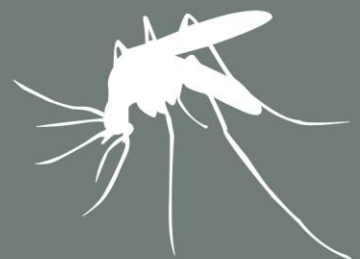




SUSTAINABILITY REPORT 2016

METROPOLITAN MOSQUITO
CONTROL DISTRICT



Our Values

We value integrity, trust, cooperation, respect, and competence in our interaction with colleagues and customers.

Our Vision
To be the leading abatement district in the world.

Sustainability

For the MMCD, Sustainability means meeting the needs of the present without compromising the ability of the future generations to meet their needs.

Our Mission

To promote health and well being by protecting the public from disease and annoyance caused by mosquitoes, black flies, and ticks in an environmentally sensitive manner.



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Executive Summary

MMCD assembled a Sustainability Steering group to set up a framework for incorporating sustainability principles into the organization. This group's overarching theme is to document current sustainability efforts and to examine the economic, environmental, and social impacts of sustainability on the District going forward.

This group focuses on four opportunity areas: 1) reducing energy usage; 2) reducing waste; 3) identifying and using renewable resources; and 4) promoting social responsibility and wellness.

Opportunity Area Goals:

Reduce Energy Usage

We are currently reviewing our vehicle fleet with the goal of minimizing fuel usage while maximizing the amount of work completed for each mile driven. To achieve this long-term goal we are exploring how we can use better training for vehicle operators including better matching of vehicles to types of work.

We are also exploring strategies to save electricity by encouraging teleconferencing for meetings, by providing training with webinars and scripts to automatically shut down computers outside of work hours.

Reduce Waste

We are working to reduce our waste stream through more effective recycling practices, through increasing organics composting, and by adopting reusable bulk control material containers.

Renewable Energy

We are exploring renewable energy such as solar and wind generation to determine when and if such sources can provide cost effective replacements for current fossil fuel derived energy.

Social Responsibility and Wellness

We are focusing on volunteering efforts inside and outside of work.

Reducing Energy Usage

The Reducing Energy Usage group focused on reducing MMCD’s overall energy consumption. The group began by reviewing MMCD electricity and fuel consumption and considering ways to reduce energy usage. In 2013 the group focused upon reducing electricity usage and continued these efforts in 2014. In 2014 the group started a review of hybrid vehicles as a way to reduce fuel consumption. These evaluations continued in 2015. In 2015 the group also developed a tool to estimate how much fuel could be saved by participating in meetings via teleconference. In 2016 the group tested a device that can measure energy usage by District equipment to develop a way to estimate potential energy savings achievable using automatic computer shutdown.

Reduce Electricity

Project 1- Evaluate energy use of computers to estimate potential savings achieved by automatic shutdown

Baseline Information: In 2016 we began to develop a pilot study to compare the energy savings achieved by various automatic computer shutdown methods using a kilowatt meter. These results could help us decide which automatic shutdown strategy would save the most energy with the least inconvenience to users and IT. We tested an inexpensive device (Belkin Conserve Insight™ Energy Monitor) to help determine the best way to measure baseline and other energy use levels of computers and other District equipment.

Strategy: The Belkin Conserve Insight™ Energy Monitor (hereinafter called “Device”) plugs into a power outlet (Figure 1). It measures the energy usage (in watts) of the equipment plugged into it (Figure 2). We chose this Device because it can measure energy in several ways including watts, the cost of operation, and the amount of carbon dioxide (CO₂) produced to generate the electricity consumed. The Device includes a 5 ft cord connected to a display. It has a socket electrical rating of 120V~/15A/60Hz/1800W. The maximum watts displayed equals 1800 and the maximum operating cost in dollars displayed equals 9999.

