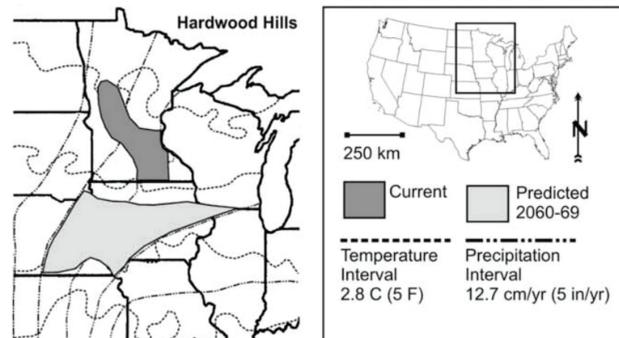


# Rosemount Greenhouse Gas Emissions Study

## Local Implications

- According to the Minnesota Department of Natural Resources:
- Since 1895, average temperature in Minnesota has increased 1.9°F and annual precipitation has increased by 3.1”
  - By the end of the century, average temperatures will increase 5–9°F and annual precipitation will increase by 6.8–11.5%.
  - By the year 2069, Dakota County will have a similar climate to western Iowa.



(Source: Galatowitsch, S., et al)

As a rapidly developing city with active commercial, industrial, agricultural and residential sectors, Rosemount has an opportunity to be proactive about reducing GHG emissions.

### Greenhouse Gas Reduction Goals:

- The U.S. Conference of Mayors Climate Protection Agreement, which Rosemount signed, set a goal of a 7% reduction from 1990 emissions levels by 2012.
- The State of Minnesota has declared a goal of 15% reductions from 2005 emissions levels by 2015, 30% by 2025, and 80% by 2050 (M.S. 216H).

### Rosemount's Current Efforts

- Resilient Communities Project
- GreenStep Cities Program
- B3 Benchmarking
- STAR Communities
- Conference of Mayors

## Emissions Analysis

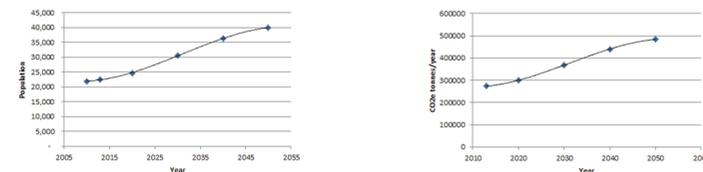
Rosemount's GHG Emissions in 2007 and 2014:

Community-Wide Emissions (tonnes)	2007	2013	Percent Change
<b>ENERGY</b>			
Electricity	122,607	91,545	-25.3%
Natural Gas	48,645	69,203	42.3%
Subtotal CO <sub>2</sub> e Emissions	171,252	160,748	-6.1%
<b>TRANSPORTATION</b>			
	102,391	84,197	-17.8%
<b>WASTE</b>			
Solid Waste	3,593	4,163	15.9%
Wastewater Treatment	2,399	1,455	-39.4%
Subtotal CO <sub>2</sub> e Emissions	5,992	5,618	-6.3%
<b>CO<sub>2</sub>e Emissions Total</b>	<b>279,635</b>	<b>250,562</b>	<b>-10.4%</b>
Weather Normalized	270,159	238,672	-11.7%
Per-Capita CO <sub>2</sub> e	13.4	11.1	-17.2%

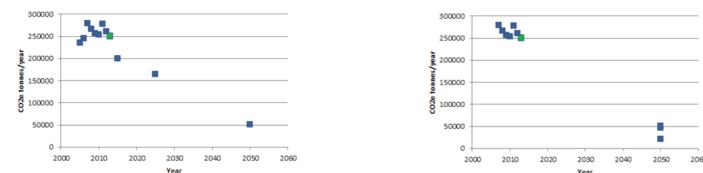
(Source: Kacey Strandemo)

## Emissions Projections

(Source: <http://regionalindicatorsmn.uli.org/emissions-chart>)



The population of Rosemount is expected to nearly double by 2050. If per-person emissions in Rosemount remain similar to recent years, the city's CO<sub>2</sub>-equivalent emissions will increase to nearly 5 million tons by 2050, from just under 3 million today.



State of Minnesota Greenhouse Gas Reduction targets for Rosemount based on Minnesota Statute 216H, using 2005 as the baseline for reductions. The green dot indicates emissions in 2013, the most recent year of data collection for the city.

This chart shows the importance of base-line year selection. Choosing 2013 as the baseline year rather than 2005 would decrease the amount of reductions by 6%. Choosing 1990 as the baseline year would increase the amount of reductions by 56%.

