**Attachment 1**

Environmental INITIATIVE

# Clean Air Minnesota

## Work Group Roster

March 2014

*(Alternates listed in italics)*

Paul Aasen, City of Minneapolis
*Patrick Hanlon, City of Minneapolis*

Laura Babcock, Minnesota Technical Assistance Program
*Karl Dewahl, Minnesota Technical Assistance Program*

Jessica Burdette, Minnesota Department of Commerce
*Joe Plummer, Minnesota Department of Commerce*

Karen Clark, Women's Environmental Institute

Lynn Clarkowski, Minnesota Department of Transportation
*Marilyn Jordahl-Larson, Minnesota Department of Transportation*

Bill Droessler, Izaak Walton League of America

Shalini Gupta, Center for Earth, Energy and Democracy

Mike Hansel, Barr Engineering

Zack Hansen, Ramsey County

John Hausladen, Minnesota Trucking Association

Anne Hunt, City of Saint Paul

Jim Kelly, Minnesota Department of Health
*Dale Dorschner, Minnesota Department of Health*

Tony Kwilas, Minnesota Chamber of Commerce
*Lloyd Grooms, Minnesota Chamber of Commerce*

Kelly Marczak, American Lung Association
*Jon Hunter, American Lung Association*

Carl Michaud, Hennepin County

Chris Nelson, 3M

Peter Raynor, University of Minnesota School of Public Health

Heather Rein, Flint Hills Resources
*Jake Reint, Flint Hills Resources*

Michelle Rosier, Sierra Club

Rick Rosvold, Xcel Energy
*Patti Leaf, Xcel Energy*

Dana Slade, HealthPartners

Scott Strand, Minnesota Center for Environmental Advocacy

David Thornton, Minnesota Pollution Control Agency

Jeff Travis, Local Public Health Association

## Core Team Members

**The Core Team serves as an advisory group to Environmental Initiative for Clean Air Minnesota*

Paul Aasen, City of Minneapolis

Mike Hansel, Barr Engineering

Anne Hunt, City of Saint Paul

Tony Kwilas, Minnesota Chamber of Commerce

Heather Rein, Flint Hills Resources

Dana Slade, HealthPartners

Scott Strand, Minnesota Center for Environmental Advocacy

David Thornton, Minnesota Pollution Control Agency

**Attachment 2**

Environmental INITIATIVE

Meaningful Partnerships, Effective Solutions

# Clean Air Minnesota
## Project Schedule

**Updated April 14, 2014**

8 meetings each in FY2014

*August/September 2013*
- Hire/train project staff
- Organize Core Team

*October 2013*
- 10/7/13 Core Team meeting #1
- Organize Work Group

*November 2013*
- 11/8/13 Work Group meeting #1
- 11/8/13 Core Team meeting #2

*December 2013*
- 12/6/13 Work Group meeting #2
- 12/6/13 Core Team meeting #3

*January 2014*
- 1/10/14 Work Group meeting #3
- 1/10/14 Core Team meeting #4

*February 2014*
- 2/7/14 Work Group meeting #4
- 2/7/14 Core Team meeting #5

*March 2014*
- 3/7/14 Work Group meeting #5
- 3/7/14 Core Team meeting #6

*April 2014*
- 4/11/14 Work Group meeting #6
- 4/11/14 Core Team meeting #7

*May 2014*
- 5/9/13 Work Group meeting #7
- 5/9/13 Core Team meeting #8

*June 2014*
- 6/6/14 Work Group meeting #8

6 meetings each in FY2015

*July 2014*
- 7/11/14 Work Group meeting #9

*August 2014*
- 8/8/14 Core Team meeting #9

*September 2014*
- 9/12/14 Work Group meeting #10
- TBD Stakeholder Input Mtg. (or Oct.)