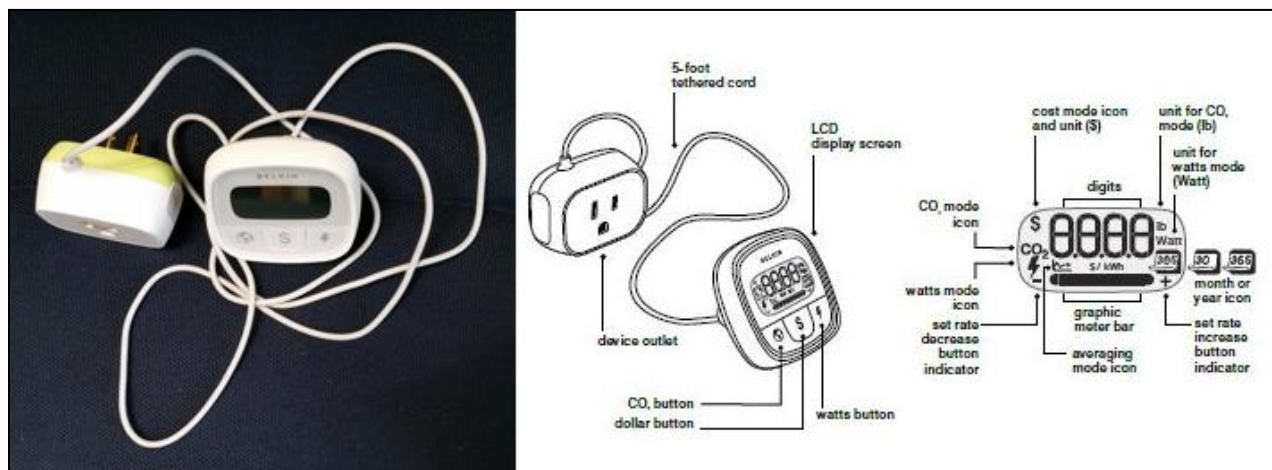


Figure 1 Belkin Conserve Insight™ Energy Monitor – Features and Output.

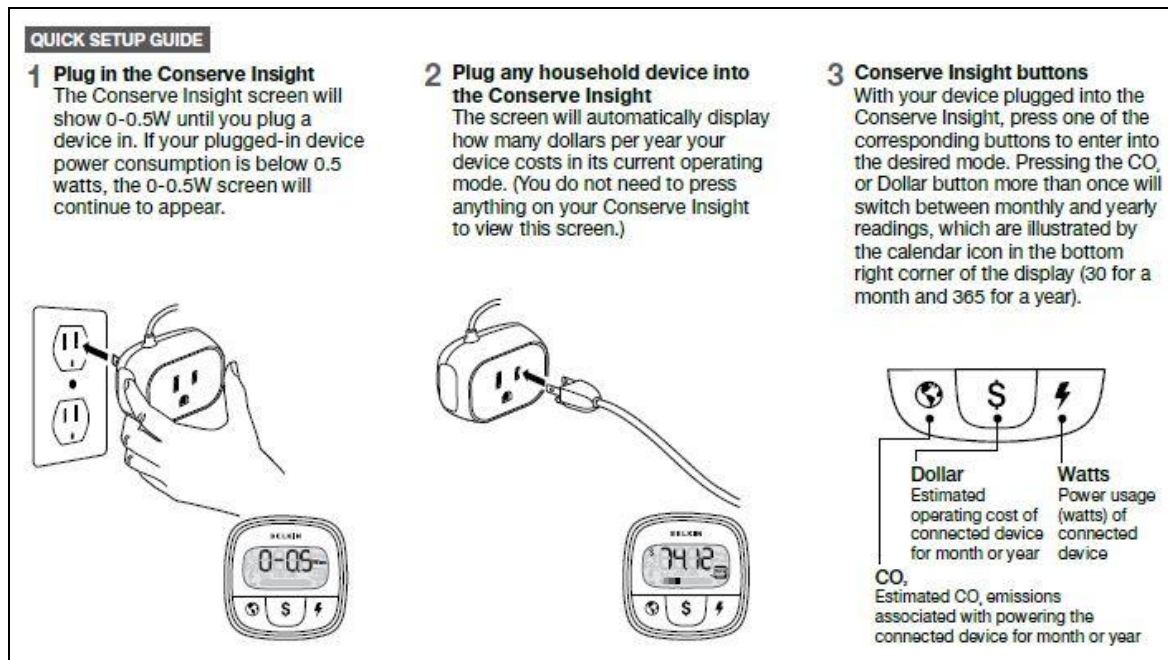


Figure 2 Belkin Conserve Insight™ Energy Monitor – Use.

Project Status: In the first test the Device was used to measure the energy used by a HP desktop computer with two monitors. The HP computer and monitors used 70 watts when all were activated. We measured a power spike of 100 watts when all were activated. With the computer in sleep mode and monitors on, power usage dropped to 20 watts. Power usage dropped to 2 watts when the computer was shut down and monitors were turned off (power strip was left on).

In the second test the Device was used to measure the energy used by an environmental chamber in the chamber room at the St. Paul Main Office. With heat and lights turned on, the chamber used 1,267 watts. Turning the heat off (but leaving lights on) reduced energy use to 1,120 watts. The amperage of the environmental chamber was equal to or above the 15 amp rating of the Device. The Device may have been damaged by using it with the environmental chamber.

Work Remaining: We need to find an energy meter with a higher amperage rating, perhaps 20 amps, than the 15-amp rating of the Device we tested in 2016. We also would like an energy meter that can record energy usage at set time intervals to better understand variation in usage.

Project 2- Quantify mileage saved by teleconferencing

Baseline Information: Assume no mileage (or fuel) savings if everyone drives to meetings. In 2015 two employees (Eva Knudsen and Carol Mertesdorf) developed a spreadsheet tool to document all meeting members who participated remotely (via teleconference). Beginning on April 23, 2015 the Sustainability group documented who participated via teleconference at each field facility. Participation in five meetings via teleconference saved about 743 miles of driving which equates to about 31 gallons of fuel with a value of almost \$79. These results suggested that additional teams should use the spreadsheet in 2016.

Strategy: In 2016 two teams, Computer Support (CSDM) and Sustainability, used the spreadsheet to document participation via teleconference.

Project Status: CSDM documented participation via teleconference for eight of eight meetings (Figure 3); Sustainability did so for ten out of ten meetings (Figure 4).

Meeting Teleconferenced	Date	Total Miles Saved	Average miles /gal	Average Fuel Amount Saved (gal)	Daily Fuel Price	Dollars Saved	# staff teleconferencing	Staff Hours Saved
CSDM	02/17/16	277.4	23.9	11.59	\$1.49	\$17.27	8	7.83
CSDM	03/09/16	277.4	23.9	11.59	\$1.90	\$22.02	8	7.83
CSDM	03/29/16	277.4	23.9	11.59	\$1.93	\$22.37	8	7.83
CSDM	04/27/16	277.4	23.9	11.59	\$2.10	\$24.34	8	7.83
CSDM	07/13/16	277.4	23.9	11.59	\$2.12	\$24.57	9	9.61
CSDM	08/10/16	277.4	23.9	11.59	\$2.15	\$24.92	9	9.61
CSDM	11/02/16	277.4	23.9	11.59	\$2.01	\$23.30	9	9.61
CSDM	12/14/16	277.4	23.9	11.59	\$2.10	\$24.34	9	9.61
CSDM	Total	2219.2		92.73		\$183.15	68	69.76

Figure 3 Estimated mileage, fuel and staff time savings accrued by all District employees participating in eight CSDM meetings via teleconference.

In 2016 participating via teleconference in CSDM and Sustainability meetings saved about 153 staff hours, and about 4,578 miles of driving which equates to about 187 gallons of fuel with a value of almost \$379. On average, District vehicles are driven between 5,000 to 11,000 miles per year. Teleconferencing saved about 42-92% as many miles of driving as are driven annually by a District vehicle. The 153 staff hours saved equals nearly four 40-hour work weeks worth of time.

Meeting Teleconferenced	Date	Total Miles Saved	Average miles/gal.	Average Fuel Amount Saved (gal)	Daily Fuel Price	Dollars Saved	# staff teleconferencing	Staff Hours Saved
Sustainability	01/06/16	233.4	25.5	9.15	\$1.49	\$13.63	6	5.88
Sustainability	03/16/16	277.4	23.9	11.59	\$2.09	\$24.23	7	6.85
Sustainability	04/20/16	202.4	27.3	7.43	\$2.05	\$15.22	4	4.50
Sustainability	05/18/16	277.4	23.9	11.59	\$2.09	\$24.23	7	7.16
Sustainability	06/15/16	157.4	25.0	6.30	\$2.25	\$14.18	3	3.50
Sustainability	07/20/16	277.4	23.9	11.59	\$2.15	\$24.92	9	9.63
Sustainability	08/17/16	189.4	28.3	6.70	\$2.20	\$14.75	5	4.90
Sustainability	09/22/16	233.4	25.5	9.15	\$2.20	\$20.12	5	5.19
Sustainability	10/19/16	233.4	25.5	9.15	\$2.20	\$20.12	7	7.65
Sustainability	12/14/16	277.4	23.9	11.59	\$2.10	\$24.34	9	9.63
Sustainability	Total	2359.0		94.24		\$195.74	62	64.89

Figure 4 Estimated mileage, fuel and staff time savings accrued by all District employees participating in ten Sustainability meetings via teleconference.

