



# 2014 Environmental Benefits Report

*Minnesota Technical Assistance Program*

Submitted to the Minnesota Pollution Control Agency

Original Publication: March 1, 2015



# About MnTAP

The Minnesota Technical Assistance Program (MnTAP) is an outreach and assistance program at the University of Minnesota. MnTAP helps Minnesota businesses develop and implement industry-tailored solutions that prevent pollution at the source, maximize efficient use of resources -- including water and energy -- reduce costs, and improve public health and the environment.

Discovering a need for waste reduction and pollution prevention assistance, the Minnesota legislature amended the Waste Management Act in 1984 to “provide for the establishment of technical and research assistance for generators of hazardous and industrial waste in the state.” The Minnesota Toxic Pollution Prevention Act, enacted by the legislature in 1990, directed the then Minnesota Office of Waste Management to “establish a pollution prevention assistance program” for all persons in the state using, generating, or releasing toxic pollutants, hazardous substances or hazardous wastes. Today, the Minnesota Pollution Control Agency provides that assistance primarily by providing funding to the University of Minnesota, School of Public Health, Environmental Health Sciences Division for MnTAP.

Pollution prevention and energy efficiency technical assistance is tailored to individual businesses through a number of services including site visits, student interns, materials exchange, facilitated teams, workshops and industry specific resources. Since MnTAP’s inception in late 1984, staff members have conducted over 3,500 site visits to small and large manufacturing and service businesses in all parts of the state. The services that MnTAP provides help businesses preserve Minnesota’s natural environment through pollution prevention measures.

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# Hats Off to Another Successful Year

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## Director's Welcome

Hats off to the 250 businesses across Minnesota who chose to work with MnTAP in 2014. The work of MnTAP's dedicated staff members in partnership with these companies has resulted in many successes: 30 companies have realized reductions totaling over **6.0 million kWh**, more than **440,000 thousand therms of energy**, as well as conserving nearly **27 gallons of water** and avoiding over **330,000 pounds of waste**. Combined, these reductions are saving companies more than **\$1.0 million annually**. In 2014, MnTAP has:

- Completed a two year effort to provide training and assessments focused on strategies to reduce solid waste in rural Minnesota communities through sponsorship by the United States Department of Agriculture (USDA)
- Supported businesses in their effort to identify and implement energy efficient solutions through Conservation Applied Research and Development (CARD) grants by the Minnesota Department of Commerce, Division of Energy Resources (DER) and support from utility partners
- Continued outreach efforts to promote reduction of volatile organic compounds (VOCs) which contribute significantly to our state air pollution, in partnership with MPCA and with funding for a small demonstration project by the United States Environmental Protection Agency (EPA)
- Focused on industrial water conservation with support from Metropolitan Council Environmental Services (MCES).

MnTAP was fortunate to welcome four new staff members to our team; Michelle Gage who is focusing on pollution prevention and alternatives assessment, Jon Vanyo who is focusing on pollution prevention and energy efficiency, Miriam Yee who is focusing on industrial water conservation, and Alaina Ryberg, who is doing some web design work.

We thank our clients and partner organizations for the opportunity to work with them in 2014 and we look forward to serving your business in 2015. Throughout this report, you will read success stories from some of the companies we assisted in 2014. The cost savings these companies have achieved are helping many of them increase production, add employees and invest back in their businesses. This is good business for Minnesota.

*Laura Babcock*

Director, Minnesota Technical Assistance Program

## Links to MPCA's Strategic Plan

### Water

**Goal - Pollution from all sources is reduced or prevented**

MnTAP provides technical assistance to POTWs and industrial water users through on-site assessments.

### Air

**Goal - Ensure emissions do not create unacceptable exposures**

MnTAP provides information and assistance for businesses to reduce VOCs and HAPs.

**Goal - Reduce contribution to greenhouse gas emissions**

MnTAP provides industrial energy efficiency solutions to businesses through on-site assessments and outreach.

### Land/Waste

**Goal - Solid waste is managed to conserve resources and energy**

MnTAP has active outreach and assistance efforts to reduce waste through source reduction and reuse.

### People and Approaches

**Goal - Conserve resources and prevent pollution to protect the environment and economy**

MnTAP is an outreach and assistance program that helps Minnesota businesses develop and implement industry-tailored solutions that prevent pollution at the source, maximize efficient use of resources, and reduce energy use and cost to improve public health and the environment.

