |
| SIGNAL - BURNSVILLE PKWY & UPTON AVE | 1246487 - Prem #16953 | 101-4635-436.01 | DEA | 7 | 0.00091 | 0.0 | 337 | 0.00084 | 0.3 | 0.3 | 4344% |
| SIGNAL - CLIFF & E RIVER HILLS DR | 1497288 - Prem #35739 | 101-4635-436.01 | DEA | 2,790 | 0.00091 | 2.5 | 3,010 | 0.00084 | 2.5 | (0.0) | 0% |
| SIGNAL - CTY RD 11 & BURNSVILLE PKWY | 1821131 - Prem #54690 | 101-4635-436.01 | DEA | 2,129 | 0.00091 | 1.9 | 2,249 | 0.00084 | 1.9 | (0.0) | -2% |
| SIGNAL - CTY RD 11 & CTY RD 42 E | 1645720 - Prem #45483 | 101-4635-436.01 | DEA | 3,778 | 0.00091 | 3.4 | 3,601 | 0.00084 | 3.0 | (0.4) | -12% |
| SIGNAL - CTY RD 42 & ALDRICH AVE | 1093111 - Prem # 7475 | 101-4635-436.01 | DEA | 3,647 | 0.00091 | 3.3 | 3,556 | 0.00084 | 3.0 | (0.3) | -10% |
| SIGNAL - CTY RD 42 & BURNHAVEN DR | 1308816 - Prem #21014 | 101-4635-436.01 | DEA | 4,072 | 0.00091 | 3.7 | 4,263 | 0.00084 | 3.6 | (0.1) | -3% |
| SIGNAL - CTY RD 42 & NICOLLET AVE | 1462373 - Prem #33420 | 101-4635-436.01 | DEA | 4,387 | 0.00091 | 4.0 | 4,222 | 0.00084 | 3.5 | (0.4) | -11% |
| SIGNAL - CTY RD 42 & PORTLAND | 1654102 - Prem #45828 | 101-4635-436.01 | DEA | 3,851 | 0.00091 | 3.5 | 3,584 | 0.00084 | 3.0 | (0.5) | -14% |
| SIGNAL - CTY RD 42/35W (EAST RAMP) | 2047652 - Prem #69907 | 101-4635-436.01 | DEA | 1,269 | 0.00091 | 1.2 | 1,230 | 0.00084 | 1.0 | (0.1) | -11% |
| SIGNAL - CTY RD 5 & BURNSVILLE PKWY | 1468990 - Prem #33950 | 101-4635-436.01 | DEA | 2,696 | 0.00091 | 2.5 | 2,564 | 0.00084 | 2.2 | (0.3) | -12% |
| SIGNAL - E HWY 13 & PARKWOOD | 2125078 - Prem #76082 | 101-4635-436.01 | DEA | 26,900 | 0.00091 | 24.5 | 4,640 | 0.00084 | 3.9 | (20.6) | -84% |
| SIGNAL - HWY 13 & PORTLAND | 2125060 - Prem #76081 | 101-4635-436.01 | DEA | 26,960 | 0.00091 | 24.5 | 4,002 | 0.00084 | 3.4 | (21.2) | -86% |
| SIGNAL - NICOLLET & 122ND ST | 1346386 - Prem #23757 | 101-4635-436.01 | DEA | 12,756 | 0.00091 | 11.6 | 2,995 | 0.00084 | 2.5 | (9.1) | -78% |
| SIGNAL - NICOLLET & 134TH | 1196641 - Prem #14378 | 101-4635-436.01 | DEA | 14,678 | 0.00091 | 13.4 | 4,926 | 0.00084 | 4.1 | (9.2) | -69% |
| SIGNAL - SOUTHCROSS & CHICAGO | 1031350 - Prem #86544 | 101-4635-436.01 | DEA | 11,242 | 0.00091 | 10.2 | 3,822 | 0.00084 | 3.2 | (7.0) | -69% |
| SIGNAL - SOUTHCROSS & LACLAVON | 1023936 - Prem #85004 | 101-4635-436.01 | DEA | 10,812 | 0.00091 | 9.8 | 2,890 | 0.00084 | 2.4 | (7.4) | -75% |
| SIGNAL - SOUTHCROSS & PORTLAND | 1023944 - Prem #85002 | 101-4635-436.01 | DEA | 11,192 | 0.00091 | 10.2 | 4,475 | 0.00084 | 3.8 | (6.4) | -63% |
| SIGNAL LIGHT -300 BURNSVILLE PKWY | 1034164 -Prem #90599 | 101-4635-436.01 | DEA | 17,066 | 0.00091 | 15.5 | 3,260 | 0.00084 | 2.7 | (12.8) | -82% |
| SIGNAL LIGHT, 2230 HIGHWAY 13 E | 303116946 | | Xcel | 3,716 | 0.00072 | 2.7 | 4,553 | 0.00055 | 2.5 | (0.2) | -6% |
| SIGNAL, 11951 COUNTY ROAD 11 | 302458936 | | Xcel | 2,710 | 0.00072 | 2.0 | 3,341 | 0.00055 | 1.8 | (0.1) | -6% |
| SIGNAL, 2200 WILLIAMS DRIVE | 302626620 | 101-4635-43601 | Xcel | | | | | | | | |
| SIGNAL, 3148 HIGHWAY 13 W | 303031060 | | Xcel | 9,581 | 0.00072 | 6.9 | 2,570 | 0.00055 | 1.4 | (5.5) | -80% |
| SIGNAL, CTY RD-42 & BURNSVILLE PKWY | 00 8945 5210 - CO 42 & Burnsville Pkwy | | MVEC | 4,050 | 0.00083 | 3.4 | 3,697 | 0.00083 | 3.1 | (0.3) | -9% |
| SIGNAL-1508 CRYSTAL LAKE RD E | 4246740 - Prem #114740 | 101-4635-436.01 | DEA | Didn't exist | | | 235 | 0.00084 | 0.2 | 0.2 | |
| SIGNAL-NICOLLET BLVD / NICOLLET AVE | 1035096 -Prem #87131 | 101-4635-436.01 | DEA | 11,706 | 0.00091 | 10.7 | 4,936 | 0.00084 | 4.1 | (6.5) | -61% |
| SIGNALS - BURNHAVEN/146 | 3531514 - Prem #105153 | 101-4165-436.01 | DEA | 2,898 | 0.00091 | 2.6 | 2,970 | 0.00084 | 2.5 | (0.1) | -5% |
| SIGNALS - NICOLLET / GRAND | 3369071 - Prem #105152 | 101-4635-436.01 | DEA | 2,785 | 0.00091 | 2.5 | 2,859 | 0.00084 | 2.4 | (0.1) | -5% |
| SIGNALS, 1200 CLIFF RD E | 302849462 | | Xcel | 2,488 | 0.00072 | 1.8 | 2,654 | 0.00055 | 1.5 | (0.3) | -19% |
| SIGNALS, 1830 HIGHWAY 13 W | 302953076 | | Xcel | 3,888 | 0.00072 | 2.8 | 4,692 | 0.00055 | 2.6 | (0.2) | -8% |
| SIGNALS, 1899 CLIFF RD E | 303126969 | | Xcel | 3,165 | 0.00072 | 2.3 | 3,092 | 0.00055 | 1.7 | (0.6) | -25% |
| SIGNALS, 2900 RIVER HILLS DR | 302992840 | | Xcel | 11,584 | 0.00072 | 8.3 | 6,495 | 0.00055 | 3.6 | (4.8) | -57% |
| TRAFFIC SIGNAL - ALDRICH/MARKETPLACE | 2233104 - Prem #82912 | 101-4635-436.01 | DEA | 22,349 | 0.00091 | 20.3 | 7,452 | 0.00084 | 6.3 | (14.1) | -69% |
| TRAFFIC SIGNAL - BUCK HILL/150TH BVILLE | 2201630 0- Prem #80790 | 101-4635-436.01 | DEA | 11,233 | 0.00091 | 10.2 | 2,787 | 0.00084 | 2.3 | (7.9) | -77% |
| TRAFFIC SIGNAL - SOUTHCROSS DR/BUCKHILL | 2201622 - Prem #80789 | 101-4635-436.01 | DEA | 11,609 | 0.00091 | 10.6 | 2,510 | 0.00084 | 2.1 | (8.5) | -80% |
| TRAFFIC SIGNAL - SOUTHCROSS DR/GRAND | 2201614 - Prem #80788 | 101-4635-436.01 | DEA | 18,914 | 0.00091 | 17.2 | 8,547 | 0.00084 | 7.2 | (10.0) | -58% |
| TRAFFIC SIGNALS SE CORNER, 12895 NICOLLET AVE | 303267359 | | Xcel | 10,708 | 0.00072 | 7.7 | 3,182 | 0.00055 | 1.8 | (6.0) | -77% |
| **Subtotal (49 accounts in 2011)** | | | | **390,417** | | **345.3** | **179,147** | | **140.6** | **(204.8)** | **-59%** |
| **Water Utility, Potable Water:** | | | | | | | | | | | |
| 12200 Dupont Ave S, carbon injection system | 303326232 | | Xcel | New in Oct 2010 | | | New in Oct 2010 | | | | |
| BUCK HILL WATER TOWER - 15411 BRYANT AVE (15420 Buck Hill Rd) | 1522911 - Prem #37322 | 601-4654-436.01 | DEA | 16,880 | 0.00091 | 15.4 | 22,090 | 0.00084 | 18.6 | 3.2 | 21% |
| CRSYTAL LK HYPOLIMETIC | 2121184- Prem # 75777 | 607-4725-45019 | DEA | 3,500 | 0.00091 | 3.2 | 3,245 | 0.00084 | 2.7 | (0.5) | -14% |
| POTABLE WATER MONITORING SYSTEM, SCADA COUNTY RD 42 & COUNTY RD 5 | 4457719 - Prem #115677 | 601-4655-436.01 | DEA | Didn't exist | | | 494 | 0.00084 | 0.4 | 0.4 | |
| PRESSURE STATION - 13967 SUNSET LK DR | 2093029- Prem #73514 | 601-4655-436.01 | DEA | 501 | 0.00091 | 0.5 | 580 | 0.00084 | 0.5 | 0.0 | 7% |
| PRESSURE STATION - 505 SUMMIT LN (501 Summit Lane) | 2093011 - Prem #73513 | 601-4655-43601 | DEA | 295 | 0.00091 | 0.3 | 656 | 0.00084 | 0.6 | 0.3 | 105% |
| PUMP -MAPLE ISLAND ROAD | 4544557 - Prem #115775 | 601-4643-436.01 | DEA | Didn't exist | | | 408 | 0.00084 | 0.3 | 0.3 | |
| PUMPING STATION, 2650 CLIFF RD W | 302613088 | | Xcel | 28,080 | 0.00072 | 20.2 | 28,080 | 0.00055 | 15.4 | (4.8) | -24% |
| PUMPING STN KRAEMER QUARRY, 1446 CLIFF RD W | 304187000 | | Xcel | Went on line in 2009 | | | 421,920 | 0.00055 | 232.1 | 232.1 | |
| RESERVOIR - 13009 NICOLLET AVE | 1114347 - Prem #9284 | 601-4654-436.01* | DEA | 96,000 | 0.00091 | 87.4 | 291,456 | 0.00084 | 244.8 | 157.5 | 180% |
| RESERVOIR, 13009 NICOLLET AVE | 2263457 - Prem #86413 | 601-4654-436.01 | DEA | 2,304,000 | 0.00091 | 2,096.6 | 2,896,896 | 0.00084 | 2,433.4 | 336.8 | 16% |
| RESERVOIR (PUMPHOUSE) - BUCK HILL RD | 1528074 - Prem #37720 | 601-4654-436.01 | DEA | 5,568 | 0.00091 | 5.1 | 9,792 | 0.00084 | 8.2 | 3.2 | 62% |
| SCADA -12330 COUNTY RD 11 | 4386710 - Prem #115381 | 601-4653-436.01 | DEA | Didn't exist | | | 543 | 0.00084 | 0.5 | 0.5 | |
| WATER LEVEL MONITOR METER, W PRESERVE BLVD | 07 7865 4100 - W Preserve Blvd | | MVEC | - | | | 14,419 | 0.00083 | 12.0 | 12.0 | |
| WATER LEVEL MONITOR, 14006 W PRESERVE | 07 7449 9510 - 14006 W Preserve Monitor | | MVEC | 240 | 0.00083 | 0.2 | | | | (0.2) | -100% |
| WATER TOWER - 13500 HEATHER HILLS DR | 1252972 - Prem #17323 | 601-4654-43601 | DEA | 8,741 | 0.00091 | 8.0 | 9,110 | 0.00084 | 7.7 | (0.3) | -4% |
| WATER TOWER - 13500 HEATHER HILLS DR WATER | 4379921 - Prem #115282 | 601-4654-4360.1 | DEA | Not metered | | | Not metered | | | | |
| WATER TREATMENT PLANT, 50 RIVER RIDGE CT (addition opened mid 2009) (5) | 303848438 | | Xcel | 8,538,291 | 0.00072 | 6,147.6 | 9,734,959 | 0.00055 | 5,354.2 | (793.3) | -13% |
| WELL #1, 201 CLIFF RD W | 303371835 | | Xcel | 355,823 | 0.00072 | 256.2 | 417,411 | 0.00055 | 229.6 | (26.6) | -10% |
| WELL #2, 101 CLIFF RD W | 302291120 | | Xcel | 605,918 | 0.00072 | 436.3 | 672,573 | 0.00055 | 369.9 | (66.3) | -15% |
| WELL #3, 800 CLIFF RD E | 302492024 | | Xcel | 1,759 | 0.00072 | 1.3 | 1,683 | 0.00055 | 0.9 | (0.3) | -27% |