Baseline Information: In 2016 remote participation also was achieved via in-house webinars. Kirk Johnson conducted three Zika webinars (March 29, April 5 and May 23, 2016) to educate staff on communicating risk to District citizens. On August 17, 2016 Mike McLean used a webinar to provide refresher training for everyone planning to represent MMCD at the MMCD booth at the 2016 Minnesota State Fair. Both webinars used ClickMeeting, an online service that was able to connect up to 25 callers (phone lines) with the webinar presenter.

A total of 230 employees at the six field facilities participated in the three Zika webinars and 57 employees at the six field facilities participated in the State Fair webinar. Remote participation in these four webinars saved 832 miles of driving, 35 gallons of fuel and 287 hours of commute time (Figure 5).

Training Teleconferenced	Date (s)	Total Miles Saved	Average miles/gal.	Average Fuel Amount Saved (gal)	Daily Fuel Price	Dollars Saved	# staff teleconferencing	Staff Hours Saved
Zika	03/29/16	277.4	23.9	11.59	\$2.09	\$24.23	RFT 35	34.58
Zika	04/05/16							
Zika	05/23/16	277.4	23.9	11.59	\$2.09	\$24.23	Insp 195	194.52
Zika	Total	554.8	23.18	11.59		\$48.45	230	229.10
State Fair	08/17/16	277.4	23.9	11.59	\$2.20	\$25.50	RFT 15	15.03
State Fair	08/17/16						Insp 42	43.15
State Fair	Total	277.4	23.9	11.59		\$25.50	57	58.18
Webinar	Total	832.2	34.78	11.59		\$73.95	287	287.28

Figure 5 Estimated mileage, fuel and staff time savings accrued by all District employees participating in Zika and State Fair webinars (staff: RFT=regular fulltime, Insp = seasonal).

Project 3- Fuel Efficiency Work Group

During 2013, the District established a work group to help find ways to do the same amount of work while driving fewer miles and using less fuel. That group has been using problem solving techniques to answer some fundamental questions about how we use fuel in day-to-day operations. This work group's stated goal is "As an Organization, Be More Fuel Efficient." The workgroup's continuing objectives are to 1) measure amount of fuel used to complete mandatory tasks; 2) have fuel efficient drivers; 3) use the most fuel efficient vehicles to do work; 4) assign workload using fuel efficient strategies; and 5) promote a fuel efficient culture. In 2015 and 2016 we continued to integrate and evaluate more fuel efficient vehicles into MMCD's fleet. We continued with overall projects initiated in 2013.



Ongoing Projects

- Review vehicle features needed to complete operations
- Measure vehicle specific and overall fuel usage
- Review amount of overall work comprised by each task

Long -term Tasks

Review work assignments

- Use highest mileage vehicle available

- Minimize driving distance
- Minimize number of vehicles required

Review Staff Training

- Provide regular feedback about fuel efficiency and driving behavior
- Provide real time mileage information

Review New Vehicle Technology

- Replace old vehicles with higher MPG models
- Move away from the “big truck” paradigm – incorporate new vehicle technology (e.g., hybrids) into fleet

Ford C-Max hybrid vehicles

In 2014, the District purchased two Ford C-Max hybrid vehicles. Although both were received late in the operational season, Andover drove 6,560 miles and Jordan 4,755 miles. In 2015, the District purchased four additional Ford C-Max hybrid vehicles and stationed one at each of the six field facilities. In 2015 the C-Max vehicles were driven an average of 8,256 miles in a 6 month period and again averaged 40+ MPG (Figure 6). They were used for a variety of tasks; commuting to St. Paul and other locations (#1 use), putting out surveillance traps, checking rain gauges, conducting tick surveillance, inspecting air sites, treating catch basins, and mapping. Having these vehicles in the fleet allowed us to purchase approximately 4,800 fewer gallons of fuel and we saved around \$11,000 in 2015.

	Ford C-Max	Ford Windstar Van	GMC Colorado, Canyon Truck	Ford F-150 Truck	GMC Silverado Truck
<u>MPG</u>	40-44	18-21	19-21	13-15	13-15

Figure 6 Average miles per gallon of various District vehicles. 2015.

In early 2016 only one vehicle was added to the fleet, a 1-ton vehicle in the East Region that is used as a control material truck. We currently have 32 compact trucks and 6 hybrid cars (Ford C-Max). In 2016 the C-Max vehicles were driven a total of 63,355 miles; an average of 10,559 miles/vehicle. The average for the other vehicles ranges from 5,000 to 8,000 miles per year as we are using the C-Max vehicles more than our other vehicles. In the winter months the C-Max vehicles are often used by staff to commute to meetings at the Saint Paul Main Office to save fuel and put fewer miles on the field trucks.