# Executive Summary

## Program Highlights

Driven by MnTAP's mission to help Minnesota businesses maximize resource efficiency, prevent pollution and save money, we had many achievements in 2014. MnTAP:

- Conducted nearly 800 assistance activities over 285 engagements
  - 250 unique Minnesota companies assisted
  - 120 site visits and team meetings held
  - 11 MnTAP intern projects completed
- Launched new initiatives
  - 5 new and 3 continuing special funded projects
  - Expanded the technical focus to reduce area source VOCs
  - Industrial water conservation in the north and east metro groundwater management area through site assessments and intern projects
- Helped companies avoid pollution emissions from implemented energy and water conservation equal to 7810 MTCO<sub>2</sub> Eq

## 2014 Outputs

Technical Assistance Activity	2013 Results	2014 Results
Contacts (calls/emails/meetings)	546	671
Requests for Assistance* (from 4/2014)	--	76
Total Staff Site Visits (facilities)	105 (52)	121 (69)
Student Interns	11	11
Materials Exchange (successful exchanges)	111	83
Events and Presentations	50	46
MnTAP Web Visits	56,363 from 44,293 unique visitors	114,107 from 91,088 unique visitors

\*MnTAP began tracking requests for assistance in 2014

## 2014 Implemented Outcomes (recommendations from all years)

Activity	Waste (lbs)			Energy		Water	Cost Savings
	Air Emission (lbs)	Hazardous (lbs)	Non-Hazardous/Solid Waste (lbs)	Electric (kWh)	Gas (Therms)	(gallons)	
<b>Goal</b>	<b>3 million</b>			<b>5 million</b>	<b>300,000</b>	<b>10 million</b>	<b>---</b>
Site Visits	12,400	14,330	88,600	3,000,000	---	13,700,000	\$353,000
Interns	0	53,170	50,100	3,200,000	440,000	13,900,000	\$648,000
Materials Exchange	0	0	120,000	---	---	---	\$500
<b>TOTALS</b>	<b>338,600</b>			<b>6.20 million</b>	<b>440,000</b>	<b>26.6 million</b>	<b>\$1.0 million</b>

# MnTAP Activities

## Overview

The Minnesota Technical Assistance Program provides pollution prevention information and assistance to help businesses maximize resource efficiency, prevent pollution, reduce energy use, reduce costs, maintain a safe and healthy work environment for employees, and comply with environmental regulations. Pollution prevention technical assistance is tailored to individual businesses through a number of services including site visits, student interns, materials exchange, facilitated teams, workshops, and industry specific resources.

## Support

MnTAP is a business outreach program located at the University of Minnesota, School of Public Health, Division of Environmental Health Sciences. MnTAP works under a primary grant from the Minnesota Pollution Control Agency (MPCA) to partially fulfill the environmental technical assistance requirements of the Minnesota Waste Management Act (WMA) and the Minnesota Toxic Pollution Prevention Act (TPPA) during fiscal year 2014. MnTAP has leveraged direct MPCA funds to win additional competitive grant funding totaling 13% of the FY 2014 budget.

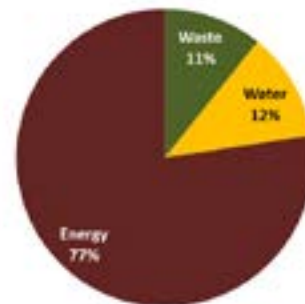
## Overall Results

Through nearly **800 interactions** with businesses across the state, MnTAP staff have been able to assist **250 organizations** during the calendar year 2014. This includes over **120 on-site assistance visits to 69 companies** as part of a technical assistance assessment, intern project, or team. Implementation has been reported for **53 MnTAP-recommended process changes by 30 companies** to reduce their environmental footprint and save money. Companies that have implemented recommendations made by MnTAP are **saving over \$1.0 million** in first year savings.

## Activities

- Conduct on-site assistance and training to help businesses implement pollution prevention waste management practices
- Coordinate the Minnesota Materials Exchange Program
- Communicate and promoting solutions that help businesses reduce waste, prevent pollution, reduce energy use and save money.

2014 Cost Savings Distribution from Implemented Recommendations



## 2014 MnTAP Staff



Back row, left to right: A.J. Van den Berghe, Karl DeWahl, Frank Strahan, Jon Vanyo, Matt Domski, Paul Pagel and Mick Jost  
Front row, left to right: Laura Babcock, Monique Dubos, Michelle Gage, Jane Paulson, Peggy Bradley, Anna Arkin and Linda Maleitzke  
Not pictured: Miriam Yee

## On-Site Assistance

### 2014 Outputs

121 site visits  
69 unique facilities  
76 requests for assistance

### 2014 Outcomes

338,600 lbs waste  
26.6 million gal water  
6.2 million kWh  
440,000 therms  
\$1.0 million annual savings

### What they said...

"MnTAP has been a great partner in the City of Minneapolis Green Business matching program, evaluating the project from an objection environmental impact perspective."

-- Patrick Hanlon, Environmental Initiatives Manager, City of Minneapolis

### 2014 Goals

Conduct 200 site visits (5,000 site visit hours) to 100 different facilities to identify opportunities for companies to prevent waste and pollution and conserve resources including water and energy. Support Minnesota businesses by responding to questions on waste generation and resource utilization.

### 2014 Accomplishments

During site visits, MnTAP staff members analyze the current production situation, research possible alternatives to achieve reduction and deliver a report with specific recommendations to the organization for material, water or energy utilization improvement. MnTAP staff made over 200 recommendations with a value of nearly **\$1.0 million** for resource conservation to Minnesota businesses in 2014 from all onsite services.