*October 2014*
- 10/3/14 Core Team meeting #10

*November 2014*
- 11/14/14 Work Group meeting #11

*December 2014*
- 12/12/14 Core Team meeting #11

*January 2015*
- 1/9/15 Work Group meeting #12

*February 2015*
- 2/13/15 Core Team meeting #12

*March 2015*
- 3/13/15 Work Group meeting #13

*April 2015*
- 4/10/15 Core Team meeting #13

*May 2015*
- 5/1/15 Work Group meeting #14

*June 2015*
- 6/19/15 Core Team meeting #14

**Attachment 3**

Environmental INITIATIVE
Powerful Partnerships, Effective Solutions

# Clean Air Minnesota Measurement and Outcomes Dashboard

| Recommendation | Metric 1: Emissions | Metric 2: Exposure | Metric 3: Economics | Metric 4: Education |
|---|---|---|---|---|
| 1 – Education and Outreach to Reduce VOC Emissions from Small to Mid-Sized Businesses | Number and type of installs, change-outs, etc.<br>VOC reduction/ worker exposure (VOC lbs.)<br>Usage (pre and post) | Location: city/county/zip<br>MDH data by zip code<br>Demographic stats (socioeconomic, EJ/equity, vulnerable populations, exposure to asthma/COPD etc.) | Number and type of installs change-outs, etc.<br>Costs | Education/ outreach activities and participation (# attendees, # contacts, # associations, etc.) |
| 5 – Air Quality Improvements and Urban Heat Island Mitigation Through Urban Forestry | | | | |
| 10 – Incentives for Diesel Engine Retrofit/Repower/ Rebuild/Replace | Number and type of installs<br>EPA DEQ: actual emissions reductions and health benefits<br>Industry standards/ tiers<br>Number of cars off the road (equivalent) | EPA DEQ: actual emissions reductions and health benefits<br>Location: city/county/zip<br>MDH data by zip code<br>Demographic stats (socioeconomic, equity/EJ, population density)<br>Worker exposure (MAC study?) | Economic benefits to fleet (cost savings) | |
| 13 – Air Alert Education and Best Management Practices Outreach | | | | |
| 16 – Develop the Transit System (Bus and Rail) in the Seven County Metro Region | | | | |
| 21 – H Model Ordinance to Reduce Emissions | Number of communities adopting | Location (zip codes)<br>MDH health data | Health costs/ cost savings related to diminished | Education/ outreach activities and |

| | | | | |
|---|---|---|---|---|
| Impacts from Hydronic Heaters | Ordinance specs<br>Number and type of installs (clean vs dirty emissions)<br>Industry forecasts (new vs. conventional) | by zip code<br>Number of complaints before and after | complaints | participation (# attendees, # contacts, # associations, etc.) |
| 23 – Wood Stove/Fireplace Change-Outs | | | | |
| 24 – Wood Smoke Reduction Education and Outreach | | | | |

.

Updated 4.30.14

Environmental INITIATIVE
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# Clean Air Minnesota Project Planning Tool

| | |
|---|---|
| **Project Title** | CLEAN DIESEL RETROFITS MPCA |
| **Category** | **Mobile Sources** |
| **Prepared By** | **Mark Sulzbach** |
| **Date** | **Feb 18, 2014** |

## Statement of Need

(What is the need for this project? Why is this project important to Clean Air Minnesota? Describe disproportionate impacts, if applicable.)
Diesel engines are the workhorses of society and industry due to their tremendous efficiency and longevity. Unfortunately, pre- 2007 diesel engines emit a disproportionately high amount of toxic pollution – primarily PM2.5 and NOx.

Compounding the problem is the fact that diesels last forever – a 40-year-old diesel engine is common – especially in certain industries such as construction. Engines older than 1995 have little if any pollution controls. Therefore our target is legacy diesel engines older than 2007.

## Objective

(What will this project accomplish? How will it address the need?)
This project / program began with collaboration with EI back in 2006. As well as mobile source outreach and education – promoting DOCs (diesel oxidation catalyst – exhaust systems) our primary retrofit. By 2008 MPCA began giving DERA grant funding to EI to supplement School bus work and also gave funding to MPCA's Small Business APU Loan program.

**From 2009-2011 MPCA had 4 concurrent, active grant programs:**

- CMAQ Grant (total $625k)– working to retrofit every eligible heavy duty – state, county and Minneapolis and St. Paul diesel vehicle engine in the 7-county metro area.
- DERA State Grant (varies by year $200k approx../yr)
- MN State Legislature Funding ($2.4M) dedicated for school bus retrofits – work contracted to EI/Project Green Fleet w. PCA administering
- ARRA/DERA – American Reinvestment and Recovery Act- ($1.75M) – this was a massive high pressure rush to give help and emission reductions statewide

## Deliverables

(Is there a product to be delivered at the end of the project? Are there any interim delivery points?)
Every completed diesel retrofit, replacement or installed APU is a deliverable. In my world there are many interim delivery points – annual RFPs, grant awards, project

## Methodology

(What methods will be used to design/implement/manage the project? Note technologies, if any.)
Federal EPA guidelines, EPA/CARB approved technologies only and Federal and State grant/contract terms and conditions.

## Target Audience

(Who is the intended audience? Sectors/markets/population segments/geographic areas?) Primary Target: Legacy diesel fleet owners in the 7-county metro area,
#2 Rochester, Duluth, St. Cloud
Current ideal target for best bang for the buck: Construction/ off-road equipment used in Metro

## Action Plan

| Task/Step | Timeframe | Partner(s) Responsible | Description of Activity |
|---|---|---|---|
| 1 | May | Mark Sulzbach | Request form for Contracts Unit Help |
| 2 | June - November | Mark Sulzbach /assigned C.S. | Work w. Contracts Specialist to draft RFP |
| 3 | During Application period | Mark Sulzbach | Promote (see Communication above) RFP |
| 4 | 2-weeks | Clean Diesel Team | Select Grant Projects once Contracts weeds out ineligible applications |
| 5 | 1-2 weeks | Mark Sulzbach + C.S. | Develop Grant Agreement and project emission metrics |
| 6 | 2- weeks to 3- months | Mark Sulzbach | Shepherd project as needed. Confirm project completion (etc.) process grant reimbursement, promote on Web page |

## Drivers

(What are the key drivers that compel action? Describe incentive structures.)
Funding is the key driver. From the PCA's perspective – we are experiencing reduced federal funding. DERA state funding remains the only active grant at this time.
A secondary driver from fleet owners would be technologies that save them money. For the most part, diesel fleet owners have zero interest in reducing emissions. But APUs were popular for long-haul truckers and construction equipment owners tend to like engine replacements or repowers – which means getting a new engine at half-price that is more efficient and quieter than the old engine – and likely good for 20-30 years. Likewise, for those who can afford it – hybrid delivery trucks have been popular though grantees must come up with 75% of the overall replacement cost.

## External Factors

(Identify any external factors, limitations, or known risks that may have an impact on the project.)

Excessive paperwork and difficult state process

- Federal Terms and Conditions
- State Terms and Conditions
- State/Agency RFP process / communication-promotion limitations/
- Applicants must use and sign up through SWIFT

## Metrics

(List performance measures that will be used to track and evaluate results.)
Federal quarterly reports
Emission reductions in grant contracts / based on EPA's Diesel Emission Quantifier (DEQ) software…
Completed Projects

## Communications

| |
|---|
| (How will project partners share information? Report to the Work Group? Share results with public?)<br><br>Direct emails of RFP news release to Clean Diesel GovDelivery List. Follow-up emails to key equipment vendors and associations. Reports to CAM Work Group : once grant is published, after applications received, after awards, (milestones etc.) Primarily, Web announcements and Web page updates. News releases are sent but rarely picked up for RFPs – other news stories can get pick-ups. Radio is the one exception but – the story is so short and Web site address links are too long and impossible for listeners to hear and write down correctly. Usually, we get some pick-ups from Trucking Associations – who re-publish the story. |

## Implementation Partners

| | Organization | Key Contact |
|---|---|---|
| **Partner #1** | EPA | Tony Maietta<br>Lisa Hoscher |
| **Partner #2** | | |
| **Partner #3** | | |
| **Partner #4** | | |

## Project Manager

| |
|---|
| (Partner agency that will manage project from initiation to close)<br>Mark Sulzbach (MPCA) |

## Role of Env. Initiative

| |
|---|
| (Describe role, if any – planning, managing, supporting, etc.)<br>Communication / promotion support, possible leads… |

## Potential

| | |
|---|---|
| **Reduced Emissions** | **Currently about 26 tons of PM2.5 2014 estimate 1-ton?? Depends on Projects.** |
| **Reduced Exposure** | **Depends on projects** |
| **Reduced Costs** | **Depends on project / technology** |
| **Other** | |

## Budget*

| | | |
|---|---|---|
| **Project Cost** | Since 2008: $6M to PCA / some shared | *Attach full budget separately |
| **Available Funding** | $200,000 to PCA | (List sources/partners) $120K EPA<br>$80K MPCA's APU loan repayments |
| **In-Kind Resources** | 50% match | (List sources/partners) Grant Awardees |
| **Notes** | | |

## Approval

| | |
|---|---|
| **Approved by Partners** | (Date) |
| **Reviewed by CAM** | (Date) |

Environmental INITIATIVE

Powerful Partnerships, Effective Solutions

# Clean Air Minnesota Project Planning Tool

| | | |
|---|---|---|
| **Project Title** | **Health Impact Assessment for St. Paul's Emerald Ash Borer Management Plan** | |
| **Category** | Urban Heat Island Mitigation/Urban Forestry #5 | |
| **Prepared By** | Sarah Rudolf | Phone 651-757-2564<br>Email sarah.rudolf@state.mn.us |
| **Date** | 1/7/14 | |

## Statement of Need

The Emerald Ash Borer (EAB) was first identified in St. Paul in May 2009. The EAB is an invasive pest known for its ability to inflict near-100% mortality on ash trees in areas of infestation. There are no proven cures for ash trees nor natural predators of EAB. With the city's ash population numbering between 25,000 and 35,000, comprising more than 25% of the urban canopy, there is much at stake. St. Paul is on the precipice of significant tree loss, with potential impacts to air quality, stormwater runoff and urban heat island mitigation.

## Objective

This project will conduct a comprehensive Health Impact Assessment (HIA) on St. Paul's Emerald Ash Borer (EAB) Management Plan. The project will identify relationships between the urban forest and human health and map them against vulnerable populations of people and ash trees in St. Paul. Recommendations will be developed to inform future policies and actions to maximize the benefit of the urban forest to St. Paul residents and minimize the health impact of the emerald ash borer in the city. Recommendations will also address the need for a comprehensive and collaborative urban forest strategy that engages multiple city departments to leverage activities and available budgets.

## Deliverables

A full HIA report will be produced in Fall 2014 at the conclusion of the grant period. Numerous written products are required as interim deliverables and are identified in the Pew-MPCA grant agreement as follows: screening summary, scoping summary, stakeholder engagement plan, monitoring and evaluation plan, literature review, baseline community health profile, dissemination and communications strategy, assessment, recommendations, executive summary, final report, process evaluation, impact evaluation, and project summary.

## Methodology

This project will follow the six steps of health impact assessment: screening, scoping, assessment, recommendations, report, and monitoring. Please refer to project workplan for further details.

## Target Audience

The project focuses on the City of St. Paul, EAB activity in St. Paul. Results will be shared with the City of St. Paul Forestry Unit, Mayor's Office, and City Council, along with other pertinent city departments. It is expected that municipalities and forestry professionals around the state of Minnesota and beyond will be interested in the findings of this project and track how recommendations are implemented.

## Environmental Justice

This project will promote environmental justice. Low-income communities of color often report disproportionate rates of asthma and other respiratory conditions and higher proportions of residents in age groups most at risk (>65 and <5 years of age.) These neighborhoods often also report higher frequency of mental health issues, lower percentages of urban trees and tree canopy. While the distribution of ash trees in St. Paul does not correspond to socioeconomic factors, this project will help to identify neighborhoods most at risk and offer recommendations to maximize both environmental and human health.

## Action Plan

| Task/Step | Timeframe | Partner(s) Responsible | Description of Activity |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |

## Drivers

Ash trees comprise at least 25% of the urban tree population of St. Paul, which stands to lose 25,000 to 35,000 trees on boulevards and city parks, along with thousands more on private property and wilderness areas.

## External Factors

External factors for this project include the emerald ash borer itself (how and where it is active in the City of St. Paul and beyond) and ongoing exploratory use of biocontrol agents to reduce EAB population. Another factor is that there is limited data on ash-specific tree benefits, so most likely general data on benefits of trees will need to serve as a proxy.

## Metrics

The monitoring phase of this assessment will track and examine how results are utilized. The monitoring plan is yet to be developed and will be based upon the reporting plan (see communications section below.)

## Communications

Results from the assessment (recommendations and a full report) will be shared with key audiences according to the reporting plan (yet to be developed, but required as a Pew deliverable.)

## Implementation Partners

| | **Organization** | **Key Contact** |
|---|---|---|
| **Partner #1** | City of St. Paul | |
| **Partner #2** | MDA | |
| **Partner #3** | USDA | |
| **Partner #4** | MDH<br>Others as described in work plan | |

| | |
|---|---|
| **Project Manager** | Sarah Rudolf, Project Coordinator, MPCA |

| **Role of Env. Initiative** | No formal role identified to date |
|---|---|

**Potential***

*For this scope of work

| | | |
|---|---|---|
| **Reduced Emissions** | | (Describe calculations or attach separately) |
| **Reduced Exposure** | | (Describe calculations or attach separately) |
| **Reduced Costs** | | (Describe calculations or attach separately) |
| **Other** | | (Describe calculations or attach separately) |

**Budget****

| | | |
|---|---|---|
| **Project Cost** | $ | **Attach full budget separately |
| **Available Funding** | $ | (List sources/partners) |
| **In-Kind Resources** | | (List sources/partners) |
| **Notes** | | |

**Approval**

| | |
|---|---|
| **Approved by Partners** | (Date) |
| **Reviewed by CAM** | (Date) |

Environmental INITIATIVE

Powerful Partnerships, Effective Solutions

# Clean Air Minnesota Project Planning Tool

| | |
|---|---|
| **Project Title** | Infrastructure & Outreach to Expand Electric Vehicle Use in Minnesota |
| **Category** | Transportation Demand Management & Light-Duty Vehicle Recommended Actions |
| **Prepared By** | Fran Crotty, MPCA |
| **Date** | 12-23-13 |

## Statement of Need

The goal of this enhanced public charging capacity, technical assistance and outreach is to help the state achieve a greater level of electric vehicle (EV) use compared to what the market will produce on its own by providing:

- encouragement and technical support to private and public employers wishing to **offer workplace charging**;
- outreach to public and private sector fleet managers, targeted business clusters (delivery businesses, parts runners, etc.) to **encourage procurement of EVs** and those serving the personal vehicle sector such as auto dealers and car-sharing programs;
- **installation of additional electric vehicle charging stations** at public facilities such as park and rides, libraries, parks, stadiums, parking ramps/lots, retail and food & beverage establishments and local government facilities. Encourage powering the charging stations with renewable solar or wind generated electricity.

## Objective

Electric vehicles emit zero air pollution emissions from the tailpipe. Because EVs are 3 times more energy efficient than gas powered internal combustion engines; they also contribute to significant decreases particulate matter (PM 2.5, PM 10), nitrous oxide (NOX), volatile organic compounds (VOCs), and greenhouse gas emissions (CO2). When EVs are powered by with renewable solar or wind generated electricity these reductions are further increased.

## Deliverables

Deliverables from participants would include:

- documentation of stories related to business, non-profit, and public employers providing workplace charging to be shared with other employers;
- lists of models and makes of EVs procured by in public and private fleets due to the project;
- maps showing installation of additional charging stations;
- Emissions reductions in NOX, VOCs, PM 2.5 & 10, CO2 due to displaced vehicle miles traveled (VMT) by EVs in place of gasoline powered vehicles.

## Methodology

Design & implementation for the project:

- Workplace charging – Reach out to and partner with MN employers through the U.S. Dept. of Energy workplace charging ambassador program. Let them know about other employers who are providing charging service to employees. Include information such as: Are they charging fees for the service? How many stations are being installed? Where are they located in proximity to the buildings? How is the program promoted? Provide the link for the 'Charging While You Work' guide.
- Fleet procurement of EVs – Partner with MN employers to provide information about the benefits of EV use in fleets potentially through workshops and/or individual meetings with employers.
- With partners identify and secure funding for the installation charging stations at key locations where there are 'gaps' in charging service.

## Target Audience

The initial, primary focus for this project is workplace charging. Private and public sector employers, located in the larger urban areas with air quality concerns, including the Twin Cities metro area, Rochester, and Duluth would be solicited as participating partners.

## Action Plan

| Task/Step | Timeframe | Partner(s) Responsible | Description of Activity |
|---|---|---|---|
| 1 | 1st Qtr 2014 | MPCA and EI members/staff | • Collaboratively work out details for implementation and secure funding for workplace charging effort.<br>• Monitor and potentially seek funding for additional charging station installations. |
| 2 | 2nd Qtr 2014 | MPCA and EI members | • Identify participating partners for workplace charging outreach and fleet EV procurement.<br>• MPCA contract with a coordinator to implement the project. |
| 3 | 3rd Qtr 2014 | MPCA Lead | • Formally enroll in U.S. DOE workplace charging Ambassador Project.<br>• Meet individually with MN companies that are interested in participating.<br>• Provide technical information and testimonials from those already implementing charging and procuring EVs.<br>• If funding is secured coordinate the installation of EV charging stations. |
| 4 | 4th Qtr 2014 – 3rd Qtr 2015 | MCPA Lead | • Document project progress, metrics, and calculate emission reductions |
| 5 | 4th Qtr 2015 | MPCA Lead | • Final report on the outcomes of the project<br>• Share results through presentations and report |

## Drivers

Key Drivers:

- Significant decreases in criteria and GHG air pollutants from mobile sources in urban areas where vulnerable and often disadvantaged populations are at risk;
- Direct use of clean, renewable energy to power vehicles (a unique attribute of EVs);
- Overall, advancement of EV infrastructure and vehicle procurement in our state.

## External Factors

No known risks or limitations are associated with workplace charging and EV procurement for fleets which have already occurred relatively small numbers. Charging station siting and installations need to be done with high occupancy rates in mind to ensure a high level of value associated with the use of funding.

## Metrics

Project Measurements:

- Record number of employers who participate and the number of workplace charging stations that are installed.
- Convert use of kilo watt hour (4 to 5 miles/kWh) of electricity at the charging Stations to annual reductions in NOX, VOCs, PM, and CO2 in lbs or grams.
- Document public fleet procurement of EV, related VMTs and gasoline use reduction. Convert this to annual criteria air pollutant and GHG reductions in lbs or grams.
- Track additional charging station installations due to the project and associated kWh use recorded at the station also converted to annual criteria air pollutant and GHG reductions.

## Communications

There will be quarterly in-person update reports to the Work Group or more frequently upon request. The final report will be written and submitted to the workgroup. Presentations will be given upon request.

## Implementation Partners

| | Organization | Key Contact |
|---|---|---|
| Partner #1 | To Be Determined | |
| Partner #2 | To Be Determined | |
| Partner #3 | | |
| Partner #4 | | |

| | | |
|---|---|---|
| **Project Manager** | Fran Crotty, MPCA | |
| **Role of Env. Initiative** | Encourage participation by EI and CAM members; assist with planning and implementing as desired.<br><br>Potential for the lead role by EI if desired. | |
| **Potential** | | |
| **Reduced Emissions** | Dependent on extent of resources for project | |
| **Reduced Exposure** | Dependent on extent of resources for project | |
| **Reduced Costs** | | |
| **Other** | | |
| **Budget*** | | *Attach full budget separately |
| **Project Cost** | $ Funding Source To Be Determined | (List sources/partners) |
| **Available Funding** | $0 | (List sources/partners) |
| **In-Kind Resources** | | |
| **Notes** | | |
| **Approval** | (Date) | |
| **Approved by Partners** | (Date) | |
| **Reviewed by CAM** | | |

Environmental INITIATIVE
Powerful Partnerships, Effective Solutions

# Clean Air Minnesota Project Summary

| | | |
|---|---|---|
| **Project Title** | 10b-Diesel Retrofits: **Project Green Fleet** | |
| **Category** | Mobile Sources | |
| **Prepared By** | Andrea Robbins<br>Environmental Initiative | 612-334-3388 ext. 109<br>arobbins@environmental-initiative.org |
| **Date** | March 5, 2014 | |

## Statement of Need

(What is the need for this project? Why is this project important to Clean Air Minnesota? Describe disproportionate impacts of exposure, if applicable.)

- Vehicles, and in particular, older diesel vehicles, contribute a large percentage of the air pollutants emitted in Minnesota.
- Exposure to fine particulate matter and NOx (building block for Ozone) that are emitted from diesel vehicle exhaust can contribute to the development of heart and lung disease, as well as aggravate existing respiratory diseases such as asthma.[1]
- Diesel retrofits are a cost effective way to significantly reduce air pollution.[2]

*1-MPCA flyer Diesel Exhaust in Minnesota.*
*2-Diesel Technology Forum website.*

## Background

(Describe the history of this project, if applicable. If ongoing, explain origin and milestones to date.)

In 2005, Environmental Initiative launched a pilot-scale effort to reduce diesel emissions from school buses. Since then, Environmental Initiative's Project Green Fleet has expanded its voluntary efforts to reduce emissions throughout the state and to numerous types of diesel vehicles. To date, Project Green Fleet has installed pollution control equipment on over 3,600 diesel vehicles including 3,200 school buses, 350 trucks, 50 pieces of construction equipment, 2 locomotives and 1 tugboat.

## Objective

(What will this project accomplish? How will it address the need? Which pollutant(s) - VOC, PM, NOx - will be reduced and what is the reduction target? If the project will extend into the future, how will it be sustained beyond this scope of work?)

Project Green Fleet installs pollution control equipment and engine replacements/upgrades to diesel vehicles throughout Minnesota. Project Green Fleet's first goal was to retrofit every eligible school bus in Minnesota. To date, we have retrofitted over 3,200 buses, and will complete the final 90 retrofits by the end of 2014. Since our initial goal was established, Project Green Fleet has expanded into other diesel fleets and our new goal is to produce enough pollution reduction though this project equivalent to removing 1 million cars off the road annually.

## Deliverables

(Is there a product to be delivered - a tangible or intangible object produced as a result of the project – for

example, a report, a document, a tool, etc.?)

In addition to the past accomplishments listed above, in 2014 Project Green Fleet will retrofit approximately 90 additional school buses and complete engine replacements on 3 vehicles. Environmental Initiative continues to actively seek additional funding to continue this program into 2015 and beyond. Project Green Fleet is working toward the overall goal of emissions reductions equivalent to removing 1 million cars off the road annually.

## Methodology

(What methods will be used to design/implement/manage the project? Note technologies, if any.)

Fleet Outreach:

- Maintain relationships to equipment vendors and trade organizations
- Maintain and update as needed website presence on the project, including how to participate
- Build relationships to new diesel fleet operators via phone calls and in person meetings
- Update an produce print materials for in person meetings

Implementation:

- Obtain fleet information and identify appropriate vehicles to be retrofitted
- Execute operating agreement with fleet and send purchase order to vendor to order parts
- Oversee the installation of retrofit equipment and address any issues that arise
- Process and pay vendor invoice once work has been completed.
- Quantify emission reductions using the EPA Diesel Emission Quantifier tool

Technologies and Application:

- Only EPA and/or CARB approved technologies will be installed
- 2014 focus is on school bus DOCs and large engine repowers
- Select vehicles that will produce the largest emissions reductions and/or can be used to leverage additional retrofits

## Target Audience

(Who is the intended audience? Sectors/markets/population segments/geographic areas? Indicate approximate number of <facilities/other> expected to participate, if applicable.)

- School bus fleet owners/operators (provide vehicles to retrofit)
- Heavy duty construction fleet owners/ operators (provide vehicles to repower)
- Other diesel fleet owners/operators (provide vehicles to repower)
- Associated General Contractors, MN Trucking Association and other industry associations (outlet to recruit fleet owners/operators to participate)
- Diesel Vehicle Dealers (provide bids and perform retrofits/repowers)
- Potential Funders (raise additional funding for 2015 and beyond)

## Environmental Justice

(Will this project promote environmental justice? Does this project help to ensure that everyone enjoys the same degree of protection from environmental and health hazards?

In addition to focusing our work on vehicles who serve high density population areas, we find that many low-income individuals and families live near high traffic roadways and industrial areas because of lower property values. While I do not currently have statistical data to present, this general fact shows that pollutant reductions achieved through this project will certainly be felt by those who live in these areas.

## Action Plan

| Task/Step | Start/End Dates | Partner(s) Responsible | Description of Activity |
|---|---|---|---|

| | | | |
|---|---|---|---|
| 1 | March-Apr 2014 | Environmental Initiative | Conduct RFP for school bus DOCs and FOHs, select best bid and set up contact with vendor<br><br>Select industry sectors to target for repower projects and start outreach to potential fleets |
| 2 | April-May 2014 | Environmental Initiative | Meet with fleets interested in repower projects<br><br>Update fleet lists and operating agreements for remaining school bus fleets |
| 3 | May-September 2014 | Environmental Initiative | Order and oversee installation of approx.. 90 school bus DOCs and FOHs<br><br>Order and oversee installation of 1 engine repower, work on setting up 2nd and 3rd repower projects |
| 4 | September – November 2014 | Environmental Initiative | Oversee installation of 2nd and 3rd repower projects, develop budget and workplan for 2015 and identify number and type of retrofits to complete in 2015 |

## Project Partners

| Organization | Key Contact | Phone and Email |
|---|---|---|
| Clean Air Minnesota | Gena Gerard | 612-334-3388 ext. 103<br>ggerard@environmental-initiative.org |
| Minnesota Pollution Control Agency | Mark Sulzbach | 651-7557-2770<br>mark.sulzbach@state.mn.us |
| | | |

## Project Manager

Andrea Robbins, Environmental Initiative

## Role of Env. Initiative

Environmental Initiative manages this project with financial support from various sources including federal, state and local government, foundations, and private contributions.

## Drivers

(What are the key drivers that compel action? Describe incentive structures for engagement.)

The main drivers for this project are financial incentives and outreach to fleet owners/managers.

**Financial Incentives:** We have established a percentage-based system that gives financial support to fleets to install equipment that is based on the financial ROI seen by fleets. For example, emission reduction technologies like Diesel Oxidation Catalysts and Diesel Particulate Filters that do not provide reductions in fuel consumption are funded by Project Green Fleet at 100% of the cost of parts and installation. In contrast, technologies like engine repowers and idle reduction equipment do offer the fleet the benefit of reduced fuel costs and longer vehicle life and therefore only funded by Project Green Fleet at 50% with the fleet contributing the other half of parts and installation costs.

**Fleet Outreach:** One of our goals is to make the process of participating in Project Green Fleet as easy as possible. This includes one-on-one visits with fleet owners to let them know about the project and how to participate, simplifying paperwork that they need to complete to participate, and addressing their concerns about maintenance and warranty of the equipment installed.

## External Factors

(Identify any external factors, limitations, or known risks that may have an impact on the project.)

- Maintaining adequate funds to continue providing financial incentives to fleets and support Environmental Initiative staff to work on this project.
- Contacting and connecting with new fleets to participate.
- Locating and identifying eligible equipment that will maximize pollution reduction.

## Communications

(How will project partners share information? Report to the Work Group? Share results with public?)

- Environmental Initiative supports a URL (www.projectgreenfleet.org) and web presence for this project.
- Provide periodic updates to the Clean Air Minnesota work group on progress and projections.
- Work with the Minnesota Pollution Control Agency on coordinated communications efforts and legislative engagement as appropriate.
- Maintain relationships with vendors, fleet operators and industry associations to keep them aware of new opportunities.

## Project Potential (Metrics)

(For this scope of work: define metrics and/or performance measures to demonstrate quantifiable emissions reductions of PM, VOC, and NOx consistent with MPCA/EPA standard calculation methods. See Attachment C of EPA's Ozone Advance guidance: http://www.epa.gov/ozoneadvance/pdfs/2012404guidance.pdf. For questions, contact Rocky Sisk, MPCA.)

2014:

These numbers are an estimate and may change depending on the ratio of Diesel Oxidation Catalysts (DOCs) versus Fuel Operated Heaters (FOHs) that are installed. More accurate numbers will be available early summer.

| | |
|---|---|
| **PM2.5** | **1** |
| **NOx** | **7.6** |
| **HC** | **1.4** |
| **CO** | **3.3** |
| **CO2** | **30.9** |

** All numbers represent annual reductions in tons*

## Budget*

| | | |
|---|---|---|
| **Project Cost** | $450,000 for 2014 | |
| **Available Funding** | $450,000 | Flint Hills Resources |
| **In-Kind Resources** | | |
| **Notes** | | |

## Approval

| | |
|---|---|
| **Approved by Partners** | (Date) |
| **Reviewed by CAM** | (Date) |

Environmental INITIATIVE

Powerful Partnerships, Effective Solutions

# Clean Air Minnesota Project Planning Tool

| | |
|---|---|
| **Project Title** | Model Ordinance to Reduce Emissions Impacts from Hydronic Heaters |
| **Category** | **Wood Smoke Recommended Actions** |
| **Prepared By** | **MPCA** |
| **Date** | **11/14/13** |

## Statement of Need

As traditional sources of fuel have increased in price, the purchase and use of wood or biomass fired hydronic heaters has increased. These units are called by a number of names including but not limited to "outdoor wood boilers" or "outdoor wood furnaces," and can also be located inside.

Hydronic heaters can be highly polluting and are currently unregulated on a statewide level in Minnesota. Estimates indicate there are between 20,000 to 30,000 of these units in the state. In efforts to reduce exposure, nuisances, or emissions from these units, a dozen or so states and many local governments (at least 40 in Minnesota) have passed varying regulations ranging from prohibition to allowable use with emissions limits, set-back distances from property lines or buildings, stack height, and other conditions.

In 2007, a model rule/ordinance for hydronic heaters was created by the Northeast States for Coordinated Air Use Management (NESCAUM). EPA supported the development of this model and recommends that areas consider adopting the model rule or a more stringent approach tailored to the specific needs of the community.

To help local units of government in Minnesota, there is a need to further develop a more relevant and updated model ordinance and approach to reduce emissions and exposure.

## Objective

- Develop a model ordinance for local governments to voluntarily adopt that addresses emissions from hydronic heaters recognizing the following factors:
  - Explore different options to meet the needs of local units of government recognizing size/staffing/ and potential exposure (examples may include metro versus rural, large versus small)
  - Try to influence new unit installation and problematic existing units
  - Provide technical expertise to help justify ordinance (a good "Statement of Intent" helps solidify justification)
  - Recognize different authorities have different mechanisms (counties can help unincorporated areas)
- Once developed, provide outreach to local units of government to raise awareness of model tool.

## Deliverables

- