

November 18, 2008

The Honorable Mayor
and
Members of the City Council
City of Des Moines

Re: Quarterly Sustainability Report

Dear Mayor and Council,

The following information presents an overview of the environmental sustainability efforts of the City of Des Moines for the previous quarter, July 1, 2008 through September 30, 2008. The report overviews work to-date and, where possible, reports the measurable impact of the efforts discussed.

Council Goal

“Sustainable Green Community: Des Moines will be a leader in setting policies and practicing service delivery innovations that promote environmental sustainability. Des Moines will offer safe, reliable, and convenient transportation alternatives that reduce reliance on automobiles and parking facilities.”

Measurable Impact – To-Date

Environmental projects are highlighted in the following sections of this report. The environmental impacts of those projects that can be measured or credibly estimated have been totaled and are presented here for the last 18 months.

Kilowatt hours of electricity not used:	7.43 Million
Fossil fuel not consumed:	52,228 Gallons
Carbon Dioxide not released into the air:	6,867 Tons
British Thermal Units (heat energy) not used:	155 Million
Landfill space not used:	63.75 Cubic Feet
Net Trees Planted, Saved (and Removed):	1,228
Dollars saved:	\$107,146

These impacts will change each quarter as more projects are implemented and as the impacts of current projects can be measured.

Notable Efforts

Bio-fuels

Fleet Services initiated the use of soy-based biodiesel in June of 2007 for a targeted portion of the City’ fleet of diesel units at the rate of 5% at the main fueling station at East 5th and Market, WRA Wastewater Reclamation Facility, and outlying Parks remote storage facilities. Diesel engine performance and fuel related maintenance was monitored throughout the fleet that utilizes these fueling facilities. No observed negative effects on performance or maintenance were experienced.

The 5% rate of soy-base biodiesel was continued through the cold weather months with the addition of a chemical fuel additive to enhance the fuel characteristics for cold weather operation. The cold filter plug point was reduced to -30 degrees Fahrenheit through the use of chemical additives in lieu of higher costing #1 petroleum diesel fuel. This resulted in 40 cents per gallon savings in diesel fuel costs during winter months. Fleet staff is not aware of any other Midwestern municipality that adopted this strategy of continued biodiesel use in winter months.

The concentration of biodiesel was increased to B10 (10% soy-based biodiesel) in the spring of 2008, and subsequently increased to B20 for summer months. The use of biodiesel is reduced to B10 and B5 for fall and winter respectively to maintain fuel properties appropriate for the season. This strategy results in an average use of 10% biodiesel based on annual consumptions of #2 petroleum diesel, and reduces the use of #2 petroleum diesel fuel by 50,000 gallons.

Currently, biodiesel costs a premium of 70 cents per gallon, but reduces emissions from diesel engines and results in fewer tons of CO₂ released into the atmosphere. Fleet receives biodiesel from its current fuel supplier KECK Energy who contracts with Renewal Energy Group to produce biodiesel at its Iowa production plants. Biodiesel used in the City's fleet is produced from Iowa grown soybeans.

Fleet Management staff introduced the use of 5% and 20% soy-diesel and E85 ethanol gas in targeted areas of fleet operations. These actions have had the following annual impacts:

- Carbon Dioxide not released into the air – 872 Tons
- Fossil Fuel not consumed – 87,432 Gallons

Citizen Stewardship

The Park and Recreation Department has been engaging the public in the care and restoration of our environment through various volunteer opportunities. Citizens have been helping with pond clean-ups, building sustainable nature trails, helping with flood recovery, beautifying neighborhoods and cemeteries, volunteering at community centers, and much more.

River Run Garbage Grab

On Saturday, August 16, 2008, 450 volunteers gathered for the 7th Annual River Run Garbage Grab donating over 800 hours, the largest donation of hours for one group this past quarter. Compared to 2007, this year's event connected twice as many people to the river and doubled the miles of river cleaned to 20 miles.

Approximately 10 miles of land trails were impacted, including the mountain bike trail north of Euclid

Avenue, the Neal Smith Trail, and downtown trails from University Avenue to Scott Street. An amazing 28.8 tons of trash was removed in total (1.5 tons of scrap metal recycled, 5.6 tons of tires recycled, 21.7 tons of landfill trash)! After the workday,



200 volunteers attended the Clean-up Festival at the Simon Estes Amphitheatre. Izaak Walton League-DM Chapter provided food while Tropical Steel, Plymouth Congregational Church Chancel Choir, and Jon Stravers & Big Blue Sky shared music. This wonderful event would not have been possible without the leadership and organization from volunteers Robin Fortney and John Wenck! Thank you to sponsors from Izaak Walton League-Des Moines Chapter, River Stewards, Wells Fargo, Metro Waste Authority, Plymouth Congregational Church, City of Des Moines, City of Pleasant Hill, Army Corps of Engineers, and Polk County Conservation.

Four Mile Creek Sweep

Forty-four volunteers from Central Campus, PACE, and throughout the community donated around 132 hours to improve the community's water quality by removing one ton of trash (2,000 pounds) from in and around Four Mile Creek! In addition to the 2,000 pounds of trash, 40 tires were pulled out of the creek. The Four Mile Creek Sweep is a cooperative effort between the Cities of Des Moines, Ankeny, Altoona, and Pleasant Hill; Polk County Conservation; URBAN; and the Soil and Water Conservation District.



United Way Day of Caring

September 9, 2008, was the United Way Day of Caring. Volunteers from Principal, Wells Fargo, and the Boys & Girls Club of Iowa joined together to donate around 160 hours at Grandview Park mulching over 400 trees and flower beds. Urban landscapes typically have less organic matter resulting in poorer soil. Mulching mimics a more natural environment improving the soil's fertility around trees. Mulching the trees helps insulate them in the winter, keep them cool in the summer, retain moisture by reducing evaporation, and prevent weeds as well.



Over 1,092 hours have been donated since the last report. Since January, our dedicated volunteers have donated around 7,292 hours of service worth over \$142,194 (based on the Independent Sector's researched value of volunteer time for 2007).

Economic Development and LEED

The Economic Development Division of the City Manager's Office has referenced U.S. Green Building Council's Leadership in Energy and Environmental Design Green Building Rating System (LEED) standards when city financial assistance is sought. By experimenting with a tiered system, the City ties higher LEED levels to greater financial assistance. For example, the City of Des Moines has proposed the

following incentives should Wellmark choose to construct their campus in accordance with LEED.

- Certified = \$25,000 per year x 10 years
- Silver = \$50,000 per year x 10 years
- Gold = \$100,000 per year x 10 years
- Platinum = \$150,000 per year x 10 years

Greenhouse Gas Emissions

The City has joined ICLEI (Local Governments for Sustainability). In the coming quarter it is hoped to have an environmental firm under contract to do the data gathering and analysis for our carbon footprint. With that information, we can begin to better calculate our savings and progress.

House Construction and Renovation – Green Demonstration Project

The City, in partnership with COSC (Center On Sustainable Communities) and CHDC (Community Housing Development Corporation), is helping to construct one new residential home using LEED standards. Throughout the building process, tours will be given for builders, developers, and anyone interested to demonstrate the cost effectiveness of building green housing.

Hybrid Cars

The City now owns or leases 21 hybrid vehicles. While these vehicles cost more to purchase than the City would have spent in the past for regular vehicles, the yearly environmental impact of these vehicles on the fleet are:

- Dollars saved (or additional) – (\$145,688)
- Carbon Dioxide not released into the air annually – 27.4 Tons
- Fossil Fuel not consumed annually – 2,754 Gallons



The picture above shows some of the City's fleet of hybrids and Brian Bennett, Fleet Manager.

Lighting Retrofits

The Park and Recreation Department began an energy conservation project in 2004 which focused on lighting retrofits in three city buildings (City Hall, Armory, and the Police Station). In the last 15 months, the project has saved the City:

- Dollars saved (or additional) - \$27,000
- Energy not used – 500,000 Kilowatt Hours (Kwh)
- Carbon Dioxide not released into the air - 1 Million Pounds

Low Gas Paint

The Park and Recreation Department has initiated a test of the use of low or non-toxic paint (low or no VOC [Volatile Organic Compound] paint). Thirty-seven gallons were used through the winter indoor painting cycle. This paint costs roughly \$5 more per gallon. If this paint truly has a measurable impact on indoor air quality, staff will investigate a bulk purchase to attempt to reduce the cost.

The tests of VOC paints last quarter were successful. A total of 88 gallons of low VOC or no VOC paint have been used this quarter. The paint was used in the Amory, City Hall, and Police Station.

New Municipal Buildings

The City of Des Moines has constructed its first LEED rated building. The Glendale West Zone Maintenance Facility has achieved a certified level. This facility is also the first LEED rated building in Des Moines. The Park and Recreation Department hosted an open house in September to celebrate this achievement.