### 2014 Environmental Recommendations

Recommendation Area		Proposed Reduction	Actual Reduction
Water Use	gal/year	35,200,000	12,000,000
Energy	kWh/yr	4,500,000	1,000,000
Energy	therms/yr	321,000	234,000
Air Emissions	lb/yr	21,400	12,400
Hazardous Material/ Waste	lb/yr	176,000	64,000
Non-Hazardous Material/ Solid Waste	lb/yr	506,000	90,000
Savings	\$/yr	\$997,000	\$358,000

### Project Success: Site Assistance in the City of Minneapolis

During 2014 MnTAP continued our partnership with the City of Minneapolis Green Business Matching Grant Program by providing on-site technical assessments and other analysis as requested to estimate or verify the environmental improvement opportunity for proposed projects. The Green Business Matching Grant Program is a mechanism for The City of Minneapolis to invest alongside businesses that reduce pollution and help create a healthier place to live, work and play. Grants are awarded in three areas - Dry Cleaning, Vehicle Repair, Service and Maintenance, and Innovative Ways to Reduce Pollution.

Since 2013 MnTAP has been directly involved with eight Minneapolis businesses seeking to participate in the program. Implemented reductions have totaled 5,300 lbs of air pollution. Serving as a partner in this effort has allowed MnTAP the opportunity to provide technical assistance and information to many small to medium size businesses within the city.





## On-Site Assistance: Intern Program

### 2014 Outputs

11 intern projects

### What they said...

"The intern project allowed us to take a deeper look than we normally do at how our process uses energy.

The MnTAP technical support also helped with the success of the project."

-- Clinton Buchner, Business Development Manager, Kraft Foods, Albany

### Funding Partners

Minnesota Pollution Control Agency

Metropolitan Council Environmental Services

Minnesota Department of Commerce, Division of Energy Resources

Xcel Energy

CenterPoint Energy

### 2014 Goals

This year, MnTAP direct funding to place eight students with businesses to identify and implement waste reduction solutions. MnTAP also secured partnerships to fund an additional three students in the program.

### 2014 Accomplishments

The combination of enthusiastic engineering and science students, company and MnTAP mentors, committed sponsors and business-relevant questions resulted in creative solutions for businesses and professional experience for our interns during summer 2014.

#### Student recruitment highlights:

- The number of student applicants rose from 89 in 2013 to 139 in 2014, a 64% increase.

#### Company recruitment highlights:

- Seventeen companies applied to host and intern in 2014.

### 2014 Outcomes - Intern Program Implementation\*

Project Year(s)	Waste (lbs)			Energy		Water (gallons)	Savings
	Air Emissions (lbs)	Hazardous Waste (lbs)	Non-Haz/Solid Waste (lbs)	(kWh)	(therms)		
2011	4,200		10,500	3.8 million	1.2 million	6.2 million	\$1.1 million
2012	50	14,400	33,000	3.8 million	153,000	11.6 million	\$590,000
2013	---	---	775,000	1.4 million	182,000	24.8 million	\$512,000
<b>2014</b>	<b>0</b>	<b>53,170</b>	<b>50,100</b>	<b>3.2 million</b>	<b>440,000</b>	<b>13.9 million</b>	<b>\$648,000</b>

\*Implementation reported in 2014 for intern projects from all years



### Project Success: St. Cloud Wastewater Treatment Facility

At the City of St. Cloud Wastewater Treatment Facility (WWTF), a MnTAP intern led the charge in reducing the facility's energy consumption and lowering its operating costs consistent with the facility goals. The intern recognized that, with one-third of the plant's energy consumption coming from the aeration blowers, costs could be cut by increasing blower efficiency. Utilizing the fan affinity laws, the intern developed a strategy to reduce blower pressure enabling the blower to operate at its minimum power capacity, thereby saving energy. Based on the intern's research and recommendation, the facility implemented a most-open valve control strategy which will result in energy savings of **392,000 kWh** and **\$27,000** annually. She also recommended installing a master control panel to automate the optimal value position of the most-open valve control strategy. This solution could save an additional **766,000 kWh** per year and **\$54,000**.

See more solutions at [mntap.umn.edu/intern/pdf/2014Solutions.pdf](http://mntap.umn.edu/intern/pdf/2014Solutions.pdf)

## Minnesota Materials Exchange

### 2014 Outputs

197 new organizations/  
companies  
707 new individual members  
17,484 unique visitors  
36,003 website visits  
223 listings  
83 successful exchanges

### 2014 Outcomes

119,977 lbs diverted material  
\$516 reported cost savings

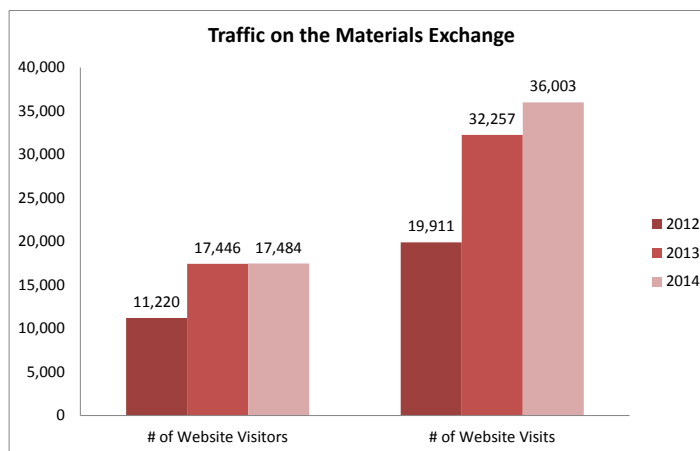
### What they said...