## Major Local Businesses in Rosemount

- Rosemount School District
- Flint Hills Refinery
- Wayne Transports
- Dakota County Technical College
- Intermediate School District
- Cub Foods
- Spectro Alloys Corp
- Cannon Equipment
- Greif Brothers Corp
- Proto Labs

### Flint Hills Pine Bend Refinery

- Averaging 3.6 million tons of GHG emissions per year since 2010
- Voluntarily reduced GHG emissions by 71% since 1997
- Emissions per barrel are currently 42% lower than the large-refinery industry average (10th lowest among the 50 largest U.S. refineries)
- Announced over \$400 million in improvements in 2013, including:
  - Replacing three less-efficient heaters
  - Upgrading the existing process heater
  - Making improvements to cooling towers
- Announced plans in 2014 to construct a combined heat and power system to supply half of total power needed to run the plant

### Assistance available to local businesses:

- MN Energy Smart
- Programs through Xcel and Dakota Electric:
  - Energy Efficiency
  - Solar and Wind Power Resources

### Local School District Emission Reduction Efforts

- Facilities that have been Energy Star-certified:
- Rosemount High School (2010)
  - Parkview Elementary (2010)
  - Shannon Park Elementary (2011)

### Cub Foods Emission Reduction Efforts

- Energy Star-certified in 2004 and 2008
- Reducing food waste by partnering with local food shelves and farmers
- Implementing stricter recycling requirements for cardboard and plastics
- Installing efficient lighting in refrigeration cases



(Source: [pinebendrefinery.com](http://pinebendrefinery.com))

## UMore Park

UMore Park is a 5,000-acre property owned by the University of Minnesota, about 70% of which is located in Rosemount. Previously an ammunition factory abandoned in 1945, there are plans to develop the property over the next 30–40 years. The University of Minnesota recently abandoned plans to develop the area as a sustainable community.

### Model Greenhouse Gas Reduction Efforts Contained in Original Development Plans for UMore Park:

- Develop a waste-to-energy process where waste is used to generate electricity or heat for buildings
- Achieve a zero-waste and zero-carbon community
- Reduce energy use based on the SB 2030 Energy Standard Tool (Sustainability Strategies)
- Integration of renewable resources such as wind and solar energy
- Dedicated spaces for district energy and experimental individual solutions for renewable energy
- Community solar plants with minimal maintenance required by residents



(Source: <http://www.ci.rosemount.mn.us/DocumentCenter/Index/51>)

## Model Communities

The project team researched model communities in six categories:

1. **Transportation:** Vauban, Germany: "A City Without Cars"



(Source: wikipedia.org)

2. **Renewable Energy:** Goldsboro, NC: Solar-Powered Community and Camp Kilowatt



(Source: stratasolar.com)



(Source: waynecc.edu)

3. **Building Efficiency:** Milan, MN: The Sustainable Energy Utility

- The SEU is an independent, self-sufficient entity that finances small-scale community energy improvements. Loans are paid back through cost-savings.
- Milan found the B3 Benchmarking tool to be useful in reducing the impact of their buildings

4. **Waste Reduction:** Boulder, CO: The Master Plan for Waste Reduction

- Single-stream recycling
- Residential yard and food-waste collection
- Commercial food-waste collection
- Ban on electronic scrap
- More aggressive "pay-as-you-throw"



(Source: [bouldercolorado.gov/lead/zero-waste](http://bouldercolorado.gov/lead/zero-waste))

5. **Land Use:** White Bear Lake, MN: Comprehensive, Forward-Thinking Land Use

- White Bear Lake's land-use plan specifically identifies reducing dependence on fossil fuels and encouraging solar energy as top priorities.

6. **Community Engagement:** Northfield, MN

- Established a citizen task force with start and end date and meeting frequency
- Engaged local experts who are a wealth of knowledge and vested members of the community
- Hosted a kick-off meeting to get residents involved and excited
- Provided a way for residents to share their ideas and a means to contact them should the task force want to follow-up

## Conclusions

Electricity is the largest contributor to GHG emissions in Rosemount, and energy-use reductions would therefore have the largest impact on GHG emissions.

### The City Government Can Lead the Way by:

- Acting as a role model for the community through green development and operations
- Encouraging the entire community to reduce their impact on the environment in all sectors (energy, water, waste, and travel)
- Providing educational opportunities to help residents integrate sustainability principles into their everyday lives
- Taking the knowledge gained from the Resilient Communities Project and other sources to design and implement a Climate Action Plan

### SUST 4004: Sustainable Communities

Instructor: Amir Nadav  
 Final Report: "Rosemount Greenhouse Gas Reduction Plan"  
 Research completed by: Nicole Anderson, Alex Hotz, Kacey Strandemo, Skyler Johnson, and Kristin Erhardt  
 Rosemount Staff Lead: Jason Lindahl  
 Poster by: Alex Hotz and Kristin Erhardt

This project was completed as part of SUST 4004: Sustainable Communities, a course at the University of Minnesota, with support from the Resilient Communities Project (RCP). RCP is an initiative of the Sustainability Faculty Network at the University of Minnesota, with funding and administrative support provided by the Center for Urban and Regional Affairs (CURA) and the Institute on the Environment (IEnE). To learn more, visit [rcp.umn.edu](http://rcp.umn.edu).