Construction of the new enclosed shelter and congregate meal site located at 1650 Garfield in the Martin Luther King, Jr. Park has recently been completed. The LEED certification documentation will be submitted soon. This building is also attempting to achieve the certified level. Of the known LEED costs for the shelter, pursuing certification is at least 4% more than typical project costs.

As of the date of this letter, the quantifiable impacts of this LEED building have not been calculated. This will be done in a future report and appear in the "Measurable Impact" section.

The City continues to pursue LEED certification and implement energy efficiency and sustainable strategies for all projects. Some of the upcoming LEED projects and strategies are listed below:

Franklin Avenue Library Addition and Remodeling: Currently in design and pursuing LEED certification. The design includes features that will introduce daylight into many spaces in the building. New conventional mechanical equipment will meet a high level of energy efficiency matching that of a geothermal system.

Grandview Golf Course and Clubhouse: Currently starting design and will pursue LEED certification.

Airport Concourses A and C Remodeling: Concourses at the Airport will undergo remodeling starting in the spring of 2009. Many strategies to improve indoor air quality, save energy, use materials with recycled content, and recycle materials being demolished have been integrated in the design.

As these projects are completed and certified, we will quantify the impacts and include them in the “Measurable Impact” section of the report.

Rain Gardens

For the past couple of years the Park and Recreation Department has been installing and maintaining rain gardens. A rain garden is a landscaping feature that is planted with native perennial plants and is used to manage storm water runoff from impervious surfaces such as roofs, sidewalks, and parking lots. In addition to the existing rain gardens at Ewing, Crivaro, and Sargent’s parks, new or renovated rain gardens can be found at Union and Ashby parks and Glendale Cemetery.

Recycled Paper

The City has been using 30% post consumer waste recycled paper for all of its printing needs since September 2007. This choice will cost approximately \$2,800 more per year than the use of non-recycled paper; however, it will also produce the following environmental impacts:

- saves 252 trees per year
- uses 155 Million BTUs less energy to produce than virgin paper
- produces 73 fewer tons of carbon dioxide emissions than virgin paper
- fills 51 Cubic Yards less landfill space

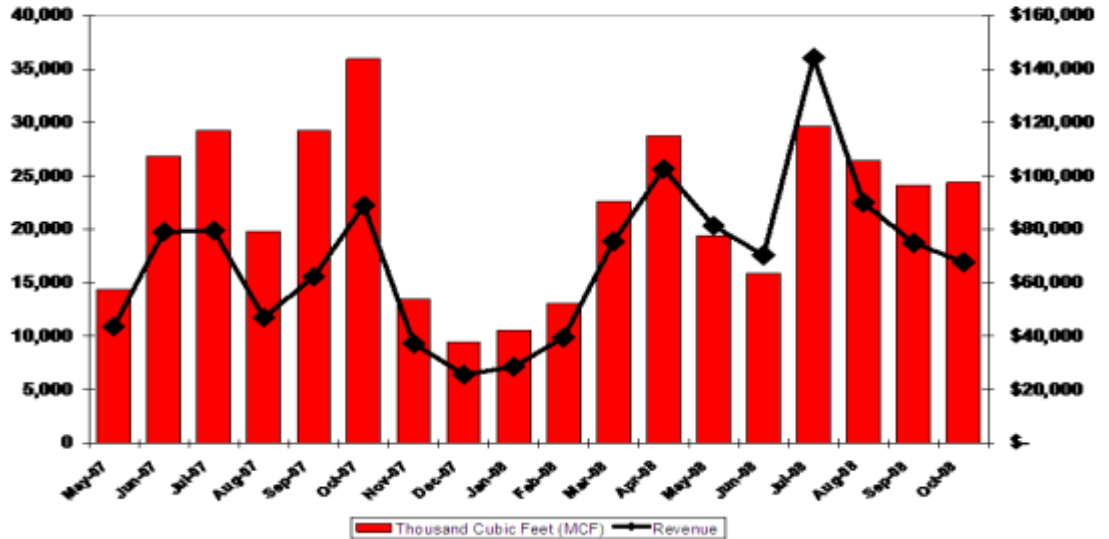
Sewage into Energy

Sixteen communities in the Des Moines metro area are joint owners of the Metropolitan Wastewater Reclamation Authority (WRA) and together they have installed a technology that processes sewage sludge and converts it to biogas, which contains methane that can be used to power generators.