We had planned to purchase 12-14 smaller trucks (Colorado or Canyon vehicles) in 2016 but were unable to do so because the vehicles no longer were available through the Minnesota State Contract and our efforts to secure supply bids were unsuccessful. Instead we bought fewer larger trucks.

Potential Reducing Energy Projects in 2017

Energy savings by automatically shutting down computers

Next steps: We plan to test additional candidate energy meters. When we find one that can measure what we need, we will conduct a more robust test to measure energy usage by desktop computers. We plan to repeat the test with several different desktop computers to assemble baseline energy usage data.

Encourage remote participation in meetings and training via teleconferencing and webinars

Next steps: Mileage and staff time savings achieved in 2016 indicate that we should continue to encourage and document both participation via teleconference in all applicable District meetings and Webinars for all applicable District training in 2017 and beyond.

Increase fuel efficiency of District fleet

Next steps: Fuel savings achieved by hybrid vehicles indicate we should slowly integrate these kinds of vehicles into our fleet. We plan to actively research other hybrid vehicles and potentially attractive technologies to evaluate which might help us continue to improve the fuel efficiency and versatility of our fleet.

Reducing Waste



The Reducing Waste group's mission is to reduce the waste stream in all processes and to share the techniques, processes, and experiences of all facilities as they find ways to reduce waste.

A waste stream is defined as a material that is not recycled, re-used, or composted. If material is brought to a landfill or incinerated, we defined it as part of the waste stream.

2016 was a banner year for recycling and reducing our waste stream. All facilities have embraced composting, and the District instituted a facility wide recycling program for all *Bti* and MetaLarv control material bags. In addition, facilities have worked on some of their own projects to further reduce our waste stream.

Expanded Organics Recycling at the Saint Paul Office

The Saint Paul office established a Waste Reduction Group in 2016 to facilitate a reduction in the garbage produced by increasing the composting capacity to include paper towels. In addition to 'paper towel only' compost bins placed in all restrooms, larger compost bins were also added to the boardroom and lunchroom to accommodate all types of organics.



Bulk Liquid *Bti* Treatments at the Jordan Facility

The goal was to reduce the amount of 2.5 gallon jugs of liquid *Bti* used, reduce the amount of people used for treatments, and make the process safer.

The Minnesota River was treated three times in 2016 using a bulk container. A total of 320 gallons was used in the treatments. Using the bulk container saved a total of 128 2.5 gallon jugs and reduced

the number of people treating from six or seven to only three. The post treatment checks looked great and we had zero accidents or injuries. Overall, all of our goals were met.



Control Material Bag Recycling

In June of this year, our *Bti* and *MetaLarv* control material supplier allowed the District to return to them these “waste bags” of those products for recycling. Since these bags are multi-layered and extremely durable, the manufacturer collected the empty bags and is working with a recycler to develop a method to reuse the raw materials. Due to the District using over 40,000 bags annually, these control material bags have been our biggest source of waste. We returned over 42,000 bags (each bag weighs approx. 0.46 lbs) which saved approximately 19,320 pounds of trash from entering our waste stream.



Bulk Tote Containers for Control Materials

The District continues to move towards using more reusable bulk containers in our operations. Utilizing these larger totes (1,000 to 2,000 lb), we create less container waste and our staff spends less time & effort handling waste products. In 2016, we purchased *Natular G30* granules (75,200 lbs), *Altosid* pellets (22,000 lbs), *MetaLarv* granules (2,000 lbs), *Vectobac 12-AS Liquid* (528 gallons) and *Mineral Oil* (825 gallons) in bulk containers. These purchases allowed the District to reduce the amount of individual containers (3,156 units) and removed them from our waste stream.



Renewable Energy

The “Renewable Energy” group continued to expand their knowledge on regional renewable energy projects. In 2016, the team continued to focus on solar energy, local solar educational/promotional support groups, and reviewed projects in the metro area.

Due to the last two historically wet summers, the financial aspects of larger-scale building projects, such as converting some of District’s power usage to solar, has been inhibited by the increased treatments of mosquitoes. Although any building modifications may be on hold, the District still actively reviews the solar industry and is keeping up on the latest trends.

There are options that are being reviewed to examine this question that would still allow the District to utilize renewable energy sources without directly investing in solar power equipment within our facilities.