"The exchange works great for finding a user for unwanted commercial items."

-- Larry Piepho, Manager,  
Piepho Moving and Storage

### 2014 Accomplishments

The Minnesota Materials Exchange is a website that links organizations that have reusable goods they no longer need to others who can use them. In 2014, MnTAP focused on publicizing this service to businesses, organizations and institutions throughout Minnesota. Promotional efforts tied into a renewed focus on reduction and reuse, including byproduct synergy, among businesses in the metro area. MnTAP also continued work with the website developer to improve user experience on the site.



### Partnerships

A new sub-exchange, the Minnesota Arts Market ([martsmarket.org](http://martsmarket.org)), began operating in 2014. This exchange, managed by the Minnesota Theater Alliance, links artists and arts organizations to exchange reusable art and theater materials. MnTAP continued its partnership with the University of Minnesota ReUse Program to offer the Virtual Warehouse sub-exchange for members of the university community. The sub-exchange model allows partner organizations to offer an exchange targeted to a specific audience at a reduced cost and increase reuse within a specific community.



### Program Success: Chemical Reuse

Stellar Technologies is a medical component manufacturer in Brooklyn Park that uses several different acids, solvents, silicones and epoxies. Due to FDA rules and regulations, these products cannot be used in medical applications after their expiration date. Disposal of these products can be expensive with both fees and staff time needed for disposal prepping, which at times can exceed the purchase price. Typically these materials can be used in nonmedical applications.

"Minnesota Materials Exchange has allowed us to pass on at no cost to the recipient perfectly good product, saving the company both time and money of disposing of perfectly good product," say Anthony K. Blais, Stellar Technologies' maintenance coordinator. "We don't use it every day but it's really great to have it when we need it! This program makes my job a little easier." Stellar Technologies has also taken advantage of Minnesota Materials Exchange in locating and purchasing items from the exchange.



## Client Communications

### 2014 Outputs

- 671 calls/emails
- 5 market surveys
- 7 MnTAP e-newsletters to  
~ 1,067 subscribers
- 9 FRP tips e-newsletters to  
~ 160 subscribers
- 3 water tips e-newsletters to  
~ 1,537 subscribers
- 2 printed Source  
newsletters to  
~ 2,900 subscribers
- 1 *Solutions* magazine
- 46 presentations
- 2 promotional postcards

### 2014 Goal

Develop and disseminate technical information for Minnesota businesses to help them implement pollution prevention and energy efficiency practices and technologies. Promote MnTAP services and results through publications and presentations.

### 2014 Accomplishments

In 2014, MnTAP utilized a number of enhanced outreach tools and techniques to promote available project opportunities, gather information and share the results of our efforts. Communication methods included electronic newsletters, targeted email campaigns and target-specific printed materials.

#### Enhanced Promotional Materials

MnTAP developed several new promotional and outreach tools in 2014 to market our services specifically to industry sectors or geographic regions:

- A series of tips newsletters and event promotional materials targeting the fiberglass-reinforced plastics industry
- A series of tips newsletters promoting water conservation project and technical assistance opportunities in the NE metro businesses
- Targeted flyers and fact sheets to promote VOC reduction project, activities and events.

#### Outreach

MnTAP continued to market its services through multiple avenues, including:

- Public presentations, assessments and training workshops across the state
- Presentations at regional business and community outreach events
- Participation in multi-stakeholder planning activities
- Presenting MnTAP results as part of an EPA Region 5 practitioners training event
- A new healthcare industry web portal including new content, layout and resources
- New and updated sections of the MnTAP website to communicate our VOC project initiatives, resources and events
- Increasing Twitter followers by 80 individuals or organizations



### Project Success: Healthcare Website Launch

In 2014, MnTAP launched a healthcare industry web portal to connect industry staff with pollution prevention and waste regulatory resources. We have been working with the healthcare industry since the late 1990s and can provide assistance to help increase resource efficiency and regulatory compliance while reducing waste and costs. The site provides information for a range of healthcare facilities including hospitals, surgery centers, clinical laboratories, dental offices, family practice and specialty clinics, imaging and radiology clinics, long-term care facilities, pharmacies, and veterinary clinics.

The new information is easily navigable by topic or by type of facility. Topics include regulatory resources focused on waste and sustainability resources such as infection prevention, energy efficiency, and waste reduction and recycling. For information on pollution prevention and resource conservation, visit [www.mntap.umn.edu/health](http://www.mntap.umn.edu/health).