The process consists of 6 anaerobic (without oxygen) digesters, control buildings, and associated equipment and facilities. Concentrated wastes that are biodegradable are fed into the digesters which produce a flammable biogas that contains 60 – 65% methane.

The gas produced made it feasible to build a gas pipeline to Cargill, the WRF’s neighbor. The pipeline, in use since April 2007, makes it possible for the WRF to sell excess biogas to Cargill. The biogas is used in Cargill’s steam boiler and substitutes for natural gas.

2007 - 2008 Cargill Gas Sales
Total Revenue = \$1,237,389



The Wastewater Facility uses biogas as a primary fuel for hot water boilers (heat), and engine generators (heat and electricity). Beneficial use of biogas reduces the plant’s need for electricity and natural gas and generates a revenue stream which decreases the annual cost of utilities.

Smaller Cars and Diesel Engines

Where possible, vehicles have been replaced with smaller (more fuel efficient) models and switched to diesel engines (also more fuel efficient). These changes have the following impacts:

- Dollars saved (or additional) – (\$22,064)
- Carbon Dioxide not released into the air annually – 10.4 Tons
- Fossil Fuel not consumed annually – 1,043 Gallons

Traffic Lights

We have replaced incandescent traffic signals with more energy-efficient LED bulbs at over 300 intersections to reduce the yearly consumption of electricity. This alone is saving the City:

- \$120,000 on energy costs
- 2.9 Million Kilowatt-hours of electricity
- 4.7 Million pounds of carbon dioxide

Trees

In this quarter, 173 trees were removed by the City in public right-of-way and parks, much of them due to major wind events in July. Twenty-four trees were planted on the public right-of-way and 55 trees were planted on parkland. For a running total of the amount of trees removed and planted, see page one of this report under the heading, “Measureable Impact – To Date.”

Water

Refer to Citizen Stewardship on Page 2.

Storm Water Runoff Control

Since the mid to late 1970s, storm water runoff quantity has been regulated in Des Moines and most other communities in an effort to reduce flooding. This has made a dramatic impact during very heavy rain events, but these events only accounted for about 10% of the total amount of rainfall in the historical period from 1960 to 2006.

The Iowa Department of Natural Resources (IDNR) requires the City of Des Moines to obtain an annual storm water discharge permit as part of the federal program involving the Clean Water Act. Our most recent permit required that we adopt or amend an ordinance “as necessary that will address the control of runoff from building activities after construction has been completed. The ordinance shall require water quantity and quality components to be considered in the design of new construction and implemented when practical. The ordinance shall promote the use of storm water detention and retention, grass swales, bioretention swales, riparian buffers and proper operation and maintenance of these facilities.”

As a result of this requirement, the Council instituted new requirements on October 15, 2007, for new developments and areas of significant redevelopment involving 1 acre or more of development area, a value supported by IDNR. This was done in an effort to regulate runoff from the other 90% of the rainfall total and improve water quality through the use of new design criteria and maintenance agreements.

Both City staff and the design community have now familiarized themselves with the design requirements, resulting in some unique storm water management plans in recent months. Although the requirement is limited to projects involving 1 acre or more of development area, we continue to strongly recommend these storm water management practices for all projects.

Web Site

The City has implemented a high-profile website to communicate the work of the City in the area of sustainability and also what residents can do to reduce their consumption of natural resources and their contribution to global warming. The web site is located at: <http://www.greendm.org/>.

Yard Waste

The City recently received the results of a study of the greenhouse gas emissions of the yard waste program. The study was completed by Sebesta Blomberg (a leader in environmental impact analysis) and can be found on the City’s Green Des Moines web site (<http://www.greendm.org/>).

Summarized, the study states that while composting yard waste has a positive impact on the environment (decreases carbon-dioxide equivalent gases by 892 metric tons per year), ending this practice and returning yard waste to the landfill would reduce nearly triple the amount of greenhouse gases (3,234 metric tons of carbon-dioxide equivalents). This is due primarily to the fact that our particular landfill uses the gases that are produced by the landfill to produce electricity.

Given this information, it seems the prudent ecological step is to simply stop separating yard waste from other waste, return it to the landfill, and capture the gases as we do with other solid waste. City staff will now begin to create a cost/benefit analysis of this idea to determine the cost of such a change. The staff report will be completed in January of 2009.

Any change in this program would require changes in State law as the separation of yard waste is currently required by the State of Iowa.

I hope this information is useful.

Sincerely,

Richard A. Clark
City Manager