Community solar projects continue to grow in our region. The option of local solar gardens is intriguing because our organization could participate in a local community project and still benefit directly from generating solar energy. MMCD would purchase solar panels that would be part of a larger project. MMCD would own the equipment but the project would be managed by the solar garden managers. The investment could be sold at later date. MMCD would receive credits from the solar array which would ultimately reduce our energy cost. These credits would be respective of the energy produced by the number of the panels we own. MMCD would also benefit by not having to manage a solar system at our facilities and the all of the related costs of installing, maintaining, and operating solar panels on our buildings or grounds. More information can be found at www.cleanenergyresourceteams.org/solargardens

Small solar energy production for items such as electric spray backpacks, mobile phones, field computers and similar items are being explored. Many charging systems may not fully charge a device but if they can maintain battery life in the field, they still may be useful items to extending time in the field without burning fossil fuels or using hard wired power sources.



Wind generated energy is another possibility for the District. The team reviewed larger windmill projects but there is also a large financial outlay for those projects. Small-scale windmills are becoming more affordable and technology is continually improving. Partial energy replacement by small wind generators may be a smaller investment and a good first step towards renewable energy.



The group will meet to discuss the above options and further research opportunities to utilize renewable energy sources. We plan to continue learning from other organization's experiences to develop our own quality renewable energy program. Our team will continue to review current data to focus on projects with the greatest return on investment and understand what is the best option to recommend for our organization.

Social Responsibility and Wellness

At MMCD, we define social responsibility as how we give back to and take care of our community. Our community includes the citizens of our seven-county metro service area, but also state, national, and international perspectives.

2016 Activities

3rd Annual Shoe Drive: MMCD employees donated 186 pairs of shoes to Fishing for Life, an organization in charge of collecting, handling and transporting shoes to Haiti. We also donated 21 pairs of gently used boots to their annual sportsmen's garage sale. The money received from the sale goes directly to children in our community and wounded warrior support.

Food Shelf: District employees conducted a fourth annual summer food drive and donated food items to Neighborhood House in St. Paul totaling 155.6 lb of non-perishable food and 2.6 lbs of garden fresh produce.

Career Development Tour: On December 1, we hosted a tour group from Lifeworks, a nonprofit organization serving the community and people with disabilities. Two Lifeworks clients interviewed MMCD staff and toured MMCD's St. Paul facility. They learned about mosquito control techniques and the equipment used for control and they viewed mosquitoes, black flies, and ticks using dissecting microscopes in the entomology lab.

Newsletter: Continuation of a newsletter on sustainability is now in its third year. [RESources](#) contains topics about: reusing, reducing, recycling, volunteering opportunities, hazardous waste disposal, air quality, and what is happening in the world of sustainability.

Free Tables: Almost all facilities now have a "Free Table" where employees can place items they no longer want or need that others may have a use for.

Unwanted Eyeglasses Collection: 28 pairs of glasses were collected and donated to the MN Lions Eyeglass Recycling Center that distributes them to the poor in developing countries.

Hotel Shampoos, Soaps and Toiletries: Over 22 lbs of toiletries were collected and donated for homeless veteran's shelters.

New Vegetable Garden: A new vegetable garden was put in at the Plymouth facility and maintained by the staff.



Plans for 2017

We plan on continuing and upgrading the programs from 2016, while also looking for new opportunities to assist our communities and enhance the health and wellbeing of our employees.

Members of the Sustainability Groups

Reducing Energy Usage

Aubrey Soukup, Brian Feldhake, John Walz,
Jon Peterson, Stephen Manweiler, Matt Giesen, Jennifer Crites

Reducing Waste

John Walz, Jim Stone, Brian Feldhake, Matt Giesen, Mark Smith, Loren Lemke

Renewable Energy

Mark Smith, Eva Knudsen, Kirk Johnson, Stephen Manweiler, Jon Peterson, Molly Nee

Social Responsibility and Wellness

Loren Lemke, Mike McLean, Eva Knudsen, Jim Stone, Carey LaMere,
Aubrey Soukup, Kirk Johnson, Molly Nee

IPPAT Participation

MMCD is also a member of the Minnesota's Interagency Pollution Prevention Advisory Team (IPPAT). IPPAT was created by governor's executive order as a way to reduce hazardous waste generation. Now housed in the MN PCA, it has grown to include efforts to reduce waste, prevent pollution, improve efficiency, reduce energy use in public buildings, and to provide a forum for sharing sustainability practices.