# MnTAP's 2014 Special Projects

Project & Funding	Highlighted Activities	Page
E3 in FRP: Fiber Reinforced Plastics Project Launch <i>Minnesota Pollution Control Agency</i>	Conduct four Economy, Energy and Environment (E3) assessments of fiber reinforced plastics manufacturers to implement time, energy and materials savings opportunities to improve business productivity and profitability.	8
Area Source VOC Reduction <i>Minnesota Pollution Control Agency Clean Air Minnesota</i>	Support voluntary reduction of VOC emissions at small- to mid-size businesses through education and outreach in automotive and industrial painting, degreasing and oil seed milling industries.	9
Area Source VOC Reduction: Degreasing <i>U.S. Environmental Protection Agency, Region 5</i>	Demonstrate efficiency of low-VOC low hazard degreasing materials in industrial maintenance and service businesses.	10
Assisting Minnesota Communities with Solid Waste Reduction <i>U.S. Department of Agriculture Rural Development</i>	Conduct assessments and training on solid waste reduction at companies in rural Minnesota.	11
Motivating Manufacturing Energy Efficiency with Lean <i>Minnesota Department of Commerce, Division of Energy Resources</i>	Student interns provided support for implementation of lean tools and energy improvements at two companies.	12
Industrial Water Conservation Initiatives <i>Metropolitan Council with funding from the Clean Water, Land, and Legacy Amendment</i>	Develop a profile of industrial water use for the north and east metro and conduct water use assessments through site visits and intern projects.	13

## New for 2015

### Wastewater Treatment



Wastewater treatment energy efficiency and distributed energy generation assessments

### Data Centers



Energy efficiency at small embedded data centers

### Breweries



Brewery energy and efficiency, water conservation and waste reduction

## E3 in FRP: Fiber Reinforced Plastics Project Launch

### Project Outputs

117 FRP contact emails  
 10 e-newsletters to 176 individuals  
 1 postcard sent to 135 industry professionals soliciting participation a training event

### Sponsor

Minnesota Pollution Control Agency, EPA Region 5

### What they said...

"With federal agencies working together to promote sustainable manufacturing, companies are able to reduce their environmental impact while gaining a competitive edge."

-- Laura Babcock,  
 MnTAP Director

### Project Overview

MnTAP is reaching out to the fiber reinforced plastics (FRP) industry with the E3 in FRP Project. This Minnesota effort is modeled after the federal Economy, Energy, Environment multi-agency program developed to deliver energy reduction and pollution prevention strategies to small to medium size businesses in order to increase productivity and profitability. The FRP industry was selected for Minnesota's first targeted E3 effort because it is a major Minnesota industry that has potential in all three areas of an E3 project: P2 opportunities for material efficiency and green chemistry; significant ventilation requirements offer energy saving opportunities; and multi-step manufacturing processes provide potential for significant benefit from lean tools.

### Project Activities

The main project outreach consisted of 10 FRP Tips e-newsletters which were emailed to 176 FRP industry professionals. The newsletters contained information on an aspect of the E3 in FRP project, such as:

- E3 overview or project updates
- Pollution prevention
- Energy efficiency
- Lean assessment
- A "did you know?" section with energy or P2 tips, including case studies of demonstrated money-saving opportunities
- Newsletters can be accessed at: <http://www.mntap.umn.edu/industries/air/e3infrp.html>



Larson Boats in Little Falls was selected as the first of four project sites for the E3 in FRP project. Pollution prevention and energy efficiency assessments have been completed and a number of energy-saving opportunities have been identified in the compressed air system, as well as potential opportunities for improved material efficiency. MnTAP staff were impressed with the facility as they toured both the open mold and virtual engineered composites (VEC) closed mold fiberglass hull lines. Enterprise Minnesota will be performing a lean assessment, value steam mapping and a kaizen event in early 2015.

MnTAP plans to conduct three more assessments in 2015 and develop strategies for saving energy, time and materials that can be shared with partners.

## Project Success: FRP Training Draws Crowd

In November 2014, MnTAP conducted FRP best practices training at St. Cloud Technical College, co-hosted with Composites One. MnTAP presented the E3 in FRP program and tips on efficient compressed air systems. Nearly 30 people were in attendance with seven different FRP companies, four FRP material suppliers and five different organizations (MPCA, SPDC, Xcel Energy, Enterprise Minnesota, Manufacturers Alliance) represented. The hands-on demonstration of the latest closed molding techniques and spray gun technology was the highlight of the event. While spray layup is still widely used, closed molding is the best method for reducing styrene emissions and improving worker safety. Many of the participants said they were also interested in the utility rebates discussed by Xcel, and the lean manufacturing information presented by Manufacturers Alliance and Enterprise Minnesota.



## Area-Source VOC Reduction

### 2014 Outputs

- 2 virtual painter training events
  - 38 painters trained
- 1 water-based autobody paint promotion
  - 6 industrial paint case studies documented
  - 1 FRP training event
- 13 companies assisted with state grant application
  - 1 white paper

### 2014 Outcomes

12,400 lb VOC reduction

### Sponsor

Minnesota Pollution Control Agency

### What they said...

"It is important to reduce emissions to ensure long-term success of Silgan, our employees, and the environment."

-- *Silgan Sustainability Group*

### Project Overview

In this project MnTAP identifies functional non-VOC (volative organic compound) alternative products, implements training and conducts on-site technical assistance to reduce VOC emissions from area sources at small to mid-size businesses.

### 2014 Project Activities and Results

Here are a few highlights of project activities:

- Identified a strategy based on photochemical reactivity to rank formulation components based on their ozone generation impact, not just VOC volumes
- Published an oilseed process best practices white paper and had discussions with two plants
- Held two virtual painter events, training 38 painters in technique improvements and best practices. There is an estimated 12,400 lb/yr reduction in paint emissions from painter training
- Held one water-based autobody promotion event. Seven shops were introduced to water-based paint technology
- Assisted 11 autobody shops and 2 industrial facilities with applications for the State Environmental Assistance Grants. When fully implemented these projects will reduce air emissions by over 13,000 lb VOC per year



### Project Success: Case Studies Offer Strategy Insights

When MnTAP expanded the VOC reduction program, staff identified business leaders who already had success in this area by searching the Toxic Release Inventory. Staff compiled case studies detailing reductions of **405,000 lb/yr VOC reduction** and **129,000 lb/yr of HAP reductions** at six Minnesota companies that had realized reductions in chemical pollutants such as xylene, toluene and ethylbenzene while maintaining or growing their production outputs. For example, one company realized an 85% reduction in VOC emissions when they switched from using liquid paint to powder coating in their manufacturing process. The six manufacturers reduced HAPs via:

- Paint reformulation
- Changes in type of cleaning solvent
- Updating equipment or processes.

## Area-Source VOC Reduction: Degreasing

### 2014 Outputs

8 degreasing pilots initiated  
 3 pilots continued to testing stage  
 129 facilities contacted via 90 emails and 39 calls

### 2014 Outcomes

345 lb VOC converted to non-VOC  
 420 lb additional reduction pending final testing

### Sponsor

Environmental Protection Agency Region V

### Project Overview

MnTAP will run 20 pilots at facilities with industrial maintenance departments or vehicle repair operations to identify alternatives to current degreasing aids that perform as well with less ozone impact.

### 2014 Activities and Results

Activities associated with this project include of research, demonstration projects, training, and implementation assistance.

- Meeting with five degreasing chemical suppliers on the project, VOC issues, the industry, the chemicals they sell and possible alternative product. One consistent message is that the sector has gotten smaller with less degreasing solvent sold and used
- Reviewed typical products for VOC impacts and other health risks and established a protocol for evaluating and comparing available risk assessment information
- Contacted companies and launched eight demonstration projects
- Investigated photochemical reactivity as a means of comparing solvent alternatives, concluding:
  1. The Maximum Incremental Reactivity (MIR) scale is a reasonable basis for making relative comparisons of solvents
  2. Quantitative estimates of likely ozone impacts from any VOC reduction requires sophisticated atmospheric modeling.

### Future Plans

Continue outreach to target solvents, degreasing and alternative products and develop case studies to share.



### Project Success:

The Ramsey County Parks Department uses a mixture of three cleaners in a once-a-season effort to remove puck marks from the boards in 11 hockey rinks. The three-cleaner blend releases 150lb/yr of VOCs into the atmosphere. Pilot testing evaluated five alternative products suitable for this application. Three cleaned well, two of those showed reductions in VOC releases, and one of these had similar handling properties to incumbent cleaners. In February 2015, Ramsey County chose to fully test the effectiveness of the latter product on all 11 rinks. If implemented, the product will **reduce VOC emissions by 110lb/yr (73%)**. If successful, a case study will be developed and shared with facility managers across the state.

## Assisting Minnesota Communities with Solid Waste Reduction

### Project Outputs

- 13 solid waste trainings to  
156 individuals
- 20 solid waste site  
assessments and reports
- 1 waste assessment video  
produced in English &  
Spanish

### Sponsor

U.S. Department of  
Agriculture Rural  
Development

### Partners

Becker County  
Benson Kiwanis  
Brown County  
Cass County  
Jackson County  
Latino Economi  
Development Center  
Lyon County  
Mille Lacs County  
Minnesota Pollution Control  
Agency  
Otter Tail County  
Rotary Clubs in Pelican  
Rapids & Perham  
Southwest Regional Solid  
Waste Commission  
St. Louis County  
Swift County

### Project Overview

MnTAP provided solid waste technical training and site assessments to businesses, local governments, schools and healthcare organizations. Trainings were tailored to address the solid waste concerns of each audience, and assessments were conducted in a wide range of organizations. Activities took place between October 2012 and September 2014 in small communities in 53 counties in greater Minnesota.

### 2014 Project Activities and Outputs

Activities completed and resources developed during this project include:

- Thirteen trainings (exceeded goal of 10) for an audience that included representatives from business and local government staff
- Twenty solid waste assessments for a variety of organizations and businesses
- Twenty reports containing 590 recommendations for waste reduction
- An estimate of 129,000 lbs waste reduction worth \$66,000 was recommended during site assessment activities
- A 10-minute solid waste reduction training video, titled "How to Conduct a Waste Assessment: Tools to Reduce Waste and Save Money at Your Facility," was produced in both English and Spanish. Watch the videos on MnTAP's YouTube channel (search Minneosta Technical Assistance Program). Watch the videos at: <http://youtu.be/jU8c6VCBo98>
- A list of resources related to solid waste reduction, provided to project partners, training attendees and assessment contacts
- A waste assessment checklist provided to local government

### Future Plans

Compile the developed resources into an assessment package for general use and site training.

## Project Success: Survey Respondents Report Solid Waste Reduction

At the end of the two-year USDA grant period, MnTAP surveyed project participants to gauge how the trainings and assessments were received and whether recommendations had been implemented. The feedback was overwhelmingly positive from those who responded:

- 100% of respondents reported that they gained insights to help reduce and divert solid waste
- 100% of respondents have taken or plan to take actions to reduce waste and recycle more.
- Written feedback was also positive, including comments such as, "The program was very informative and I have come to believe that education is going to be a requirement to success."





## Motivating Manufacturing Energy Efficiency with Lean

### Project Outputs

2 project companies

2 student interns

### 2014 Project Outcomes

545,249 kWh

11,500 lbs hazardous waste

\$68,055 savings

### Outcomes from 2013 Projects Implemented in 2014

33,675 kWh

2,612 therms

\$5,174

### Sponsors

Minnesota Department of Commerce, Division of Energy Resources

### What they said...

"Our MnTAP intern enhanced the company's ability to explore meaningful energy conservation and water reduction opportunities while validating daily kaizen as a viable heuristic methodology."

-- Dave Westphal,  
Engineering Manager, MGK

### Project Overview

In 2014, MnTAP conducted two intern projects that utilized lean manufacturing tools to improve process efficiency and reduce waste. The lean approach provided a high level process view that identified where excess processing occurs and where implemented solutions could lead to energy savings.

### 2014 Project Activities

At MGK, the intern identified opportunities to reduce solvent use in the cleaning tanks without compromising the effectiveness of the cleaning process. During this time the intern also discovered opportunities to reduce annual energy expenditures. Outcomes of the project include:

- Modifying cleaning processes to reduce solvent needs by 27,600 lbs and save \$21,000 annually
- Repairing leaks and improving air compressor maintenance to save 122,400 kWh and \$10,000 annually
- Recommending variable frequency drives on motors to save 177,400 kWh and \$16,000 annually

At Uponor, the intern helped the plant optimize its new polyethylene (PEX) extrusion process. The intern adjusted machinery and other processes to reduce the inputs Uponor needed to purchase and save energy. Outcomes of the project include:

- Optimizing curing process settings to save 553,000 kWh and \$55,300 annually
- Switching from nitrogen to compressed air to save \$1,300 annually
- Insulating the extruder barrel to save 26,000 kWh and \$2,600 annually
- Removing a redundant blower to save 6,500 kWh and \$600 annually

Additional savings of 33,675 kWh, 2,612 therms and \$5,174 were realized from 2013 recommendations implemented in 2014.

## Project Success: Cost, Waste and Energy Savings at Uponor

A MnTAP intern worked with Enterprise Minnesota, one of our service provider partners, to eliminate waste from Uponor's next generation cross-linked polyethylene (PEX) extrusion process to bring down operation costs while conserving energy and natural resources. During a three-day Value Stream Mapping (VSM) event, the team documented the current flow of material, energy and information through the process, and identified opportunities to reduce waste and meet the facility's reduction goals. The intern was able to address many of these areas over the course of the summer, resulting in significant energy savings. The new extrusion process is a future technology for Uponor so energy savings achieved through this project will be multiplied many times over as additional extrusion lines are added.



## Industrial Water Conservation Initiatives

### 2014 Outputs

- 1 regional water use report
- 2 facility visits
- 3 project presentations
- multiple in-person & email contact

### What they said...

"We are proud to work with MnTAP in finding innovative water efficiency solutions for Twin Cities area businesses."

-- Brian Davis, Metropolitan Council, Water Supply Planning

### Sponsor

Metropolitan Council, with funding from the Clean Water, Land, and Legacy Amendment to the State Constitution

### Project Overview

The objectives of the project are to encourage industrial water conservation at businesses in the north and east metro groundwater management area (GWMA), designated by the Minnesota Department of Natural Resources. The project includes a detailed research report on potential industrial water conservation targets, nine to 12 technical outreach publications describing water conservation opportunities, four water conservation technical assessments, and up to three intern projects in summer 2015.

Four significant industrial water users in the north and east metro GWMA responded to the first e-news announcing the project in late Oct. 2014. Additional companies and municipalities have come forward interested in the project, soliciting site visits and inquiring about water conservation intern projects, including two facilities outside the GWMA boundaries.

### 2014 Project Activities

In 2014, MnTAP:

- Published three e-newsletters outlining the project and soliciting intern projects with technical content tips on the cost of water, leaks and boilers/steam traps
- Visited two industrial facilities in GWMA to outline the project and solicit interest in participating
- Gave three presentations on the project to Hennepin and Anoka County hazardous waste generators
- Provided two networking opportunities for businesses interested in water issues
- Generated two publications to solicit companies for project participation, MCES Open Channel News and Hennepin County Green Notes
- Posted project information on Anoka County's Know the Flow website: [www.knowtheflow.us](http://www.knowtheflow.us)



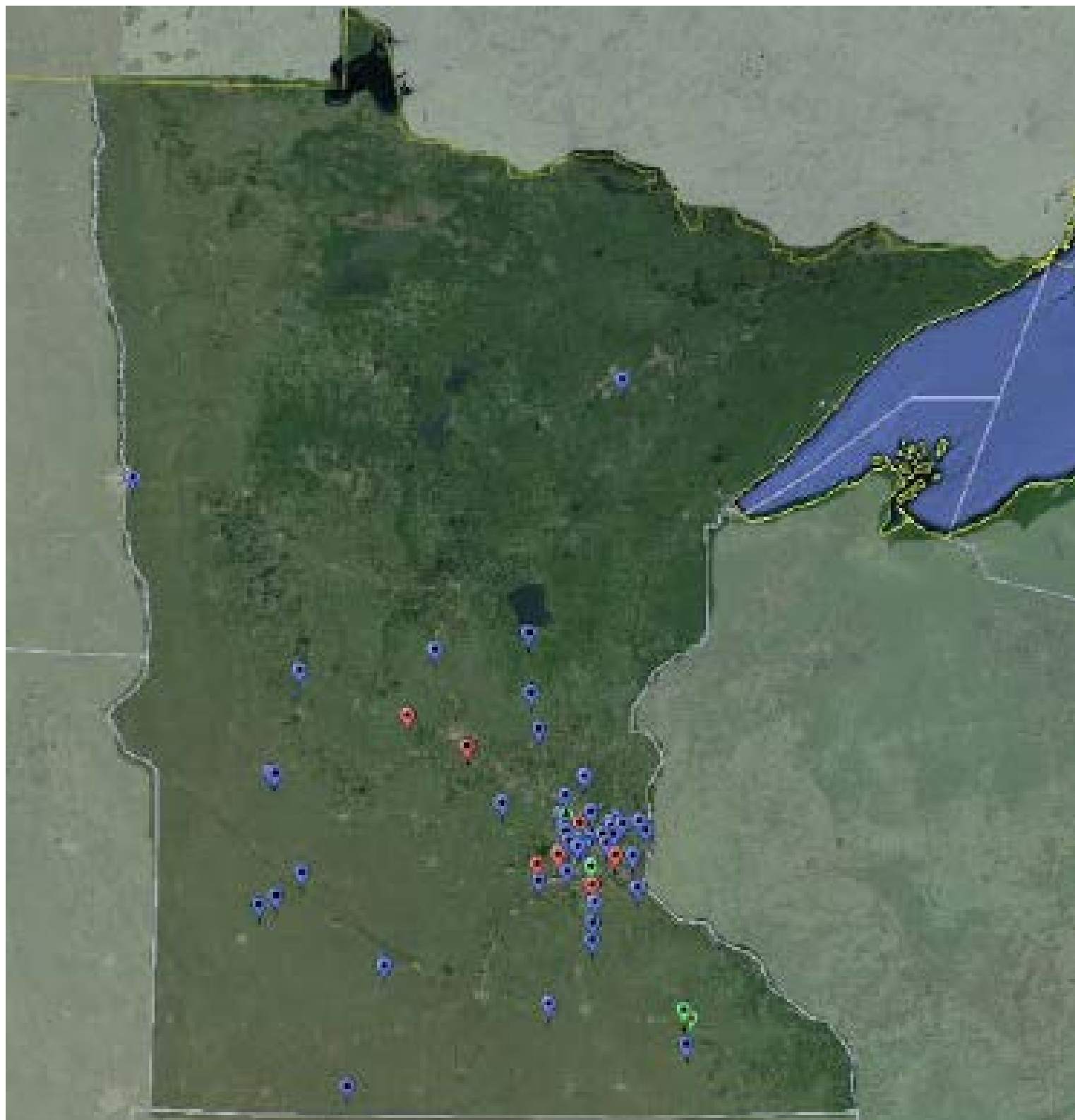
### Project Success: GE Water & Process Technologies

In 2014, five of 11 intern projects involved water conservation. The conservation potential was 24,321,500 gallons for the combined 2014 recommendations. At GE Water & Process, a project supported by MCES, the intern identified opportunities to optimize the amount of noncontact cooling water used.

Recommendations included:

- Install metering valves and flow meters to control and reduce water flow, which could save **1.45 million gallons of water** and **\$3,100 annually**
- Install a solenoid valve with an interlocking mechanism to shut down water flow temporarily on non-operating lines, with an estimated value of **\$370** and **173,000 gallons of water annually**
- Applying these changes to a second line has the potential to conserve an additional **2 million gallons** and **\$4,500 per year**.

MnTAP Interaction Summary (Interns, Team Meetings, and Site Visits)



 Teams

 Intern Projects

 Site Visits