## Electricity Consumption by City Operations

Updated: 5/21/12

| Categories | | Account # | City Fund | Utility | 2005 Consumption (kWh) | 2005 CO2e Rate (tonnes per kWh) | 2005 CO2e (tonnes) | 2009 Consumption (kWh) | 2009 CO2e Rate (tonnes per kWh) | 2009 CO2e (tonnes) | Change in CO2e Tonnes | Change in CO2e % Change |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | WELL HOUSE #4, 12320 RIVER RIDGE BLVD | 302762615 | | Xcel | 2,350 | 0.00072 | 1.7 | 4,386 | 0.00055 | 2.4 | 0.7 | 43% |
| | WELL #5, 12330 RIVER RIDGE BLVD | 303384368 | | Xcel | 2,585 | 0.00072 | 1.9 | 3,006 | 0.00055 | 1.7 | (0.2) | -11% |
| | WELL HOUSE #6, 150 CLIFF RD E | 302944719 | | Xcel | 1,824 | 0.00072 | 1.3 | 2,660 | 0.00055 | 1.5 | 0.1 | 11% |
| | WELL #7, 12401 RIVER RIDGE BLVD | 303016999 | | Xcel | 8,963 | 0.00072 | 6.5 | 7,909 | 0.00055 | 4.3 | (2.1) | -33% |
| | LOAD PROFILE WELL #9, 600 CLIFF RD E | 302853621 | | Xcel | 774,041 | 0.00072 | 557.3 | 1,232,332 | 0.00055 | 677.8 | 120.5 | 22% |
| | WELL #11 - 12295 NICOLLET AVE | 1527993 - Prem #37713 | 601-4652-436.01* | DEA | 338,688 | 0.00091 | 308.2 | 400,224 | 0.00084 | 336.2 | 28.0 | 9% |
| | WELL #12 -990 BURNSVILLE PKWY E | 1956200 - Prem #63476 | 601-4652-436.01* | DEA | 300,672 | 0.00091 | 273.6 | 228,144 | 0.00084 | 191.6 | (82.0) | -30% |
| | WELL #13 - 590 BURNSVILLE PKWY E | 1524230 - Prem #37432 | 601-4652-436.01* | DEA | 185,472 | 0.00091 | 168.8 | 205,920 | 0.00084 | 173.0 | 4.2 | 2% |
| | WELL #14 & #15 - 1200 BURNSVILLE PKWY E | 2010361- Prem #66735 | 601-4652-436.01* | DEA | 612,096 | 0.00091 | 557.0 | 480,192 | 0.00084 | 403.4 | (153.6) | -28% |
| | WELL #16 - BVILLE PKWY (CONNECTED 4/7/94) | 2111037 - Prem #75019 | 601-4652-436.01* | DEA | 211,968 | 0.00091 | 192.9 | 276,000 | 0.00084 | 231.8 | 38.9 | 20% |
| | WELL #17, 2349 BURNSVILLE PKWY E | 3992435 - Prem #113028 | 601-4652-436.01* | DEA | Didn't exist | | | 578,208 | 0.00084 | 485.7 | 485.7 | |
| | **Subtotal (29 accounts in 2011)** | | | | **14,404,255** | | **11,147.1** | **17,945,296** | | **11,441.1** | **294.0** | **3%** |
| **Water Utility, Sanitary Sewers** | | | | | | | | | | | | |
| | LIFT STATION - 12735 PARKWOOD DR | 2005817 - Prem #66405 | 607-4660-436.01 | DEA | 4,500 | 0.00091 | 4.1 | 4,255 | 0.00084 | 3.6 | (0.5) | -13% |
| | LIFT STATION - 13639 OAKWOOD CURVE | 1037894 -Prem #3073 | 601-4643-436.01 | DEA | 26,421 | 0.00091 | 24.0 | 21,545 | 0.00084 | 18.1 | (5.9) | -25% |
| | LIFT STATION - 13811 NICOLLET BLVD (1/2) | 1830785 - Prem #55233 | 601-4643-436.01 | DEA | 49,000 | 0.00091 | 44.6 | 48,288 | 0.00084 | 40.6 | (4.0) | -9% |
| | LIFT STATION - 1508 E CRYSTAL LAKE RD | 1353606 - Prem #24441 | 601-4643-436.01 | DEA | 1,284 | 0.00091 | 1.2 | 1,257 | 0.00084 | 1.1 | (0.1) | -10% |
| | LIFT STATION - 15420 LUCERNE CIR | 3797131 - Prem #110661 | 607-4660-436.01 | DEA | 629 | 0.00091 | 0.6 | 677 | 0.00084 | 0.6 | (0.0) | -1% |
| | LIFT STATION - 156TH ST E (BLUE BILL BAY) | 1351238 - Prem #24185 | 601-4643-436.01 | DEA | 1,110 | 0.00091 | 1.0 | 1,170 | 0.00084 | 1.0 | (0.0) | -3% |
| | LIFT STATION - 16 MEADOW CIR (SAN SWR) | 1074228 - Prem #5914 | 601-4643-436.01 | DEA | 19,303 | 0.00091 | 17.6 | 18,984 | 0.00084 | 15.9 | (1.6) | -9% |
| | LIFT STATION - 1621 KELLER LAKE DR | 1775444 - Prem #52698 | 601-4643-436.01 | DEA | 4,447 | 0.00091 | 4.0 | 4,073 | 0.00084 | 3.4 | (0.6) | -15% |
| | LIFT STATION - 1901 VICTORIA LN (1900 CTY RD 11) | 1431303 - Prem #30985 | 601-4643-436.01 | DEA | 14,039 | 0.00091 | 12.8 | 14,757 | 0.00084 | 12.4 | (0.4) | -3% |
| | LIFT STATION - 2704 WOODS TRAIL N | 3800364 - Prem #110670 | 601-4643-436.01 | DEA | 1,145 | 0.00091 | 1.0 | 2,273 | 0.00084 | 1.9 | 0.9 | 83% |
| | LIFT STATION - 3229 VALLEY VIEW DRIVE | 4365524 - Prem #115273 | 601-4643-436.01 | DEA | 1,820 | 0.00091 | 1.7 | 1,734 | 0.00084 | 1.5 | (0.2) | -12% |
| | LIFT STATION - BUCKHILL RD | 2222339 - Prem #82210 | 601-4643-436.01 | DEA | 3,318 | 0.00091 | 3.0 | 3,457 | 0.00084 | 2.9 | (0.1) | -4% |
| | LIFT STATION - COUNTY RD11/COUNTRYVIEW | 1038967 - Prem #87126 | 601-4643-436.01 | DEA | 640 | 0.00091 | 0.6 | 680 | 0.00084 | 0.6 | (0.0) | -2% |
| | LIFT STATION - MAPLE ISLAND ROAD | 4544532 - Prem #115774 | 601-4643-436.01 | DEA | 7,680 | 0.00091 | 7.0 | 7,496 | 0.00084 | 6.3 | (0.7) | -10% |
| | LIFT STATION - WHITE OAK DRIVE | 2110849 - Prem #74998 | 607-4660-436.01 | DEA | 1,685 | 0.00091 | 1.5 | 1,636 | 0.00084 | 1.4 | (0.2) | -10% |
| | LIFT STATION 3229 VALLEY VIEW DR | 4365524- Prem # 775273 | 601-4643-436.01 | DEA | 1,950 | 0.00091 | 1.8 | 1,874 | 0.00084 | 1.6 | (0.2) | -11% |
| | LIFT STATION-14705 WHITE OAK DR EFFECT 11/30/95 | 2232379 - Prem #82845 | 601-4643-436.01 | DEA | 518 | 0.00091 | 0.5 | 527 | 0.00084 | 0.4 | (0.0) | -6% |
| | LIFT STATION-CO RD 11/145TH | 2170173 - Prem #78987 | 601-4643-436.01 | DEA | 1,034 | 0.00091 | 0.9 | 1,106 | 0.00084 | 0.9 | (0.0) | -1% |
| | SANITARY SEWER LIFT STATION, 12421 WASHBURN AVE S | 303506903 | | Xcel | 1,718 | 0.00072 | 1.2 | 2,088 | 0.00055 | 1.1 | (0.1) | -7% |
| | SANITARY SEWER LIFT STATION, 3700 HIGHWAY 13 W | 303479903 | | Xcel | 8,162 | 0.00072 | 5.9 | 7,454 | 0.00055 | 4.1 | (1.8) | -30% |
| | **Subtotal (20 accounts in 2011)** | | | | **150,403** | | **135.0** | **145,331** | | **119.3** | **(15.7)** | **-12%** |
| **Totals** | | | | | **21,399,701** | | **17,409** | **26,664,134** | | **18,598** | **1,189.0** | **7%** |
| **Total accounts** | | | | | 208 | | | 207 | | | | |

**Notes:**

1 The Dakota Electric Association (DEA) wholesales electricity. The CO2e emission factors are from the generating utility, Great River Energy. Derivation of the emissions factors are the Emission Factors sheet.

Utility contacts:

- Xcel Energy contact Jennifer Abbott, jennifer.m.abbott@xcelenergy.com
- Dakota Electric Association contact: Tim Dougherty, TDoherty@dakotaelectric.com, 651-463-6235
- MVEC contact: Ron Jabs, rjabs@mvec.net, Eric Nordin, ericn@mvec.net, Shane Reidlang, 952-563-4861
- Great River Energy Coop contact: Mark Strohfus, Environmental Project Leader, Great River Energy, Strohfus, MStrohfu@GREnergy.com, 763-445-5210

2 The significant decrease in consumption for the Performing Arts Center is attributable to improved operation of the facility.

3 The City has been converting lighting, holiday lighting, and signals and flashers to LED fixtures, which explains the significant decrease in consumption for most of the lighting accounts.

4 2005 and 2009 data from Community-wide electricity data. 2011 estimate is average of 2005 and 2009 amounts.

## Electricity Consumption by City Operations

Updated: 5/21/12

| Categories | Account # | City Fund | Utility | Consumption (kWh) | 2011 CO2e Rate (tonnes per kWh) | 2011 CO2e (tonnes) | Change in CO2e Tonnes | Change in CO2e % Change |
|---|---|---|---|---|---|---|---|---|
| **Buildings (incl. on-site lighting):** | | | | | | | | |
| 100 CIVIC CENTER PKWY - MISC STREET LIGHTING - CITY HALL PARKING LOT LIGHTS | 101-4634-43601 | | Xcel | not metered | | | | |
| City Garage/Youth Center - 13101 NICOLLET AVE / 75 CIVIC CTR PKWY | 1128610 - Prem #10384 | 101-4155-436.01 | DEA | 159,120 | 0.00081 | 128.4 | 8.1 | 7% |
| CIVIC CENTER, CITY HALL - 100 CIVIC CTR PKWY | 1990639- Prem #65703 | 101-4151-436.01 | DEA | 791,560 | 0.00081 | 638.8 | (74.1) | -10% |
| FIRE STATION I - 14011 BURNHAVEN DR | 1012780- Prem #883 | 101-4159-436.01 | DEA | 117,560 | 0.00081 | 94.9 | (9.5) | -9% |
| FIRE STATION II - 12155 PARKWOOD DR | 1971209 - Prem #64234 | 101-4153-436.01 | DEA | 101,920 | 0.00081 | 82.2 | (54.9) | -40% |
| FIRE TRAINING FACILITY, 12321 RIVER RIDGE BLVD | 302869531 | 101-4161-436.01 | Xcel | 1,187 | 0.00055 | 0.7 | (0.4) | -37% |
| ICE CENTER - 251 CIVIC CTR PKWY | 1251891 - Prem #17250 | 603-4760-436.01 | DEA | | | | | |
| ICE CENTER - 251 CIVIC CTR PKWY | 4609566 - Prem #116038 | 603-4760-436.01 | DEA | 2,349,877 | 0.00081 | 1,896.4 | 149.0 | 9% |
| MAINTENANCE FACILITY - 13713 Frontier Court (expanded 2008) | 2144533- Prem #77500 | 101-4164-436.01 | DEA | 542,304 | 0.00081 | 437.6 | (23.5) | -5% |
| MVTA PARK & RIDE - 12293 NICOLLET AVE S - | 2148393 - Prem #77691 | 101-4635-436.01 | DEA | 9,420 | 0.00081 | 7.6 | (0.6) | -8% |
| PARKING RAMP HEART OF THE CITY - 12751 PILLSBURY AVE | 3724960 - Prem #108345 | 101-4166-436.01 | DEA | 427,392 | 0.00081 | 344.9 | (9.6) | -3% |
| Performing Arts Center (2) | 444448-5 | | DEA | 744,192 | 0.00081 | 600.6 | (575.2) | -49% |
| PAC parking deck LIGHT - 101 TRAVELERS TRAIL/PILLSBURY AVE | 4422663 - Prem #115268 | 101-4166-436.01 | DEA | 104,922 | 0.00081 | 84.7 | 73.0 | 626% |
| XMAS TREE LIGHTS CIVIC CTR / NICOLLET AVE | 2712669- Prem #94674 | 101-4155-436.01 | DEA | 730 | 0.00081 | 0.6 | (3.1) | -84% |
| **Subtotal (12 accounts in 2011)** | | | | **5,350,184** | | **4,317.3** | **(520.8)** | **-11%** |
| **Park and Recreation Facilities (incl. on-site lighting and sprinkling): (3)** | | | | | | | | |
| SIOUX TRAIL ICE RINK, TENNSIOUX PARK LIGHTING, 2701 RIVER HILLS DR | 302579932 | | Xcel | Meter replaced | | | | |
| 2701 RIVER HILLS DR ICE RINK TENNSIOUX PARK LIGHTING | 304203402 | 101-4720-43601 | Xcel | 59 | 0.00055 | 0.03 | (1.1) | -97% |
| ALIMAGNET PARK - ALIMAGNET AVE | 3209137 - Prem #101744 | 101-4720-436.01 | DEA | 38,742 | 0.00081 | 31.3 | 16.2 | 107% |
| ALIMAGNET PARK - CTY RD 11 | 1392364 - Prem #27607 | 101-4154-436.01 | DEA | 4,380 | 0.00081 | 3.5 | 1.2 | 49% |
| ALIMAGNET PARK (BASEBALL FIELD)- CTY RD 11 | 1589928 - Prem #41645 | 101-4720-436.01 | DEA | 18,821 | 0.00081 | 15.2 | (7.1) | -32% |
| ALIMAGNET PARK OFFICE - 1200 ALIG. PKWY | 1044908 - Prem #3681 | 101-4154-436.01 | DEA | 8,339 | 0.00081 | 6.7 | (2.1) | -24% |
| ALIMAGNET YOUTH CTR SHED - CTY RD 11 | 1098227 - Prem #7887 | 101-4720-436.01 | DEA | 7,310 | 0.00081 | 5.9 | (2.2) | -27% |
| BALLFIED LIGHTS/IRRIGATION, 12702 VINCENT AVE S | 303172340 | | Xcel | 3,084 | 0.00055 | 1.7 | 0.9 | 120% |
| BALLFIELD ALIMAGNET PARK - ALIMAGNET PARKWAY | 2710846 - Prem #94608 | 101-4720-436.01 | DEA | 17,280 | 0.00081 | 13.9 | (3.5) | -20% |
| BALLFIELD LIGHTS # 1 & IRRIGATION, 12700 VINCENT AVE S | 302194651 | | Xcel | 4,948 | 0.00055 | 2.7 | (0.1) | -3% |
| BALLFIELD # 2 @ 12700 VINCENT AVENUE | 302636752 | 101-4720-43601 | Xcel | 17,710 | 0.00055 | 9.7 | 9.7 | |
| BICENTENNIAL GARDENS - 130TH & NICOLLET | 1423664 - Prem #30079 | 101-4720-436.01 | DEA | 9,129 | 0.00081 | 7.4 | (1.9) | -21% |
| BIRNAMWOOD GOLF COURSE | 1018175 - Prem #1339 | 605-4780-436.01 | DEA | 16,813 | 0.00081 | 13.6 | (1.4) | -9% |
| BLACKDOG PK - LIGHTING, 10945 TERRITORIAL DR | 302498371 | | Xcel | 78 | 0.00055 | 0.0 | (0.2) | -79% |
| BLACKDOG PK, 10950 TERRITORIAL DR | 303870430 | | Xcel | 8,800 | 0.00055 | 4.8 | 1.7 | 55% |
| CIVIC CENTER PARK HOCKEY RINK - 260 CIVIC CTR PKWY | 1296581 - Prem #20087 | 101-4720-436.01 | DEA | 3,728 | 0.00081 | 3.0 | (0.3) | -9% |
| CROSSTOWN W PARK/401 TRVLRS TRAIL E | 3585288 - Prem #106500 | 101-4720-436.01 | DEA | 16,912 | 0.00081 | 13.6 | | |
| CRYSTAL LAKE BEACH HOUSE-15350 LAC LAVON DRIVE | 1379668 - Prem #26549 | 101-4720-436.01 | DEA | 15,500 | 0.00081 | 12.5 | 1.5 | 14% |
| DOG PARK -1200 ALIMAGNET AVE | 3930583 - Prem #112204 | 101-4720-436.01 | DEA | 18,849 | 0.00081 | 15.2 | (7.4) | -33% |
| ECHO HILLS PK TENNIS COURT -1400 140TH ST E | 1369735 - Prem #25765 | 101-4720-436.01 | DEA | 3,401 | 0.00081 | 2.7 | | |
| FIELD #5 LIGHTS - 12700 VINCENT AVE S LIGHTS | 303996826 | | Xcel | 8,827 | 0.00055 | 4.9 | (2.2) | -31% |
| FIREMUSTER CONCESSIONS - NICOLLET AVE | 1623503 - Prem #44079 | 101-4720-436.01 | DEA | 1,560 | 0.00081 | 1.3 | 0.4 | 50% |
| FOUNTAIN, RESTROOMS NICOLLET COMMONS PARK - 126TH/NIC AVE | 4488318 - Prem #114466 | 101-4168-436.01 | DEA | 75,225 | 0.00081 | 60.7 | 26.4 | 77% |
| GOLF COURSE - 12424 PARKWOOD DR | 2079713 - Prem #72412 | 605-4780-436.01 | DEA | 6,650 | 0.00081 | 5.4 | 0.1 | 2% |
| ICE RINK - 13512 KNOB HILL RD | 1108935 - Prem #8829 | 101-4720-436.01 | DEA | 4,687 | 0.00081 | 3.8 | (0.3) | -8% |
| ICE RINK - TIMBERLAND KNOLLS ACRES | 1093475 - Prem #1093475 | 101-4720-436.01 | DEA | | | | | |
| ICE RINK - TIMBERLAND KNOLLS ACRES | 1093475 - Prem #7506 | 101-4720-436.01 | DEA | 5,880 | 0.00081 | 4.7 | 4.7 | |
| ICE RINK NORTHVIEW PARK - 150TH & CTY RD 5 | 1108968 - Prem #8832 | 101-4720-436.01 | DEA | 6,703 | 0.00081 | 5.4 | 1.5 | 37% |
| IRRIGATION GOLF COURSE - 12424 PARKWOOD DR - | 1018050 - Prem #1329 | 605-4780-436.01 | DEA | 17,260 | 0.00081 | 13.9 | (2.9) | -17% |
| LAC LAVON SHELTER - 15501 LAC LAVON DR | 2004760 - Prem #66312 | 101-4720-436.01 | DEA | 1,487 | 0.00081 | 1.2 | 0.3 | 33% |
| NEIL PARK LIGHTING - BURNS PARKWAY/UPTON | 2175701 - Prem #79378 | 101-4720-436.01 | DEA | 32,448 | 0.00081 | 26.2 | (0.3) | -1% |
| NEILL PARK SHELTER - OLIVER AVE S | 1207208 - Prem #15000 | 101-4720-436.01 | DEA | 16,840 | 0.00081 | 13.6 | | |
| NEILL PARK TENNIS COURTS - UPTON AVE | 1265412 - Prem #17955 | 101-4720-436.01 | DEA | 249 | 0.00081 | 0.2 | | |
| NICOLLET COMMONS PARK - 12520 NICOLLET AVE | 3577780 - Prem #107912 | 101-4168-436.01 | DEA | 25,070 | 0.00081 | 20.2 | (2.3) | -10% |
| NICOLLET COMMONS PARK - 12520 NICOLLET AVE-(SPCL EVNT ELECT) | 4250239 - Prem #114753 | 101-4168-436.01 | DEA | 150 | 0.00081 | 0.1 | 0.1 | 7105% |
| NICOLLET COMMONS PARK IRRIGATION, 12520 NICOLLET AVE | 302359925 | | Xcel | 35 | 0.00055 | 0.0 | 0.0 | 775% |
| NORTH RIVER HILLS PARK, 11501 19TH AVE S | 303445032 | | Xcel | 26,480 | 0.00055 | 14.6 | (3.4) | -19% |
| PAHA SAPA ICE RINK - 15016 CHICAGO AVE S | 1354240 - Prem #24500 | 101-4720-436.01 | DEA | 4,752 | 0.00081 | 3.8 | (5.4) | -58% |
| PARK LIGHT - SHELLY LANE | 2008282 - Prem #66541 | 101-4720-436.01 | DEA | | | | | |
| PARKING LOT - LAC LAVON | 1587906 - Prem #41447 | 101-4720-436.01 | DEA | 11,590 | 0.00081 | 9.4 | (1.1) | -11% |
| RED OAK PARK - 12030 R.H. DR | 1587724 - Prem #41430 | 101-4720-436.01 | DEA | 15,782 | 0.00081 | 12.7 | (22.3) | -64% |
| SECURITY LIGHT - NORTHVIEW PK (Tennis Court) COUNTY RD 5 | 1546829 - Prem #38516 | 101-4720-436.01 | DEA | 410 | 0.00081 | 0.3 | 0.0 | 9% |
| SECURITY LITE - ALIMAGNET PARK COUNTY RD 11 | 1595644 - Prem #41881 | 101-4720-436.01 | DEA | 5,950 | 0.00081 | 4.8 | 0.3 | 7% |
| SECURITY LITE - WOOD PARK PARKING LOT | 1656115 - Prem #45987 | 101-4720-436.01 | DEA | 1,490 | 0.00081 | 1.2 | 0.7 | 124% |

## Electricity Consumption by City Operations

Updated: 5/21/12

| Categories | Account # | City Fund | Utility | 2011 Consumption (kWh) | 2011 CO2e Rate (tonnes per kWh) | 2011 CO2e (tonnes) | Change in CO2e Tonnes | Change in CO2e % Change |
|---|---|---|---|---|---|---|---|---|
| SPRINKLER - 134 E TRAVELERS TRAIL E | 3634037 - Prem #109177 | 101-4165-436.01 | DEA | 4 | 0.00081 | 0.0 | (0.0) | -4% |
| SPRINKLER - 600 NICOLLET BLVD E | 3921632 - Prem #112075 | 101-4720-436.01 | DEA | 49 | 0.00081 | 0.0 | (0.0) | -6% |
| SPRINKLER ON LIGHT POLE -14250 JUDICIAL RD | 2144574 - Prem #77504 | 101-4635-436.01 | DEA | 10,271 | 0.00081 | 8.3 | 8.2 | 16346% |
| SPRINKLER (on light pole - HOC) HAROLD/NICOLLET | 2786903 - Prem #95852 | 101-4165-436.01 | DEA | 36 | 0.00081 | 0.0 | (0.0) | -46% |
| SPRINKLER METER, 150 1/2 E 125TH ST | 303225795 | | Xcel | 36 | 0.00055 | | | |
| SUNSET POND METER, 13675 W Preserve Blvd - W | 00 8945 4410 - 13675 W Preserve Blvd- Walking | | MVEC | 253 | 0.00074 | 0.2 | 0.1 | 88% |
| TERRACE OAKS W PARK SHELTER - 12801 CTY 11 | 1646165 - Prem #45513 | 101-4720-436.01 | DEA | 4,100 | 0.00081 | 3.3 | 0.1 | 4% |
| TUXEDO PARK/JERRARD POND - 3159 BVILLE PKWY | 1925825 - Prem #61558 | 607-4660-436.01 | DEA | 4,776 | 0.00081 | 3.9 | 1.8 | 83% |
| VISTA VIEW ICE RINK, 1501 CIRCLE LN | 303721368 | | Xcel | 4,862 | 0.00055 | 2.7 | (0.7) | -20% |
| WARMING HOUSE - 12650 PARK DR/TERR OAKS E | 2011096 - Prem #66804 | 101-4720-436.01 | DEA | 6,579 | 0.00081 | 5.3 | (0.7) | -11% |
| WARMING HOUSE - S RIVER HILLS PK | 1918820 - Prem #61164 | 101-4720-436.01 | DEA | 3,263 | 0.00081 | 2.6 | (2.1) | -44% |
| **Subtotal (52 accounts in 2011)** | | | | **517,578** | | **398.4** | **31.3** | **9%** |
| **Other Facilities:** | | | | | | | | |
| CIVIL DEFENSE SIREN - 2401 HIGHLAND VIEW | 1498047 - Prem #35790 | 101-4460-436.01 | DEA | 12 | 0.00081 | 0.01 | | |
| CIVIL DEFENSE SIREN - BUCK HILL RD | 1497197 - Prem #35732 | 101-4460-436.01 | DEA | 12 | 0.00081 | 0.01 | | |
| CIVIL DEFENSE SIREN - BURNSVILLE PKWY W | 1578285 - Prem #40750 | 101-4460-436.01 | DEA | 12 | 0.00081 | 0.01 | | |
| CIVIL DEFENSE SIREN - CHESTNUT CIR | 1498054 - Prem #35791 | 101-4460-436.01 | DEA | 12 | 0.00081 | 0.01 | | |
| CIVIL DEFENSE SIREN - JUDICIAL RD | 1497189 - Prem #35731 | 101-4460-436.01 | DEA | 12 | 0.00081 | 0.01 | | |
| CIVIL DEFENSE SIREN - PARK DR | 1285477 - Prem #19435 | 101-4460-436.01 | DEA | 12 | 0.00081 | 0.01 | | |
| RADIO -COLONIAL HILLS (13525 RYANT LANE) | 1080902 - Prem #6473 | 101-4157-436.01 | DEA | 12,680 | 0.00081 | 10.2 | (7.9) | -44% |
| RADIO COMM BLDG - 13500 HEATHER HILLS | 1563451 - Prem #39620 | 101-4157-436.01 | DEA | 67,520 | 0.00081 | 54.5 | (32.7) | -38% |
| RADIO COMM BLDG - 15410 BUCK HILL RD | 2249803 - Prem #84326 | 101-4157-436.01 | DEA | 19,750 | 0.00081 | 15.9 | 1.2 | 8% |
| SIREN - 630 134TH ST E | 2745370 - Prem #95473 | 101-4460-436.01 | DEA | 13 | 0.00081 | 0.01 | | |
| SIREN - 911 140TH ST W | 2745347 - Prem #95464 | 101-4460-436.01 | DEA | 12 | 0.00081 | 0.01 | | |
| UNMETERED MUNICIPAL SIREN, 14709 W BURNSVILLE PKWY | 00 8945 3610 - 14709 W Burnsville Pkwy | | MVEC | Not metered | | | | |
| **Subtotal (11 accounts in 2011)** | | | | **100,047** | | **80.7** | **(39.4)** | **-33%** |
| **Streetlights (incl. sprinklers on light pole) (3):** | | | | | | | | |
| 12920 UPTON AVE S lighting | 303113501 | | Xcel | 2,543 | 0.00055 | 1.4 | (0.5) | -26% |
| 13112 COUNTY ROAD 5 lighting | 303322145 | | Xcel | | | | | |
| 300 HIGHWAY 13 E lighting | 302617584 | | Xcel | 1,831 | 0.00055 | 1.0 | 0.2 | 20% |
| ARTS CENTER LIGHTS - 1200 ALIMAGNET PKWY | 4162137 - Prem #114380 | 101-4720-436.01 | DEA | 14,917 | 0.00081 | 12.0 | (2.2) | -16% |
| CEDAR BRIDGE, 2820 HAYES DR lighting | 304157705 | | Xcel | 830 | 0.00055 | 0.5 | 0.1 | 45% |
| CITY OWNED LIGHTS N SIDE OF TRAVELERS TRAIL | 3936416 - Prem #112435 | 101-4165-436.01 | DEA | 18,534 | 0.00081 | 15.0 | (5.6) | -27% |
| CTY RD 5 & CTY RD 34, 12755 CO RD 5 - lighting | 302628434 | | Xcel | 2,779 | 0.00055 | 1.5 | (0.1) | -7% |
| FESTOON/RECEPTICLES, 3 E BURNSVILLE PKWY lighting | 303666823 | | Xcel | 6,107 | 0.00055 | 3.4 | (1.2) | -27% |
| HAYES, 10903 27TH AVE S Lighting | 302999395 | | Xcel | 435 | 0.00055 | 0.2 | 0.0 | 9% |
| INTERSECTION LIGHTING | 00 8945 1010 - Street Lights | | MVEC | 62,124 | 0.00074 | 46.1 | (5.5) | -11% |
| LIGHTS - 1/S RIVER HILLS, 3/ALIG., 1/SKYLINE | 1525039 - Prem #37489 | 101-4720-436.01 | DEA | 20,880 | 0.00081 | 16.9 | | |
| LIGHTS - 126th/PILLSBURY | 1073998 - Prem #106668 | 101-4634-436.01 | DEA | 10,443 | 0.00081 | 8.4 | (2.7) | -24% |
| LIGHTS - 140TH ST W/ BURNHAVEN DR | 4394235 - Prem #115414 | 101-4634-436.01 | DEA | 18,061 | 0.00081 | 14.6 | (4.4) | -23% |
| LIGHTS - 14251 NEWTON AVE | 3959285 - Prem #112717 | 101-4634-436.01 | DEA | 3,144 | 0.00081 | 2.5 | 0.9 | 58% |
| LIGHTS - 143 ST W /BURNHAVEN DR | 4394227 - Prem #115413 | 101-4634-436.01 | DEA | 35,810 | 0.00081 | 28.9 | (2.7) | -8% |
| LIGHTS - 15501 LAC LAVON DRIVE - Athletic field | 4460218 - Prem #115680 | 101-4720-436.01 | DEA | 133,632 | 0.00081 | 107.8 | 91.1 | 543% |
| LIGHTS - BURNHAVEN DR TO BUCKHILL ON SOUTHCROSS DR | 4063525 - Prem #113432 | 101-4634-436.01 | DEA | 60,147 | 0.00081 | 48.5 | (7.3) | -13% |
| LIGHTS - COUNTY RD 42/COUNTY RD 5 | 4426524 - Prem #115494 | 101-4634-436.01 | DEA | 22,412 | 0.00081 | 18.1 | (4.0) | -18% |
| LIGHTS - CRYSTAL LAKE/BURNSVILLE DR | 4527883 - Prem #115751 | 101-4634-436.01 | DEA | 4,767 | 0.00081 | 3.8 | 1.4 | 59% |
| LIGHTS - NICOLLET/130TH | 2014900 - Prem #67165 | 101-4635-436.01 | DEA | 2,487 | 0.00081 | 2.0 | (1.8) | -48% |
| LIGHTS - PLEASNT/BVLL PKWY | 4263620 - Prem #114809 | 101-4165-436.01 | DEA | 22,048 | 0.00081 | 17.8 | (16.1) | -48% |
| LIGHTS - PORTLAND/BURSVILLE PKWY | 4494290 - Prem #115709 | 101-4720-436.01 | DEA | 7,459 | 0.00081 | 6.0 | 3.1 | 107% |
| LIGHTS - SOUTHCROSS/EARLEY | 4394219 - Prem #115412 | 101-4634-43601 | DEA | 18,660 | 0.00081 | 15.1 | (1.3) | -8% |
| OVERHEAD INTERSECTION LIGHT - COUNTY RD 42/IRVING AVE S | 2009082 - Prem #66618 | 101-4635-436.01 | DEA | 3,540 | 0.00081 | 2.9 | (0.2) | -6% |
| PROTECTIVE LIGHTING, 12101 RIVER RIDGE BLVD | 302939395 | | Xcel | 765 | 0.00055 | 0.4 | (0.1) | -12% |
| SOUTHCROSS/EARLEY LIGHTS | 4394219 (NA) | 101-4634-436.01 | DEA | | 0.00081 | - | - | |
| STREET LIGHT (EAST OF 35W BRIDGE, SOUTH OF CR42) - COUNTY RD 42 | 3128436 - Prem #100004 | 101-4634-436.01 | DEA | 30,830 | 0.00081 | 24.9 | 6.1 | 33% |
| STREET LIGHT (BY RED LOBSTER ON CR-42) - COUNTY RD 42 | 3128410 - Prem #100003 | 101-4634-436.01 | DEA | 44,270 | 0.00081 | 35.7 | (6.5) | -15% |
| STREET LIGHT-NICOLLET AVENUE | 2822997 - Prem #96005 | 101-4165-436.01 | DEA | 10,660 | 0.00081 | 8.6 | (0.8) | -9% |
| STREET LIGHTS (1,500 lights) | 1114107- Prem #9263 | 101-4634-436.01 | DEA | 998,420 | 0.00081 | 805.7 | (31.8) | -4% |
| STREET LIGHTS E SIDE OF 35W ON PKWY - 300 BURNSVILLE PKWY | 2605020 - Prem #91706 | 101-4165-436.01 | DEA | 33,505 | 0.00081 | 27.0 | (9.8) | -27% |
| STREET LIGHTS W SIDE 35W ON PKWY - ALDRICH/BURNSVILLE PKWY | 1045855 - Prem #91585 | 101-4165-436.01 | DEA | 10,129 | 0.00081 | 8.2 | (2.2) | -21% |
| STREET LIGHTS-NICOLLET/CIVIC CNTR PKWY | 2823060 - Prem #96004 | 101-4165-436.01 | DEA | 23,900 | 0.00081 | 19.3 | (2.9) | -13% |
| STREET LIGHTS-NICOLLET/TRAVELER'S TRAIL | 2823037- Prem #96003 | 101-4165-436.01 | DEA | 27,520 | 0.00081 | 22.2 | (11.3) | -34% |
| Public street and highway lighting (4) | | | Xcel | 424,510 | 0.00055 | 233.5 | (10.8) | -4% |
| **Subtotal (33 accounts in 2011)** | | | | **2,078,099** | | **1,560** | **(12.1)** | **-1%** |
| **Signals and flashers (3):** | | | | | | | | |
| 151 E Hwy 13 Highway signs | 303665849 | no charge for this usage | Xcel | 3,203 | 0.00055 | 1.8 | | |
| 10901 SOUTHVIEW DR UNIT SIGNAL | 302775322 | | Xcel | 3,449 | 0.00055 | 1.9 | (0.0) | -1% |
| 12659 Nicollet Ave S - signal light | 304244986 | 101-4635-43601 | Xcel | 2,694 | 0.00055 | 1.5 | | |

## Electricity Consumption by City Operations

Updated: 5/21/12

| Categories | Account # | City Fund | Utility | 2011 Consumption (kWh) | 2011 CO2e Rate (tonnes per kWh) | 2011 CO2e (tonnes) | Change in CO2e Tonnes | Change in CO2e % Change |
|---|---|---|---|---|---|---|---|---|
| FLASHER - 140TH & CTY RD 11 | 1460773 - Prem #33270 | 101-4635-436.01 | DEA | 722 | 0.00081 | 0.6 | 0.0 | 8% |
| FLASHER - BURNSVILLE PKWY & IRVING | 1219153 - Prem #15662 | 101-4635-436.01 | DEA | 8,229 | 0.00081 | 6.6 | (0.3) | -5% |
| SIGNAL - 141st Street/Burnhaven Drive | 4676623 - Prem #116191 | 101-4635-436.01 | DEA | 6,160 | 0.00081 | 5.0 | | |
| SIGNAL - 138TH & NICOLLET AVE | 1727213 - Prem #50226 | 101-4635-436.01 | DEA | 2,917 | 0.00081 | 2.4 | (0.2) | -8% |
| SIGNAL - 143RD & BURNHAVEN | 1887009 - Prem #58848 | 101-4635-436.01 | DEA | 3,609 | 0.00081 | 2.9 | (0.2) | -7% |
| SIGNAL - 15510 LAC LAVON DR | 2117968 - Prem #75553 | 101-4635-436.01 | DEA | 590 | 0.00081 | 0.5 | (2.2) | -82% |
| SIGNAL - 35E & CTY RD 42 E | 1527845 - Prem #37698 | 101-4635-436.01 | DEA | 4,589 | 0.00081 | 3.7 | (0.2) | -6% |
| SIGNAL - 35E & CTY RD 42 W | 1527787 - Prem #37692 | 101-4635-436.01 | DEA | 4,430 | 0.00081 | 3.6 | 1.7 | 89% |
| SIGNAL - 35W & BVILLE PKWY/EAST 35W BRIDGE (356 Bville Pkwy) | 1326628 - Prem #22378 | 101-4635-436.01 | DEA | 3,077 | 0.00081 | 2.5 | (7.3) | -75% |
| SIGNAL - 850 BURNSVILLE PKWY/WEST 35W BRIDGE | 1462951- Prem #33466 | 101-4635-436.01 | DEA | 5,477 | 0.00081 | 4.4 | (5.5) | -56% |
| SIGNAL - BURNSVILLE PKWY & UPTON AVE | 1246487 - Prem #16953 | 101-4635-436.01 | DEA | 352 | 0.00081 | 0.3 | 0.0 | 0% |
| SIGNAL - CLIFF & E RIVER HILLS DR | 1497288 - Prem #35739 | 101-4635-436.01 | DEA | 2,990 | 0.00081 | 2.4 | (0.1) | -5% |
| SIGNAL - CTY RD 11 & BURNSVILLE PKWY | 1821131 - Prem #54690 | 101-4635-436.01 | DEA | 2,414 | 0.00081 | 1.9 | 0.1 | 3% |
| SIGNAL - CTY RD 11 & CTY RD 42 E | 1645720 - Prem #45483 | 101-4635-436.01 | DEA | 3,501 | 0.00081 | 2.8 | (0.2) | -7% |
| SIGNAL - CTY RD 42 & ALDRICH AVE | 1093111 - Prem # 7475 | 101-4635-436.01 | DEA | 3,526 | 0.00081 | 2.8 | (0.1) | -5% |
| SIGNAL - CTY RD 42 & BURNHAVEN DR | 1308816 - Prem #21014 | 101-4635-436.01 | DEA | 4,057 | 0.00081 | 3.3 | (0.3) | -9% |
| SIGNAL - CTY RD 42 & NICOLLET AVE | 1462373 - Prem #33420 | 101-4635-436.01 | DEA | 4,112 | 0.00081 | 3.3 | (0.2) | -6% |
| SIGNAL - CTY RD 42 & PORTLAND | 1654102 - Prem #45828 | 101-4635-436.01 | DEA | 3,540 | 0.00081 | 2.9 | (0.2) | -5% |
| SIGNAL - CTY RD 42/35W (EAST RAMP) | 2047652 - Prem #69907 | 101-4635-436.01 | DEA | 1,256 | 0.00081 | 1.0 | (0.0) | -2% |
| SIGNAL - CTY RD 5 & BURNSVILLE PKWY | 1468990 - Prem #33950 | 101-4635-436.01 | DEA | 2,668 | 0.00081 | 2.2 | (0.0) | 0% |
| SIGNAL - E HWY 13 & PARKWOOD | 2125078 - Prem #76082 | 101-4635-436.01 | DEA | 3,090 | 0.00081 | 2.5 | (1.4) | -36% |
| SIGNAL - HWY 13 & PORTLAND | 2125060 - Prem #76081 | 101-4635-436.01 | DEA | 3,165 | 0.00081 | 2.6 | (0.8) | -24% |
| SIGNAL - NICOLLET & 122ND ST | 1346386 - Prem #23757 | 101-4635-436.01 | DEA | 2,744 | 0.00081 | 2.2 | (0.3) | -12% |
| SIGNAL - NICOLLET & 134TH | 1196641 - Prem #14378 | 101-4635-436.01 | DEA | 2,737 | 0.00081 | 2.2 | (1.9) | -47% |
| SIGNAL - SOUTHCROSS & CHICAGO | 1031350 - Prem #86544 | 101-4635-436.01 | DEA | 4,078 | 0.00081 | 3.3 | 0.1 | 3% |
| SIGNAL - SOUTHCROSS & LACLAVON | 1023936 - Prem #85004 | 101-4635-436.01 | DEA | 3,065 | 0.00081 | 2.5 | 0.0 | 2% |
| SIGNAL - SOUTHCROSS & PORTLAND | 1023944 - Prem #85002 | 101-4635-436.01 | DEA | 4,766 | 0.00081 | 3.8 | 0.1 | 2% |
| SIGNAL LIGHT -300 BURNSVILLE PKWY | 1034164 -Prem #90599 | 101-4635-436.01 | DEA | 3,311 | 0.00081 | 2.7 | (0.1) | -2% |
| SIGNAL LIGHT, 2230 HIGHWAY 13 E | 303116946 | | Xcel | 4,676 | 0.00055 | 2.6 | 0.1 | 3% |
| SIGNAL, 11951 COUNTY ROAD 11 | 302458936 | | Xcel | 3,274 | 0.00055 | 1.8 | (0.0) | -2% |
| SIGNAL, 2200 WILLIAMS DRIVE | 302626620 | 101-4635-43601 | Xcel | 4,808 | 0.00055 | 2.6 | 2.6 | |
| SIGNAL, 3148 HIGHWAY 13 W | 303031060 | | Xcel | 2,559 | 0.00055 | 1.4 | (0.0) | 0% |
| SIGNAL, CTY RD-42 & BURNSVILLE PKWY | 00 8945 5210 - CO 42 & Burnsville Pkwy | | MVEC | 2,652 | 0.00074 | 2.0 | (1.1) | -36% |
| SIGNAL-1508 CRYSTAL LAKE RD E | 4246740 - Prem #114740 | 101-4635-436.01 | DEA | 253 | 0.00081 | 0.2 | 0.0 | 3% |
| SIGNAL-NICOLLET BLVD / NICOLLET AVE | 1035096 -Prem #87131 | 101-4635-436.01 | DEA | 4,283 | 0.00081 | 3.5 | (0.7) | -17% |
| SIGNALS - BURNHAVEN/146 | 3531514 - Prem #105153 | 101-4165-436.01 | DEA | 2,928 | 0.00081 | 2.4 | (0.1) | -5% |
| SIGNALS - NICOLLET / GRAND | 3369071 - Prem #105152 | 101-4635-436.01 | DEA | 2,841 | 0.00081 | 2.3 | (0.1) | -5% |
| SIGNALS, 1200 CLIFF RD E | 302849462 | | Xcel | 2,434 | 0.00055 | 1.3 | (0.1) | -8% |
| SIGNALS, 1830 HIGHWAY 13 W | 302953076 | | Xcel | 4,897 | 0.00055 | 2.7 | 0.1 | 4% |
| SIGNALS, 1899 CLIFF RD E | 303126969 | | Xcel | 2,741 | 0.00055 | 1.5 | (0.2) | -11% |
| SIGNALS, 2900 RIVER HILLS DR | 302992840 | | Xcel | 3,790 | 0.00055 | 2.1 | (1.5) | -42% |
| TRAFFIC SIGNAL - ALDRICH/MARKETPLACE | 2233104 - Prem #82912 | 101-4635-436.01 | DEA | 3,162 | 0.00081 | 2.6 | (3.7) | -59% |
| TRAFFIC SIGNAL - BUCK HILL/150TH BVILLE | 2201630 0- Prem #80790 | 101-4635-436.01 | DEA | 2,856 | 0.00081 | 2.3 | (0.0) | -2% |
| TRAFFIC SIGNAL - SOUTHCROSS DR/BUCKHILL | 2201622 - Prem #80789 | 101-4635-436.01 | DEA | 2,501 | 0.00081 | 2.0 | (0.1) | -4% |
| TRAFFIC SIGNAL - SOUTHCROSS DR/GRAND | 2201614 - Prem #80788 | 101-4635-436.01 | DEA | 3,021 | 0.00081 | 2.4 | (4.7) | -66% |
| TRAFFIC SIGNALS SE CORNER, 12895 NICOLLET AVE | 303267359 | | Xcel | 5,500 | 0.00055 | 3.0 | 1.3 | 73% |
| **Subtotal (49 accounts in 2011)** | | | | **163,694** | | **120.6** | **(20.0)** | **-14%** |
| **Water Utility, Potable Water:** | | | | | | | | |
| 12200 Dupont Ave S, carbon injection system | 303326232 | | Xcel | 43,529 | 0.00055 | 23.9 | | |
| BUCK HILL WATER TOWER - 15411 BRYANT AVE (15420 Buck Hill Rd) | 1522911 - Prem #37322 | 601-4654-436.01 | DEA | 7,010 | 0.00081 | 5.7 | (12.9) | -70% |
| CRSYTAL LK HYPOLIMETIC | 2121184- Prem # 75777 | 607-4725-45019 | DEA | 2,786 | 0.00081 | 2.2 | (0.5) | -18% |
| POTABLE WATER MONITORING SYSTEM, SCADA COUNTY RD 42 & COUNTY RD 5 | 4457719 - Prem #115677 | 601-4655-436.01 | DEA | 696 | 0.00081 | 0.6 | 0.1 | 35% |
| PRESSURE STATION - 13967 SUNSET LK DR | 2093029- Prem #73514 | 601-4655-436.01 | DEA | Not in use in 2011 | | | | |
| PRESSURE STATION - 505 SUMMIT LN (501 Summit Lane) | 2093011 - Prem #73513 | 601-4655-43601 | DEA | 583 | 0.00081 | 0.5 | (0.1) | -15% |
| PUMP -MAPLE ISLAND ROAD | 4544557 - Prem #115775 | 601-4643-436.01 | DEA | 1,846 | 0.00081 | 1.5 | 1.1 | 335% |
| PUMPING STATION, 2650 CLIFF RD W | 302613088 | | Xcel | 9,040 | 0.00055 | 5.0 | (10.5) | -68% |
| PUMPING STN KRAEMER QUARRY, 1446 CLIFF RD W | 304187000 | | Xcel | 1,603,840 | 0.00055 | 882.1 | 650.1 | 280% |
| RESERVOIR - 13009 NICOLLET AVE | 1114347 - Prem #9284 | 601-4654-436.01* | DEA | 1,422,336 | 0.00081 | 1,147.8 | 903.0 | 369% |
| RESERVOIR, 13009 NICOLLET AVE | 2263457 - Prem #86413 | 601-4654-436.01 | DEA | 1,024,301 | 0.00081 | 826.6 | (1,606.8) | -66% |
| RESERVOIR (PUMPHOUSE) - BUCK HILL RD | 1528074 - Prem #37720 | 601-4654-436.01 | DEA | 3,840 | 0.00081 | 3.1 | (5.1) | -62% |
| SCADA -12330 COUNTY RD 11 | 4386710 - Prem #115381 | 601-4653-436.01 | DEA | 737 | 0.00081 | 0.6 | 0.1 | 30% |
| WATER LEVEL MONITOR METER, W PRESERVE BLVD | 07 7865 4100 - W Preserve Blvd | | MVEC | 14,168 | 0.00074 | 10.5 | (1.5) | -12% |
| WATER LEVEL MONITOR, 14006 W PRESERVE | 07 7449 9510 - 14006 W Preserve Monitor | | MVEC | Equipment not in use | | | | |
| WATER TOWER - 13500 HEATHER HILLS DR | 1252972 - Prem #17323 | 601-4654-43601 | DEA | 16,827 | 0.00081 | 13.6 | 5.9 | 77% |
| WATER TOWER - 13500 HEATHER HILLS DR WATER | 4379921 - Prem #115282 | 601-4654-4360.1 | DEA | Not metered | | | | |
| WATER TREATMENT PLANT, 50 RIVER RIDGE CT (addition opened mid 2009) (5) | 303848438 | | Xcel | 5,253,556 | 0.00055 | 2,889.5 | (2,464.8) | -46% |
| WELL #1, 201 CLIFF RD W | 303371835 | | Xcel | 194,160 | 0.00055 | 106.8 | (122.8) | -53% |
| WELL #2, 101 CLIFF RD W | 302291120 | | Xcel | 270,750 | 0.00055 | 148.9 | (221.0) | -60% |
| WELL #3, 800 CLIFF RD E | 302492024 | | Xcel | 1,827 | 0.00055 | 1.0 | 0.1 | 9% |

## Electricity Consumption by City Operations

Updated: 5/21/12

| Categories | | Account # | City Fund | Utility | 2011 Consumption (kWh) | 2011 CO2e Rate (tonnes per kWh) | 2011 CO2e (tonnes) | Change in CO2e Tonnes | Change in CO2e % Change |
|---|---|---|---|---|---|---|---|---|---|
| | WELL HOUSE #4, 12320 RIVER RIDGE BLVD | 302762615 | | Xcel | 4,109 | 0.00055 | 2.3 | (0.2) | -6% |
| | WELL #5, 12330 RIVER RIDGE BLVD | 303384368 | | Xcel | 2,049 | 0.00055 | 1.1 | (0.5) | -32% |
| | WELL HOUSE #6, 150 CLIFF RD E | 302944719 | | Xcel | 2,329 | 0.00055 | 1.3 | (0.2) | -12% |
| | WELL #7, 12401 RIVER RIDGE BLVD | 303016999 | | Xcel | 5,690 | 0.00055 | 3.1 | (1.2) | -28% |
| | LOAD PROFILE WELL #9, 600 CLIFF RD E | 302853621 | | Xcel | 510,080 | 0.00055 | 280.5 | (397.2) | -59% |
| | WELL #11 - 12295 NICOLLET AVE | 1527993 - Prem #37713 | 601-4652-436.01* | DEA | 348,384 | 0.00081 | 281.1 | (55.0) | -16% |
| | WELL #12 -990 BURNSVILLE PKWY E | 1956200 - Prem #63476 | 601-4652-436.01* | DEA | 207,072 | 0.00081 | 167.1 | (24.5) | -13% |
| | WELL #13 - 590 BURNSVILLE PKWY E | 1524230 - Prem #37432 | 601-4652-436.01* | DEA | 162,144 | 0.00081 | 130.9 | (42.1) | -24% |
| | WELL #14 & #15 - 1200 BURNSVILLE PKWY E | 2010361- Prem #66735 | 601-4652-436.01* | DEA | 207,744 | 0.00081 | 167.6 | (235.7) | -58% |
| | WELL #16 - BVILLE PKWY (CONNECTED 4/7/94) | 2111037 - Prem #75019 | 601-4652-436.01* | DEA | 149,088 | 0.00081 | 120.3 | (111.5) | -48% |
| | WELL #17, 2349 BURNSVILLE PKWY E | 3992435 - Prem #113028 | 601-4652-436.01* | DEA | 116,928 | 0.00081 | 94.4 | (391.3) | -81% |
| | **Subtotal (29 accounts in 2011)** | | | | **11,587,449** | | **7,319.6** | **(4,121.5)** | **-36%** |
| **Water Utility, Sanitary Sewers** | | | | | | | | | |
| | LIFT STATION - 12735 PARKWOOD DR | 2005817 - Prem #66405 | 607-4660-436.01 | DEA | 2,950 | 0.00081 | 2.4 | (1.2) | -33% |
| | LIFT STATION - 13639 OAKWOOD CURVE | 1037894 -Prem #3073 | 601-4643-436.01 | DEA | 22,924 | 0.00081 | 18.5 | 0.4 | 2% |
| | LIFT STATION - 13811 NICOLLET BLVD (1/2) | 1830785 - Prem #55233 | 601-4643-436.01 | DEA | 53,184 | 0.00081 | 42.9 | 2.4 | 6% |
| | LIFT STATION - 1508 E CRYSTAL LAKE RD | 1353606 - Prem #24441 | 601-4643-436.01 | DEA | 1,549 | 0.00081 | 1.3 | 0.2 | 18% |
| | LIFT STATION - 15420 LUCERNE CIR | 3797131 - Prem #110661 | 607-4660-436.01 | DEA | 870 | 0.00081 | 0.7 | 0.1 | 23% |
| | LIFT STATION - 156TH ST E (BLUE BILL BAY) | 1351238 - Prem #24185 | 601-4643-436.01 | DEA | 2,141 | 0.00081 | 1.7 | 0.7 | 76% |
| | LIFT STATION - 16 MEADOW CIR (SAN SWR) | 1074228 - Prem #5914 | 601-4643-436.01 | DEA | 18,849 | 0.00081 | 15.2 | (0.7) | -5% |
| | LIFT STATION - 1621 KELLER LAKE DR | 1775444 - Prem #52698 | 601-4643-436.01 | DEA | 3,055 | 0.00081 | 2.5 | (1.0) | -28% |
| | LIFT STATION - 1901 VICTORIA LN (1900 CTY RD 11) | 1431303 - Prem #30985 | 601-4643-436.01 | DEA | 16,635 | 0.00081 | 13.4 | 1.0 | 8% |
| | LIFT STATION - 2704 WOODS TRAIL N | 3800364 - Prem #110670 | 601-4643-436.01 | DEA | 2,675 | 0.00081 | 2.2 | 0.2 | 13% |
| | LIFT STATION - 3229 VALLEY VIEW DRIVE | 4365524 - Prem #115273 | 601-4643-436.01 | DEA | 1,539 | 0.00081 | 1.2 | (0.2) | -15% |
| | LIFT STATION - BUCKHILL RD | 2222339 - Prem #82210 | 601-4643-436.01 | DEA | 3,413 | 0.00081 | 2.8 | (0.1) | -5% |
| | LIFT STATION - COUNTY RD11/COUNTRYVIEW | 1038967 - Prem #87126 | 601-4643-436.01 | DEA | 770 | 0.00081 | 0.6 | 0.1 | 9% |
| | LIFT STATION - MAPLE ISLAND ROAD | 4544532 - Prem #115774 | 601-4643-436.01 | DEA | 39,697 | 0.00081 | 32.0 | 25.7 | 409% |
| | LIFT STATION - WHITE OAK DRIVE | 2110849 - Prem #74998 | 607-4660-436.01 | DEA | 2,208 | 0.00081 | 1.8 | 0.4 | 30% |
| | LIFT STATION 3229 VALLEY VIEW DR | 4365524- Prem # 775273 | 601-4643-436.01 | DEA | 1,539 | 0.00081 | 1.2 | (0.3) | -21% |
| | LIFT STATION-14705 WHITE OAK DR EFFECT 11/30/95 | 2232379 - Prem #82845 | 601-4643-436.01 | DEA | 571 | 0.00081 | 0.5 | 0.0 | 4% |
| | LIFT STATION-CO RD 11/145TH | 2170173 - Prem #78987 | 601-4643-436.01 | DEA | 1,270 | 0.00081 | 1.0 | 0.1 | 10% |
| | SANITARY SEWER LIFT STATION, 12421 WASHBURN AVE S | 303506903 | | Xcel | 5,884 | 0.00055 | 3.2 | 2.1 | 182% |
| | SANITARY SEWER LIFT STATION, 3700 HIGHWAY 13 W | 303479903 | | Xcel | 9,742 | 0.00055 | 5.4 | 1.3 | 31% |
| | **Subtotal (20 accounts in 2011)** | | | | **191,465** | | **150.5** | **31** | **26%** |
| **Totals** | | | | | **19,988,516** | | **13,947** | **(4,651)** | **-25%** |
| **Total accounts** | | | | | 206 | | | | |

**Notes:**

1 The Dakota Electric Association (DEA) wholesales electricity. The CO2e emission factors are from the generating utility, Great River Energy. Derivation o

Utility contacts:

Xcel Energy contact Jennifer Abbott, jennifer.m.abbott@xcelenergy.com

Dakota Electric Association contact: Tim Dougherty, TDoherty@dakotaelectric.com, 651-463-6235

MVEC contact: Ron Jabs, rjabs@mvec.net, Eric Nordin, ericn@mvec.net, Shane Reidlang, 952-563-4861

Great River Energy Coop contact: Mark Strohfus, Environmental Project Leader, Great River Energy, Strohfus, MStrohfu@GREnergy.com, 763-445-521

2 The significant decrease in consumption for the Performing Arts Center is attributable to improved operation of the facility.

3 The City has been converting lighting, holiday lighting, and signals and flashers to LED fixtures, which explains the significant decrease in consumption fo

4 2005 and 2009 data from Community-wide electricity data. 2011 estimate is average of 2005 and 2009 amounts.

## Change in Electricity Consumption: 2005, 2009, 2011

Updated: 5/17/12

| Potable Water Utility and Water Treatment Plant (WTP) | 2005 | | 2009 | | 2011 | |
|---|---|---|---|---|---|---|
| | Total | WTP | Total | WTP | Total | WTP |
| Percent water sales to other cities | 0.3% | | 5.2% | | 18.5% | |
| Electricity, 19 accounts (kWh) | 14,404,255 | 8,538,291 | 17,945,296 | 9,734,959 | 11,587,449 | 5,253,556 |
| Net electricity (kWh) | 14,355,422 | 8,509,345 | 17,009,678 | 9,227,405 | 9,440,330 | 4,280,088 |
| Change in consumption from prior year | | | 2,654,255 | 718,060 | (7,569,347) | (4,947,317) |
| Percent change from prior year | | | 18% | 8% | -45% | -54% |
| Change in WTP consumption as a percent of total change | | | | 27% | | 65% |
| Net total treated & pumped water (billions of gal) | 2.6 | | 2.4 | | 2.6 | |
| Net total treated & pumped water, percent change from prior year | | | -8% | | 8% | |

| Share of Changes in Total Consumption by City Operations | 2005 | | 2009 | | 2011 | |
|---|---|---|---|---|---|---|
| | Total | Share of Changes | Total | Share of Changes | Total | Share of Changes |
| Total electricity consumption (kWh) | 21,350,359 | | 25,720,938 | | 17,805,919 | |
| Percent change in total consumption from prior year | | | 20% | | -31% | |
| Change in total consumption from prior year | | | 4,370,580 | | (7,915,019) | |
| Change in total consumption attributable to Water Utility | | | 61% | | 96% | |
| WTP | | | | | (4,947,317) | 63% |
| City wells | | | | | (2,328,294) | 29% |
| Reservoir, 13009 Nicollet Ave. | | | | | (741,715) | 9% |

**Comments:**

1. The City produced 8% more potable water for City consumers in 2011 compared to 2009, but used 54% less electricity to do it.
2. After a 20% increase in 2009 over 2011 levels, consumption for all City operations decreased by 31% in 2011. Most of the change is due to the Water Utility and especially the Water Treatment Plant (WTP). About 63% of the overall reduction in consumption for all City operations in 2011 is attributable to reductions at the WTP. Another 29% is due to reductions at the reservoir at 13009 Nicollet Ave., and the remaining 9% is from reductions at City wells.
3. Factors that reduced electricity demand at the WTP between 2009 and 2011:

Lighting upgrades:
- Garage loading dock area-2011
- Filter Bays(eliminated 8-400w metal halite) 2010

Upgraded dehumidifier: Went from electric coils to condenser style-2011

Replaced backwash blower: Replaced 35 year old blower with new efficient one-2011

Pump matrix restructure:
- Try to pump majority of water with VFD pump
- Run bigger pumps so that we are able to fill towers quicker and widen our dead band so that the pump will run at idle longer.

Misc. things:
- Cut back on the elect. Heaters
- Shut lights of when not needed

## Natural Gas Consumption by City Operations

Updated: 4/28/12

| Description | Premise Street | CA# | 2005 Consumption (therms) (1) | 2005 CO2e (tonnes) (2) | 2009 Consumption (therms) (1) | 2009 CO2e (tonnes) (2) | Change in CO2e Tonnes | Change in CO2e % Change | 2011 Consumption (therms) (1) | 2011 CO2e (tonnes) (2) | Change in CO2e Tonnes | Change in CO2e % Change |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Buildings:** | | | | | | | | | | | | |
| ARTS BLDG ALIMAGNET HOUSE | 1200 ALIMAGNET PKWY | 5472145 | 1,523 | 8 | 1,814 | 10 | 2 | 19% | 1,714 | 9 | -1 | -6% |
| BURNSVILLE CITY HALL | 100 CIVIC CENTER PKWY | 5624599 | 25,269 | 138 | 26,986 | 147 | 9 | 7% | 19,543 | 107 | -41 | -28% |
| CITY GARAGE/YOUTH CENTER | 75 CIVIC CENTER PARKWAY | 5534054 | 24,415 | 133 | 22,080 | 120 | -13 | -10% | 23,503 | 128 | 8 | 6% |
| CITY OF BURNSVILLE, MAINTENANCE SHOP BLDG./Center (addition in 2008) | 13713 FRONTIER CT | 5486017 | 22,827 | 125 | 29,134 | 159 | 34 | 28% | 28,611 | 156 | -3 | -2% |
| CITY OF BURNSVILLE, Ice Center (3) | 251 CIVIC CENTER PKWY | 5534034 | 37,599 | 205 | 39,968 | 218 | 13 | 6% | | | -142 | -65% |
| CITY OF BURNSVILLE, Ice Center (3) | 251 CIVIC CENTER PKWY | 5534038 | 5,685 | 31 | 6,145 | 34 | 3 | 8% | 13,882 | 76 | -34 | -100% |
| CITY OF BURNSVILLE, Ice Center (3) | 251 CIVIC CENTER PKWY | 5534042 | 11,305 | 62 | 10,626 | 58 | -4 | -6% | | | -58 | -100% |
| FIRE STATION 1 (address prior to 2001 - 14011 BURNHAVEN DR) | 911 140TH ST. W. | 5581004 | 5,492 | 30 | 6,545 | 36 | 6 | 19% | 4,835 | 26 | -9 | -26% |
| FIRE STATION 2 | 12155 PARKWOOD DR - FIRE STATION 2 | 5624541 | 8,173 | 45 | 7,819 | 43 | -2 | -4% | 7,678 | 42 | -1 | -2% |
| PERFORMING ARTS CENTER | 12600 NICOLLET AVE | 7970666 | opened 1/09 | | 43,942 | 240 | 240 | | 20,288 | 111 | -129 | -54% |
| **Subtotal (11 accounts)** | | | **142,288** | **776** | **195,059** | **1,064** | **288** | **37%** | **120,054** | **655** | **-409** | **-38%** |
| **Park Facilities:** | | | | | | | | | | | | |
| CITY OF BURNSVILLE PAHA SAPA | 15016 CHICAGO AVE | 5741918 | 244 | 1 | 403 | 2 | 1 | 65% | 446 | 2 | 0.2 | 11% |
| CITY OF BURNSVILLE RED OAK PARK | 12100 RIVER HILLS DR - RED OAK PK SHELTER | 5776494 | 471 | 3 | 681 | 4 | 1 | 45% | 796 | 4 | 1 | 17% |
| CITY OF BURNSVILLE VISTA VIEW PARK | 1501 CIRCLE LN | 5516672 | 578 | 3 | 605 | 3 | 0.1 | 5% | 846 | 5 | 1 | 40% |
| CITY OF BURNSVILLE, BURNHAM WOOD GOLF COURSE | 12424 PARKWOOD DR | 5503480 | 722 | 4 | 694 | 4 | -0.2 | -4% | 848 | 5 | 1 | 22% |
| CITY OF BURNSVILLE, KNOB HILL PARK | 1317 KNOB HILL LN | 5434346 | 128 | 1 | 178 | 1 | 0.3 | 39% | 218 | 1 | 0.2 | 22% |
| CITY OF BURNSVILLE, NEIL PARK | 13501 UPTON AVE S | 5444306 | 1,525 | 8 | 2,168 | 12 | 4 | 42% | 2,050 | 11 | -0.6 | -5% |
| CITY OF BURNSVILLE, NORTHVIEW PARK | 14831 DEERWOOD DR | 5516747 | 280 | 2 | 413 | 2 | 1 | 48% | 443 | 2 | 0.2 | 7% |
| CITY OF BURNSVILLE, SOUTH RIVER HILLS PARK | 11514 RIVER HILLS DR - WARMING HOUSE | 5890286 | 177 | 1 | 262 | 1 | 0.5 | 48% | 322 | 2 | 0.3 | 23% |
| CITY OF BURNSVILLE, TIMBERLAND PARK | 205 HAROLD DR | 5434354 | 161 | 1 | 229 | 1 | 0.4 | 42% | 215 | 1 | -0.1 | -6% |
| Highland Forest Park building | 12920 UPTON AVE S | 5434376 | 260 | 1 | 250 | 1 | -0.1 | -4% | 249 | 1 | 0.0 | 0% |
| RIVERHILLS PARK NO | 11501 19TH AVE S | 5725724 | 586 | 3 | 703 | 4 | 1 | 20% | 1,067 | 6 | 2 | 52% |
| TERRACE OAKS PARK | 12801 COUNTY ROAD 11 | 5776496 | 568 | 3 | 478 | 3 | -0.5 | -16% | 638 | 3 | 1 | 33% |
| TERRACE OAKS PARK EAST | 12650 PARC DR | 5890321 | 200 | 1 | 242 | 1 | 0.2 | 21% | 283 | 2 | 0.2 | 17% |
| **Subtotal (13 accounts)** | | | **5,900** | **32** | **7,306** | **40** | **8** | **24%** | **8,421** | **46** | **6** | **15%** |
| **Water Utility, Potable Water:** | | | | | | | | | | | | |
| CITY OF BURNSVILLE | 1200 BVILLE PKWY - WELL 14 & 15 | 5440535 | 334 | 2 | 395 | 2 | 0 | 18% | 373 | 2 | -0.1 | -6% |
| CITY OF BURNSVILLE PMP ST | 13109 NICOLLET AVE | 5534046 | 2,711 | 15 | 702 | 4 | -11 | -74% | 9,398 | 51 | 47.5 | 1239% |
| CITY OF BURNSVILLE RESERV | 13009 NICOLLET AVE | 5534050 | 1,048 | 6 | 539 | 3 | -3 | -49% | 1,224 | 7 | 3.7 | 127% |
| CITY OF BURNSVILLE WELL 8 | 51 RIVER RIDGE CT | 5767894 | 18,418 | 101 | 7,247 | 40 | -61 | -61% | 7,192 | 39 | -0.3 | -1% |
| CITY OF BURNSVILLE, WATER TREATMENT PLANT (NEW METER) | 50 RIVER RIDGE CT | 7718435 | | 0 | 6,916 | 38 | 38 | | 12,306 | 67 | 29.4 | 78% |
| CITY OF BURNSVILLE, WATER TREATMENT PLANT (OLD METER) | 50 RIVER RIDGE CT | 5721105 | 686 | 4 | 404 | 2 | -2 | -41% | 104 | 1 | -1.6 | -74% |
| CITY OF BURNSVILLE, WELL HOUSE #3 | 800 CLIFF RD E | 5767910 | 7,767 | 42 | 5,341 | 29 | -13 | -31% | 3,127 | 17 | -12.1 | -41% |
| CITY OF BURNSVILLE, WELL HOUSE #4 | 12320 RIVER RIDGE BLVD | 5767906 | 21,957 | 120 | 9,697 | 53 | -67 | -56% | 5,673 | 31 | -22.0 | -41% |
| CITY OF BURNSVILLE, WELL HOUSE #5 | 12330 RIVER RIDGE BLVD | 5767900 | 15,614 | 85 | 5,716 | 31 | -54 | -63% | 4,840 | 26 | -4.8 | -15% |
| CITY OF BURNSVILLE, WELL HOUSE #6 | 150 CLIFF RD E | 5767896 | 9,601 | 52 | 1,618 | 9 | -44 | -83% | 2,830 | 15 | 6.6 | 75% |
| NICOLLET RESERVOIR | 13009 NICOLLET AVE | 5471716 | 12,236 | 67 | 1,254 | 7 | -60 | -90% | 63,097 | 344 | 337.5 | 4932% |
| VILLAGE OF BURNSVILLE WELL #7 | 101 S RIVER RIDGE CIR | 5767892 | 31,785 | 173 | 8,156 | 45 | -129 | -74% | 8,595 | 47 | 2.4 | 5% |
| **Subtotal (12 accounts)** | | | **122,157** | **667** | **47,985** | **262** | **(405)** | **-61%** | **118,759** | **648** | **386** | **147%** |
| **Water Utility, Sanitary Sewers** | | | | | | | | | | | | |
| CITY OF BURNSVILLE LFT ST | 13639 OAKWOOD CURV | 5516417 | 1,449 | 8 | 0 | | | | 0 | | | |
| Maple Island Lift Station--new generator in 2010 | 299 MAPLE ISLAND RD - GENE | 8285592 | 0 | 0 | 0 | | | | 67 | | 67 | |
| **Subtotal (2 accounts)** | | | **1,449** | **8** | **0** | **0** | **(8)** | **-100%** | **67** | **0.4** | **0.4** | |

## Natural Gas Consumption by City Operations

Updated: 4/28/12

| Description | Premise Street | CA# | 2005 | | 2009 | | Change in CO2e | | 2011 | | Change in CO2e | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Consumption (therms) (1) | CO2e (tonnes) (2) | Consumption (therms) (1) | CO2e (tonnes) (2) | Tonnes | % Change | Consumption (therms) (1) | CO2e (tonnes) (2) | Tonnes | % Change |
| **Other Facilities:** | | | | | | | | | | | | |
| CITY OF BURNSVILLE, HEATHER HILL RADIO BLDG. | 13500 HEATHER HILLS DR | 5457262 | 424 | 2 | 14 | 0.1 | -2 | -97% | 19 | 0.1 | 0.03 | 36% |
| **Subtotal (1 account)** | | | **424** | **2** | **14** | **0.1** | **(2)** | **-97%** | **19** | **0.1** | **0.03** | **36%** |
| **Totals** | | | **272,218** | **1,486** | **250,364** | **1,366** | **(119)** | **-8%** | **247,320** | **1,350** | **-17** | **-1%** |

**Notes:**

1. Source: CenterPoint Energy, Inc., Bill Traylor, william.traylor@centerpointenergy.com, 612-321-4716 and Nancee Chester, Nancee.Chester@centerpointenergy.com. Consumption in therms. The therm (symbol thm) is a unit of heat energy equal to 100,000 British thermal units (BTU). It is approximately the energy equivalent of burning 100 cubic feet (often referred to as 1 hcf) of natural gas.
2. Source: Table G.1 and G3, *Local Government Operations Protocol, for the Quantification and Reporting of Greenhouse Gas Emissions Inventories* , Version 1.1, May 2010.
3. In 2010, the City began operation of a geothermal system for the Ice Center.

## New Electricity and Gas Accounts for 2009

Updated: 12/26/10

| Categories | | Electricity | | | Natural Gas | | |
|---|---|---|---|---|---|---|---|
| | | Consumption (kWh) | CO2e Rate (tonnes per kWh) | CO2e (tonnes) | Consumption (Therms) | CO2e Rate (tonnes per decatherm) | CO2e (tonnes) |
| **Buildings (incl. on-site lighting):** | | | | | | | |
| | Performing Arts Center | 1,399,680 | 0.00084 | 1,175.7 | 43,942 | 0.0546 | 239.8 |
| | PARKING RAMP HEART OF THE CITY - 12751 PILLSBURY AVE | 422,016 | 0.00084 | 354.5 | | | |
| | PAC parking deck LIGHT - 101 TRAVELERS TRAIL/PILLSBURY AVE | 13,879 | 0.00084 | 11.7 | | | |
| | **Subtotal** | **1,835,575** | | **1,542** | **43,942** | | **240** |
| **Park and Recreation Facilities, incl. on-site lighting and sprinkling:** | | | | | | | |
| | ALIMAGNET PARK (BASEBALL FIELD)- CTY RD 11 | 26,480 | 0.00084 | 22.2 | | | |
| | BALLFIELD ALIMAGNET PARK - ALIMAGNET PARKWAY | 20,800 | 0.00084 | 17.5 | | | |
| | DOG PARK -1200 ALIMAGNET AVE | 26,973 | 0.00084 | 22.7 | | | |
| | FIELD #5 LIGHTS - 12700 VINCENT AVE S LIGHTS | 12,800 | 0.00055 | 7.0 | | | |
| | FOUNTAIN, RESTROOMS NICOLLET COMMONS PARK - 126TH/NIC AVE | 40,839 | 0.00084 | 34.3 | | | |
| | NICOLLET COMMONS PARK - 12520 NICOLLET AVE | 26,809 | 0.00084 | 22.5 | | | |
| | NICOLLET COMMONS PARK - 12520 NICOLLET AVE-(SPCL EVNT ELECT) | 2 | 0.00084 | 0.0 | | | |
| | NICOLLET COMMONS PARK IRRIGATION, 12520 NICOLLET AVE | 4 | 0.00055 | 0.0 | | | |
| | **Subtotal** | **154,707** | | **126** | | | |
| **Streetlights, signals, and flashers (incl. sprinklers on light pole)** | | | | | | | |
| | CEDAR BRIDGE, 2820 HAYES DR lighting | 573 | 0.00055 | 0.3 | | | |
| | LIGHTS - 140TH ST W/ BURNHAVEN DR | 22,544 | 0.00084 | 18.9 | | | |
| | LIGHTS - 14251 NEWTON AVE | 1,912 | 0.00084 | 1.6 | | | |
| | LIGHTS - 143 ST W /BURNHAVEN DR | 37,588 | 0.00084 | 31.6 | | | |
| | LIGHTS - 15501 LAC LAVON DRIVE | 19,968 | 0.00084 | 16.8 | | | |
| | LIGHTS - BURNHAVEN DR TO BUCKHILL ON SOUTHCROSS DR | 66,479 | 0.00084 | 55.8 | | | |
| | LIGHTS - COUNTY RD 42/COUNTY RD 5 | 26,268 | 0.00084 | 22.1 | | | |
| | LIGHTS - CRYSTAL LAKE/BURNSVILLE DR | 2,878 | 0.00084 | 2.4 | | | |
| | LIGHTS - PLEASNT/BVLL PKWY | 40,356 | 0.00084 | 33.9 | | | |
| | LIGHTS - PORTLAND/BURSVILLE PKWY | 3,459 | 0.00084 | 2.9 | | | |
| | LIGHTS - SOUTHCROSS/EARLEY | 19,466 | 0.00084 | 16.4 | | | |
| | SIGNAL-1508 CRYSTAL LAKE RD E | 235 | 0.00084 | 0.2 | | | |
| | **Subtotal** | **241,726** | | **203** | | | |
| **Water Utility, Potable Water:** | | | | | | | |
| | WATER TREATMENT PLANT, 50 RIVER RIDGE CT (1) | 1,196,668 | 0.00055 | 658.2 | 404 | 0.0546 | 2.2 |
| | POTABLE WATER MONITORING SYSTEM, SCADA COUNTY RD 42 & COUNTY RD 5 | 494 | 0.00084 | 0.4 | | | |
| | PUMP -MAPLE ISLAND ROAD | 408 | 0.00084 | 0.3 | | | |
| | PUMPING STN KRAEMER QUARRY, 1446 CLIFF RD W | 421,920 | 0.00055 | 232.1 | | | |
| | SCADA -12330 COUNTY RD 11 | 543 | 0.00084 | 0.5 | | | |
| | WATER LEVEL MONITOR METER, W PRESERVE BLVD | 14,419 | 0.00083 | 12.0 | | | |
| | WELL #17, 2349 BURNSVILLE PKWY E | 578,208 | 0.00084 | 485.7 | | | |
| | **Subtotal** | **2,212,660** | | **1,389** | **404** | | **2** |
| **Totals** | | **4,444,668** | | **3,260** | **44,346** | | **242** |
| **Grand total CO2e** | | | | | | | **3,502** |

**Notes:**

1 Addition opened in mid-2009. Assumes 100% of consumption difference with 2005 assumed to be attributable to new addition

| Emergency Generator Usage | | | |
|---|---|---|---|
| Updated 2/23/12 | | | |
| | | | |
| **Generator** | **2005 (gal) (1)** | **2009 (gal) (1)** | **2011 (gal) (1)** |
| City Hall | 1,150 | 250 | 1,025 |
| Maintenance Shop | 535 | 166 | 500 |
| Ice Center | 1,711 | 529 | 1,690 |
| Water Treatment Plant | 400 | 100 | 1,350 |
| Parking Deck | 30 | 30 | 30 |
| Performing Arts Center | | | 884 |
| Totals | 3,826 | 1,075 | 4,595 |
| CO2e emissions (tonnes) | 39 | 11 | 47 |
| **Diesel Fuel Greenhouse Gas Emission Factors and Global Warming Potential** | | | |
| **Greenhouse Gas Emissions (2)** | **GHG Emission Factors** | **Global Warming Potential** | **CO2e** |
| CO2 (g/gal | 10,210 | 1 | 10,210 |
| N2O (g/gal) | 0.028 | 310 | 8.68 |
| CH4 (g/gal) | 0.031 | 21 | 0.64 |
| Total (g/gal) | | | 10,219 |
| **Notes:** | | | |
| 1 | Source: City of Burnsville | | |
| 2 | Source: Table G.9, G.10, G11, and G.14, *International Local Government Greenhouse Gas Emissions Analysis Protocol*. Figures are converted from g/ml to g/gallon using 3,785 ml/gallon. | | |

## City Transportation

Updated: 3/8/12

| Category | 2005 Gasoline, Passenger Cars and Light Duty Vehicles | 2005 Diesel, Heavy Duty Vehicles | 2005 Miles of Constr. | 2005 Constr. Costs ($1,000) | 2005 Totals | 2009 E-85, Passenger Cars (gal) | 2009 Gasoline, Passenger Cars and Light Duty Vehicles | 2009 Diesel, Heavy Duty Vehicles | 2009 Miles of Constr. | 2009 Constr. Costs ($1,000) | 2009 Totals | Change from 2005 | % Change | 2011 E-85, Passenger Cars (gal) | 2011 Gasoline, Passenger Cars and Light Duty Vehicles | 2011 Diesel, Heavy Duty Vehicles | 2011 Miles of Constr. | 2011 Constr. Costs ($1,000) | 2011 Totals | Change from 2009 | % Change |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Public Works and Contracted** | | | | | | | | | | | | | | | | | | | | | |
| Public Works (gal) (1) | 120,340 | 58,845 | | | 179,185 | 22,145 | 101,541 | 56,727 | | | 180,413 | 1,228 | 1% | 6,708 | 112,160 | 97,393 | | | 216,261 | 35,848 | 20% |
| CO2e (tonnes) (2) | 1,112 | 632 | | | 1,745 | 134 | 938 | 610 | | | 1,682 | (62) | -4% | 41 | 1,037 | 1,047 | | | 2,124 | 442 | 26% |
| Contracted services (gal & $) (3) | | | | | | | | | | | | | | | | | | | | | |
| Snow plowing | | 4,000 | | | | | | 2,000 | | | | | | | 40 | 790 | | | | | |
| Road reconstruction | 2,261 | 42,955 | 3.1 | $ 2,826 | | | 3,257 | 61,879 | 4.13 | $ 4,071 | | | | | 3,722 | 70,710 | 4.40 | $ 4,652 | | | |
| Road rehabilitation | 802 | 15,230 | 2.9 | $ 1,002 | | | 552 | 10,488 | 5.05 | $ 690 | | | | | 754 | 14,334 | 1.87 | $ 943 | | | |
| Seal coating | 200 | 3,800 | 12.8 | $ 250 | | | 169 | 3,207 | 17.56 | $ 211 | | | | | 320 | 6,080 | 12.90 | $ 400 | | | |
| Subtotal (gal) | 3,262 | 61,986 | | | 65,248 | | 3,978 | 75,574 | | | 79,552 | 14,304 | 22% | | 4,796 | 91,124 | | | 95,920 | 16,368 | 21% |
| CO2e (tonnes) (2) | 30 | 666 | | | 696 | | 37 | 812 | | | 849 | 153 | 22% | | 44 | 979 | | | 1,024 | 175 | 21% |
| **Totals (gal)** | | | | | | | | | | | | | | | | | | | | | |
| **Fuel consumption (gal)** | **123,602** | **120,831** | | | **244,433** | **22,145** | **105,519** | **132,301** | | | **259,965** | **15,532** | **6%** | **6,708** | **116,956** | **188,517** | | | **312,181** | **52,216** | **20%** |
| **CO2e (tonnes) (2)** | **1,142** | **1,299** | | | **2,441** | **134** | **975** | **1,422** | | | **2,531** | **90** | **4%** | **41** | **1,081** | **2,026** | | | **3,148** | **616** | **24%** |
| **Employee commute (2010 VMT) (8)** | | | | | | | | | | | | | | | | | | | | | |
| VMT, 2010 | 1,492,339 | | | | | | 1,751,177 | | | | | | | | 1,695,282 | | | | | | |
| Fuel consumption (gal) (4) | 75,371 | | | | | | 88,443 | | | | | | | | 85,620 | | | | | | |
| **CO2e (tonnes) (2)** | **697** | | | | **697** | | **817** | | | | **817** | **121** | **17%** | | **791** | | | | **791** | **(26)** | **-3%** |
| **Business travel (2010 VMT)** | | | | | | | | | | | | | | | | | | | | | |
| VMT | | | | | | | 4,000 | | | | | | | | 4,000 | | | | | | |
| Fuel consumption (gal) (4) | | | | | | | 202 | | | | | | | | 202 | | | | | | |
| CO2e (tonnes) (2) | | | | | | | 1.8 | | | | | | | | 1.8 | | | | | | |
| Airline trips | | | | | | | | | | | 7 | | | | | | | | 7 | | |
| Assumed CO2 per total aircraft operation (tonnes) (5) | | | | | | | | | | | 7.5 | | | | | | | | 7.5 | | |
| **Total CO2e (tonnes) (9)** | | | | | **9.2** | | | | | | **9.2** | | | | | | | | **9.2** | | |
| **Total CO2e (tonnes)** | | | | | **3,147** | | | | | | **3,358** | **211** | **7%** | | | | | | **3,948** | **590** | **18%** |

| **Transportation Fuels: Greenhouse Gas Emission Factors** | **E-100 (Ethanol) (6)** | **E-85 (6)** | **E-10 (6)** | **Gasoline, Passenger Cars** | **Gasoline, Light Duty Vehicles** | **Diesel, Heavy Duty Vehicles** |
|---|---|---|---|---|---|---|
| CO2 (g/gal) (7) | 5,750 | 6,205 | 8,477 | 8,780 | 8,780 | 10,210 |
| CO2e (g/gal) (2) | 6,053 | 6,531 | 8,923 | 9,242 | 9,242 | 10,747 |
| CO2e (tonnes per 1,000 gal) | 6.1 | 6.5 | 8.9 | 9.2 | 9.2 | 10.7 |

**Notes:**

1. City provided total gallons consumed.
2. Source: http://www.epa.gov/oms/climate/420f05004.htm. "In addition to carbon dioxide, automobiles produce methane ($CH_4$) and nitrous oxide ($N_2O$) from the tailpipe, as well as HFC emissions from leaking air conditioners. The emissions of $CH_4$ and $N_2O$ are related to vehicle miles traveled rather than fuel consumption, and the emissions of $CH_4$, $N_2O$, and HFCs are not as easily estimated from a vehicle as for $CO_2$.[3.] On average, $CH_4$, $N_2O$, and HFC emissions represent roughly 5 - 6 percent of the GHG emissions from passenger vehicles, while $CO_2$ emissions account for 94-95 percent, accounting for the global warming potential of each greenhouse gas. (These percentages are estimated from the EPA *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990 - 2001* .)" To simplify this estimate, it is assumed that $CH_4$, $N_2O$, and HFCs account for 5 percent of emissions, and the $CO_2$ estimate was multiplied by 100/95 to incorporate the contribution of the other greenhouse gases.
3. The general contractor, McNamara Contracting, uses 0.016 gallons per construction dollar and that approximately 95% of fuel use is in heavy duty diesel vehicles and 5% in light duty gas trucks. City staff have determined these estimations are reasonably accurate for all City contracts and that, since fuel consumption doesn't vary
4. Assumes national average fuel efficiency of 19.8 mpg. Source: http://www.fhwa.dot.gov/policy/ohpi/hss/index.cfm
5. Refer to "Estimate of Per-Capita Share of Emissions Attributable to the Minneapolis Saint Paul International Airport Operations" elsewhere in this report.
6. Source: Table G.12, *International Local Government Greenhouse Gas Emissions Analysis Protocol* provides the E-100 emission factor. Emission factors for E-85 and E-10 are derived as proportionate mixtures of E-100 and gasoline.
7. Table G.11 and G.13, *International Local Government Greenhouse Gas Emissions Analysis Protocol*
8. Assumes same employee commute estimate in 2011 as for 2010.
9. Assumes same employee business travel in 2005 and 2011 as for 2010.

## Employee Commute and Business Travel

Updated: 2/29/12

| Employee Survey (1) | | Employees | Daily VMT | Annual VMT | Ave. Daily VMT |
|---|---|---|---|---|---|
| | Full-time, drive alone | 71 | 1,705 | 397,195 | 24 |
| | Full-time, drive alone, alt. mode: pool (2) | 5 | 213 | 39,874 | 34 |
| | Full-time, drive alone, alt. mode: bike, walk, or telecommute (2) | 2 | 55 | 9,868 | 21 |
| | Part-time (>20 hours), drive alone | 7 | 90 | 14,712 | 9 |
| | Part-time (<20 hours), drive alone | 1 | 18 | 1,678 | 7 |
| | **Totals** | **86** | **2,081** | **463,325** | **23** |
| | Average VMT per survey respondent | | | 5,388 | |
| **Projected VMT for all employees (3)** | | | | | |
| | Total FTE jobs, 2005 | 277 | | 1,492,339 | |
| | Total FTE jobs, 2009 | 325 | | 1,751,177 | |
| | Total FTE jobs, 2011 | 315 | | 1,695,282 | |

| FTE Assumptions | Full-Time | Part-Time Employees | | |
|---|---|---|---|---|
| | | More than 20 hours/week | Less than 20 hours/week | |
| Possible workdays per year | 260 | | | |
| Holidays | 12 | | | |
| Average vacation days | 10 | | | |
| Average sick days | 5 | | | |
| Net work days | 233 | 163 | 93 | |

| Business Travel (2011 estimate) | VMT | Aircraft Operations |
|---|---|---|
| Mayor and Council mileage | 4,000 | |
| Airline trips | | 7 |

**Notes:**

| | |
|---|---|
| 1 | The City conducted an email-based survey of employee survey habits in September 2010. |
| 2 | Alternative mode counted as 33% of work week. Assumes 2.5 people per average car/van pool. |
| 3 | Assumes the average VMT for the 86 out of 277 FTE employees (31%) survey sample is representative of all of the employees. For comparison purposes, the average employee VMT was 7,085 for Dakota County employees in 2009. Source: "The Dakota County Energy Efficiency and Greenhouse Gas Emissions Reduction Report." |

## Water Consumption and GHG Emissions from Sanitary Sewer Treatment

Updated: 5/19/12

| Categories | 2005 | 2009 | 2011 | Change from 2009 | |
|---|---|---|---|---|---|
| | | | | Amount | % Change |
| Total treated & pumped water (billions of gal) (1) | 2.64 | 2.55 | 3.20 | 0.65 | 25% |
| Sales to other cities (billions of gal) (2) | 0.01 | 0.13 | 0.59 | 0.46 | 346% |
| Sales as a percent of total treated & pumped water | 0.3% | 5.2% | 18.5% | | 13.3% |
| Net total treated & pumped water (billions of gal) | 2.63 | 2.42 | 2.61 | 0.19 | 8% |
| Per-capita daily consumption (gal) | 118 | 108 | 117 | 8 | 8% |
| Per-household daily consumption (gal) | 296 | 268 | 289 | 21 | 8% |
| Electrical energy use for water pumping and treatment (kWh/gal) (3) | 0.0055 | 0.0070 | 0.0036 | -0.003 | -49% |
| Winter per-capita daily consumption (gal) | 88.6 | 82.8 | 101.0 | 18 | 22% |
| Winter as a % of total per-capita consumption | 75% | 76% | 86% | 0.10 | 13% |
| Estimated wastewater treatment (billions of gal) (4) | 1.98 | 1.85 | 2.25 | 0.41 | 22% |
| Assumed per-capita fugitive emissions associated with wastewater treatment (tonnes per 1,000 pop) (5) | 4.02 | 4.02 | 4.02 | | |
| Population | 61,262 | 61,047 | 61,110 | 63 | 0.1% |
| Estimated fugitive GHG emissions associated with wastewater treatment (tonnes) | 247 | 246 | 246 | 0.3 | 0.1% |

**Notes:**

| | |
|---|---|
| 1 | Source: City of Burnsville |
| 2 | The City sold a significant amount of water to the City of Savage in 2011 and minor amounts of water to the cities of Eagan and Lakeville in all of the study years. |
| 3 | Figures are net energy after reducing total energy consumption by the percent of water sales to other cities. |
| 4 | Figures are net wastewater treatment after reducing the total treatment by the percent of water sales to other cities. |
| 5 | The baseline assessment for the District of Columbia (*District of Columbia Greenhouse Gas Emissions Inventory, 2006 Calendar Year Baseline* ) included an extensive calculation of the greenhouse gas emissions associated with wastewater treatment facilities. Considering that wastewater treatment comprises a tiny portion of the City's total emissions, it is assumed that per-capita, the City's wastewater treatment emissions are comparable to those for DC. |

## Waste Generation from City Operations

Updated: 5/19/12

| | | Jobs | Incinerated Waste | Land disposal of MSW | Total |
|---|---|---|---|---|---|
| **2005** | | | | | |
| **Dakota County** | | 170,908 | | | |
| | Tons of MSW | | 46,644 | 199,827 | |
| | Waste per job (tons) | | 0.27 | 1.17 | 1.44 |
| **Burnsville** | | 33,536 | | | |
| | Tons of MSW | | 7,494 | 32,105 | |
| | Waste per job (tons) | | 0.22 | 0.96 | 1.18 |
| **City operations (1)** | | 277 | | | |
| | Tons of MSW | | 62 | 265 | |
| | Waste per job (tons) | | 0.22 | 0.96 | 1.18 |
| | GHG emission rates (tonnes/ton MSW processed) (2) | | 0.236 | 0.244 | |
| | GHG (tonnes) | | 14.6 | 64.7 | 79 |
| **2009** | | | | | |
| **Dakota County (2)** | | 169,100 | | | |
| | Tons of MSW | | 44,456 | 173,140 | |
| | Waste per job (tons) | | 0.26 | 1.02 | 1.29 |
| **Burnsville (3)** | | 32,089 | | | |
| | Tons of MSW | | 6,756 | 26,312 | |
| | Waste per job (tons) | | 0.21 | 0.82 | 1.03 |
| **City operations (1)** | | 286 | | | |
| | Tons of MSW | | 60 | 235 | |
| | Waste per job (tons) | | 0.21 | 0.82 | 1.03 |
| | GHG emission rates (tonnes/ton MSW processed) (2) | | 0.236 | 0.244 | |
| | GHG (tonnes) | | 14.2 | 57.2 | 71 |
| **2011** | | | | | |
| **Dakota County (2)** | | 170,582 | | | |
| | Tons of MSW | | 35,550 | 180,460 | |
| | Waste per job (tons) | | 0.21 | 1.06 | 1.27 |
| **Burnsville (3)** | | 31,656 | | | |
| | Tons of MSW | | 5,451 | 27,670 | |
| | Waste per job (tons) | | 0.17 | 0.87 | 1.05 |
| **City operations (1)** | | 270 | | | |
| | Tons of MSW | | 46 | 236 | |
| | Waste per job (tons) | | 0.17 | 0.87 | 1.05 |
| | GHG emission rates (tonnes/ton MSW processed) (2) | | 0.236 | 0.244 | |
| | GHG (tonnes) | | 11.0 | 57.6 | 69 |

**Notes:**

1 It is assumed that City operations will generate waste at the same per-job rate as estimated for the City of Burnsville as a whole. For comparison purposes, the average waste generation in 2009 for employees of Dakota County was 0.24 tons. Source: "The Dakota County Energy Efficiency and Greenhouse Gas Emissions Reduction Report."

2 Based on estimating method developed for the Community Waste analysis

## Population and Household Estimates

Updated 5/19/12

| Year | Burnsville | | | Dakota County | | | Metro (3) |
|---|---|---|---|---|---|---|---|
| | Population (1) | Households (1) | Jobs (2) | Population (1) | Households (1) | Jobs (2) | Population (1) |
| 2011 | 61,110 | 24,745 | 31,656 | | | 170,582 | |
| 2010 | 60,306 | 24,283 | | 398,552 | 152,060 | | 2,849,567 |
| 2009 | 61,047 | 24,723 | 32,089 | 401,698 | | 169,100 | 2,818,758 |
| 2008 | 61,081 | 24,592 | | | | | 2,785,272 |
| 2007 | 61,393 | 24,622 | | | | | 2,769,433 |
| 2006 | 61,048 | 24,425 | | | | | 2,821,779 |
| 2005 | 61,262 | 24,380 | 33,536 | 381,300 | | 170,908 | 2,810,179 |
| 2004 | 61,425 | 24,111 | | | | | |
| 2003 | 61,355 | 24,184 | | | | | |
| 2002 | 60,900 | 24,010 | | | | | |
| 2001 | 60,434 | 23,798 | | | | | |
| 2000 | 60,286 | | | | | | 2,642,056 |

**Notes:**

| | |
|---|---|
| 1 | Source for 2000 and 2007 to 2010: http://stats.metc.state.mn.us/data_download/DD_Data.aspx?datasource=pophh&comms='037'&subjects=&years='2009'%2c'2008'%2c'2007'%2c'2006'%2c'2005'%2c'2004'%2c'2003'%2c'2002'%2c'2001'%2c'2000'%2c'1990'%2c'1980'%2c'1970'&level=COCTU |
| | Source for 2005 and 2006: http://www.metrocouncil.org/metroarea/2005PopulationEstimates.pdf |
| 2 | The figures for Dakota County and Burnsville show the actual numbers of jobs within the jurisdictions, whether they involved 1 hour a quarter or full-time for all thirteen weeks in a quarter. MN DEED data is not FTE-adjusted. Source: http://www.positivelyminnesota.com/Data_Publications/Data/All_Data_Tools/Quarterly_Census_of_Employment_Wages_(QCEW).aspx. The municipal job count is FTE for the current time. It does not count seasonal and temporary jobs. Source: City of Burnsville. |
| 3 | Seven County Metro Area |

## Full Time Equivalent and Part Time Jobs

| | 2005 | 2009 | 2011 |
|---|---|---|---|
| Full time equivalent (FTE) jobs | 277 | 286 | 270 |
| Seasonal/part-time costs | | $ 812,116 | $ 929,120 |
| Assumed average hourly wage | | $ 10 | $ 10 |
| Average hours worked | | 81,212 | 92,912 |
| Hours in an FTE work year | 2,080 | 2,080 | 2,080 |
| Seasonal/part-time FTE | | 39 | 45 |
| Total FTE | 277 | 325 | 315 |

## Normalized City Energy Use: Buildings, Facilities, and Water Utility

Updated: 12/28/10

The purpose of this table is to account for the effects of weather differences and differences in facility availability between the two study years.

| Categories | Amount (1) | | Change from 2005 | | Normalized for New Accounts | | |
|---|---|---|---|---|---|---|---|
| | 2005 | 2009 | Amount (1) | % Change | New Accounts | Normalized 2009 Base (3) | Normalized % Change (4) |
| **Energy: Electricity, Emergency Generators, and Natural Gas** | | | | | | | |
| **Buildings, incl. on-site lighting:** | | | | | | | |
| Electricity | 4,183,566 | 5,760,259 | 1,576,693 | 38% | 1,835,575 | 3,924,684 | -6% |
| Normalized for SCDD (2) | 3,919,220 | 5,985,060 | 2,065,841 | 53% | | 4,077,850 | 4% |
| GHG emissions from electricity | 3,807 | 4,838 | 1,031 | 27% | 1,542 | 3,296 | -13% |
| Natural gas | 142,288 | 195,059 | 52,771 | 37% | 43,942 | 151,117 | 6% |
| Normalized for SHDD (2) | 156,407 | 196,242 | 39,836 | 25% | | 152,034 | -3% |
| GHG emissions from gas | 776 | 1,064 | 288 | 37% | 240 | 825 | 6% |
| **Park and Recreation Facilities, incl. on-site lighting and sprinkling:** | | | | | | | |
| Electricity | 346,947 | 459,173 | 112,226 | 32% | 154,707 | 304,466 | -12% |
| Normalized for SCDD (2) | 325,025 | 477,093 | 152,068 | 47% | | 316,348 | -3% |
| GHG emissions from electricity | 309 | 367 | 58 | 19% | 126 | 241 | -22% |
| Natural gas | 5,900 | 7,306 | 1,406 | 24% | | | |
| Normalized for SHDD (2) | 6,485 | 7,350 | 865 | 13% | | | |
| GHG emissions from gas | 32 | 40 | 8 | 24% | | | |
| **Other facilities** | | | | | | | |
| Electricity | 138,603 | 142,966 | 4,363 | 3% | | | |
| GHG emissions from electricity | 126 | 120 | (6) | -5% | | | |
| Natural gas | 424 | 14 | (410) | -97% | | | |
| GHG emissions from gas | 2 | 0.1 | (2) | -97% | | | |
| GHG emissions from emergency power generators | 39 | 11.0 | (28) | -72% | | | |
| **Subtotal for Buildings and Related Facilities** | | | | | | | |
| Electricity | 4,669,116 | 6,362,398 | 1,693,282 | 36% | 1,990,282 | 4,372,116 | -6% |
| Normalized for SCDD (2) | 4,244,244 | 6,462,153 | 2,217,909 | 52% | | 4,394,198 | 4% |
| GHG emissions from electricity | 4,281 | 5,336 | 1,055 | 25% | 1,668 | 3,668 | -14% |
| GHG emissions normalized for weather | 4,011 | 5,545 | 1,534 | 38% | | 3,811 | -5% |
| Natural gas | 148,612 | 202,379 | 53,767 | 36% | 43,942 | 158,437 | 7% |
| Normalized for SHDD (2) | 162,892 | 203,593 | 40,701 | 25% | | 152,034 | -7% |
| GHG emissions from gas | 811 | 1,104 | 293 | 36% | 240 | 865 | 7% |
| GHG emissions normalized for weather | 891 | 1,111 | 220 | 25% | | 870 | -2% |
| Total GHG emissions normalized for weather (electricity and gas) | 4,902 | 6,656 | 1,753 | 36% | 1,908 | 4,681 | -5% |
| **Streetlights, Signals and Flashers (electricity)** | | | | | | | |
| Electricity | 2,175,927 | 2,211,109 | 35,182 | 2% | 241,726 | 1,969,383 | -9% |
| GHG emissions from electricity | 1,885 | 1,713 | (172) | -9% | 203 | 1,510 | -20% |
| **Water Utility, potable water** | | | | | | | |
| Electricity | 14,404,255 | 17,945,296 | 3,541,041 | 25% | 2,212,660 | 15,732,636 | 9% |
| GHG emissions from electricity | 11,147 | 11,441 | 294 | 3% | 1,389 | 10,052 | -10% |
| Natural gas | 122,157 | 47,985 | (74,172) | -61% | 404 | 47,581 | -61% |
| GHG emissions from gas | 667 | 262 | (405) | -61% | 2 | 260 | -61% |
| **Sanitary Sewers** | | | | | | | |
| Electricity | 150,403 | 145,331 | (5,072) | -3% | | | |
| GHG emissions from electricity | 135 | 119 | (16) | -12% | | | |
| Natural gas | 1,449 | - | | | | | |
| GHG emissions from gas | 8 | 0 | (8) | -99% | | | |
| **Totals for Energy** | | | | | | | |
| Electricity | 21,399,701 | 26,664,134 | 5,264,433 | 25% | 4,444,668 | 22,074,135 | 3% |
| Normalized for SCDD (2) | 20,824,426 | 26,618,558 | 5,794,132 | 28% | | 22,096,217 | 6% |
| GHG emissions from electricity | 17,448 | 18,609 | 1,161 | 7% | 3,260 | 15,349 | -12% |
| GHG emissions normalized for weather | 17,178 | 18,818 | 1,640 | 10% | | 15,373 | -11% |
| Natural Gas | 272,218 | 250,364 | (21,854) | -8% | 44,346 | 206,018 | -24% |
| Normalized for SHDD (2) | 285,049 | 251,578 | (33,471) | -12% | | 199,615 | -30% |
| GHG emissions from gas | 1,486 | 1,366 | (119) | -8% | 242 | 1,124 | -24% |
| GHG emissions normalized for weather | 1,566 | 1,373 | (193) | -12% | | 1,130 | -28% |
| Total GHG emissions | 18,934 | 19,976 | 1,042 | 6% | 3,502 | 16,474 | -13% |
| Total GHG emissions normalized for weather | 18,744 | 20,191 | 1,447 | 8% | | 16,503 | -12% |

## Normalized City Energy Use: Buildings, Facilities, and Water Utility

Updated: 12/28/10

The purpose of this table is to account for the effects of weather differences and differences in facility availability between the two study years.

| Categories | Amount (1) | | Change from 2005 | | Normalized for New Accounts | | |
|---|---|---|---|---|---|---|---|
| | 2005 | 2009 | Amount (1) | % Change | New Accounts | Normalized 2009 Base (3) | Normalized % Change (4) |
| **Transportation** | | | | | | | |
| GHG emissions from transportation | 3,147 | 3,358 | 211 | 7% | | | |
| **Solid Waste Management** | | | | | | | |
| GHG emissions from waste management | 79 | 71 | (8) | -10% | | | |
| **Grand Totals** | | | | | | | |
| Total GHG emissions | 22,160 | 23,405 | 1,245 | 6% | 3,502 | 19,903 | -10% |
| Total GHG emissions normalized for weather | 21,970 | 23,620 | 1,650 | 8% | | 19,932 | -9% |

**Notes:**

1. Electricity amounts in kWh; natural gas in therms. The very small usage of diesel fuel for emergency power generation is ignored in this analysis.
2. Normalized Standard Heating/Cooling Degree Days predicts the energy consumption based on the 118-year average SHDD/SCDD, not the actual amounts. For electricity, its is assumed 25% of electricity consumption is for air conditioning. For natural gas, it is assumed 80% is for heating buildings.
3. The purpose is to show change in consumption using only the facilities in existence in 2005. The figures are derived by reducing the consumption amounts for 2009 by the consumption from the new accounts.
4. Normalized change is the sum of the accounts that did not exist in 2005 (expressed as a negative) plus the change from 2005. The % change figure uses the 2005 amount as the denominator.

## Sensitivity Analysis, 2009

Updated: 11/1/10

| Inventory Components | Data Sources | Reliability | Maximum Range of Component Accuracy (±%) | Component Percent of Total GHG | Maximum Range of Inventory Accuracy (±%) | Likely Range of Inventory Accuracy (±%) |
|---|---|---|---|---|---|---|
| **Community-Wide Inventory** | | | | | | |
| Electricity and natural gas | Energy consumption from utilities | Extremely accurate data via individual meters. | 5% | 67% | 3.3% | 1.3% |
| | GHG emission factors from utilities | Required by law to measure and report accurately. | | | | |
| | Global warming potentials of GHG emissions from internationally recognized scientists | Extremely accurate data via scientific measurements. | | | | |
| GHG from VMT | MNDOT measured and estimated VMT (1) | State-verified data dating back more than 2 decades. Alternative estimation was within 2% of MN DOT estimates. (1) | 5% | 32% | 1.6% | 0.6% |
| | USDOT Mobile 5 computer model and scientifically determined GHG emission factors | Relies on national fleet mix and driving characteristics. Local fleet mix and driving habits could vary by percentage shown and still be within the range of acceptability for the total GHG estimate. | 16% | | 4.9% | 1.6% |
| GHG from share of MSP Airport, rail, water, & waste | MSP Airport data, and data from the railroads, barge companies, Army Corps of Engineers, MNDOT, MPCA, Metropolitan Council, Dakota County | Reasonable estimates based on actual measurements, extrapolation, and reasonable assumptions. | 10% | 2% | 0.2% | 0.1% |
| **Total** | | | | **100%** | **10.0%** | **3.6%** |
| **City-Operations Inventory** | | | | | | |
| City buildings, facilities, streetlights, signals, flashers, and water utility | Energy consumption from utilities | Extremely accurate data via individual meters. | 5% | #REF! | #REF! | #REF! |
| | GHG emission factors from utilities | Required by law to measure and report accurately. | | | | |
| | Global warming potentials of GHG emissions from internationally recognized scientists | Extremely accurate via scientific measurements. | | | | |
| Public Works | Fuel consumption data from City | Extremely accurate data via individual meters. | 2% | | | |
| | Global warming potentials of GHG emissions from internationally recognized scientists | Extremely accurate data via scientific measurements. | | | | |

**Notes:**

1 MNDOT traffic engineers use a variety of devices to collect traffic data including permanently installed loop detectors every half mile on metro area freeways, Automatic Traffic Recorders (ATRs) permanently installed in key locations throughout the state, and tube counts. The biggest share of the state-wide counts comes from road tubes that are placed on the roadway for a 48-hour period. These counts are then adjusted to annual average daily traffic (AADT) by using factors that are derived from continuous counting sites.

| | |
|---|---|
| 2 | The CACP software uses USDOT computer models that contain national emission factors for mobile sources broken down by 14 fuel types and a varying number of vehicle types per fuel. For each vehicle/fuel combination, it contains distance-based emission factors and fuel economy associated with each vehicle class (e.g., light truck, auto-compact, transit bus, heavy truck, rail and marine diesel, etc) for the years 1990 to 2020. This accounts for changes in the average on-road vehicle fleet over time (e.g., aging of the fleet, transition to newer models and vehicle types, etc.). |

## Community Comparisons

Updated: 12/20/10

| Selected Cities | Electricity | | Natural Gas | | Transportation | | Waste | | Total | | Sector Comparison, GHG | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | % of Total GHG | Per-Capita (Tonnes) | % of Total GHG | Per-Capita (Tonnes) | % of Total GHG | Per-Capita (Tonnes) | % of Total GHG | Per-Capita (Tonnes) | % of Total GHG | Per-Capita (Tonnes) | Residential | Commercial & Industrial |
| Falcon Heights (2009) (1) | 63% | 10.3 | 14% | 2.2 | 22% | 3.5 | 2% | 0.3 | 100.0% | 16.4 | 20% | 80% |
| St. Louis Park (2009) (2) | 38% | 6.1 | 24% | 3.9 | 36% | 5.8 | 1% | 0.2 | 100.0% | 15.9 | 34% | 66% |
| Burnsville (2009) (3) | 35% | 6.5 | 32% | 6.0 | 32% | 6.1 | 1% | 0.1 | 100.0% | 18.8 | 32% | 68% |
| Minneapolis (2006) (4) | 45% | 6.6 | 29% | 3.9 | 26% | 4.0 | 0.2% | 0.04 | 100% | 14.8 | 30% | 70% |
| Minneapolis normalized for 2009 weather (5) | | 6.8 | | 2.2 | | | | | | 13.1 | | |

| Selected Cities | Population | Per-Capita Energy Consumption | | Per-Capita VMT (6) | | | | |
|---|---|---|---|---|---|---|---|---|
| | | Electricity (MWh) | Gas (Dth) | Total Miles | Freeways | Freeways % of Total | Local Streets | Local % of Total |
| Falcon Heights (2009) (1) | 5,762 | 19 | 40 | 5,954 | 1,713 | 29% | 846 | 14% |
| St. Louis Park (2009) (2) | 44,293 | 11 | 71 | 9,800 | 2,808 | 29% | 695 | 7% |
| Burnsville (2009) (3) | 61,047 | 9 | 111 | 9,483 | 4,919 | 52% | 942 | 10% |
| Minneapolis (2006) (4) | 375,065 | 11 | 33 | 6,419 | 3,164 | 49% | 514 | 8% |
| Minneapolis normalized for 2009 weather (5) | | 12 | 19 | | | | | |

**Notes:**

1. *Falcon Heights Carbon Baseline Assessment*, November 2010.
2. *Saint Louis Park Carbon Baseline Assessment*, November 2010.
3. *Burnsville Greenhouse Gas Inventory*, November 2010.
4. Minneapolis natural gas figures include fuel oil and U of M district energy, both of which are primarily for space heating. Source: Minneapolis Carbon Assessment Project, 2009
5. Heating degree days were 15% lower in 2006 than in 2009 and cooling degree days were 54% higher. Assumes 25% of electricity used for air conditioning and 80% of natural gas used for space heating.
6. Freeways include the Interstate and the Minnesota Trunk Highway systems. Local streets include roads other than freeways, highways, Minnesota State Aid roads, and County Aid roads.

## Existing Land Use Map
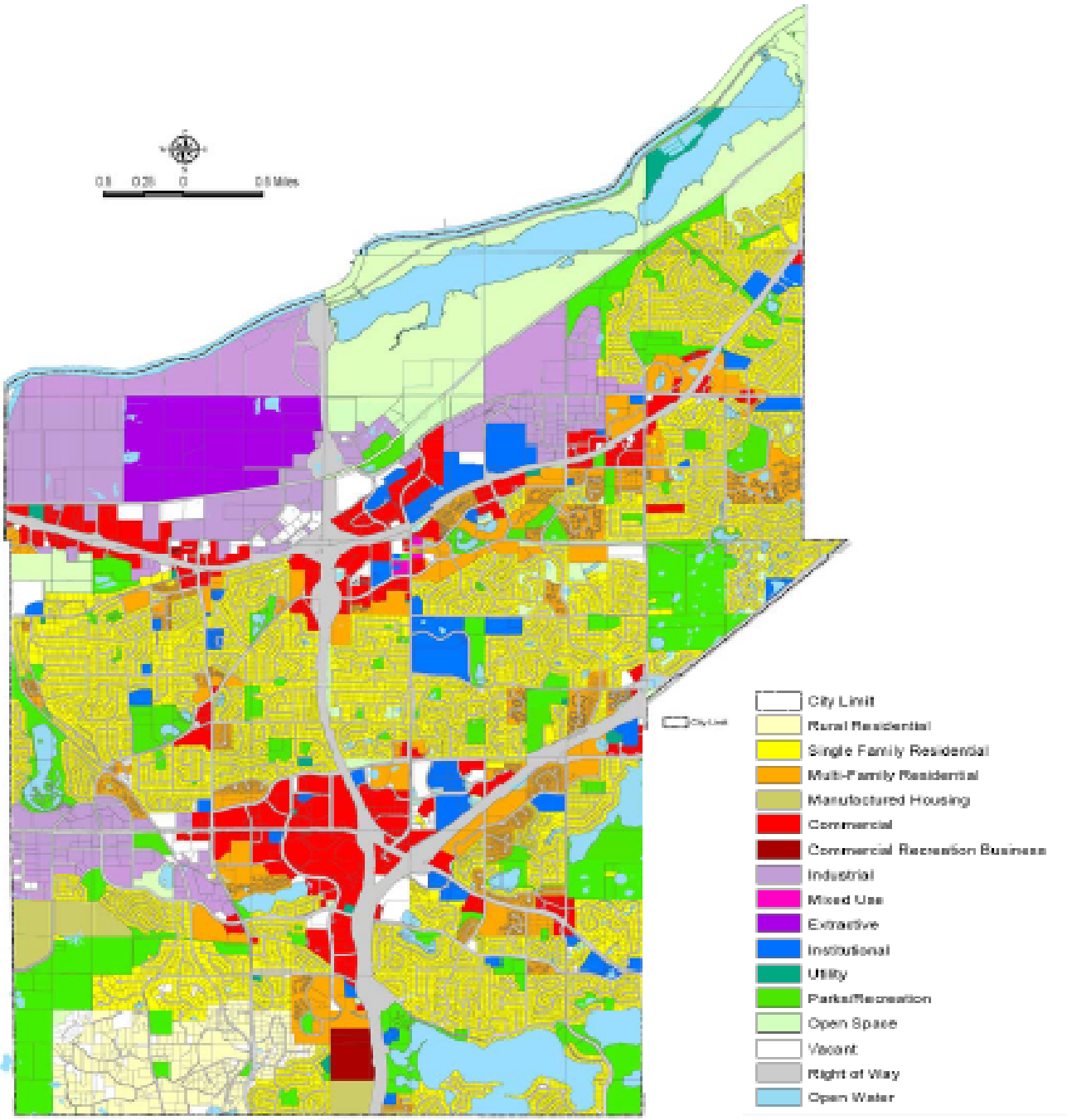
Figure 5, Burnsville Existing Conditions Map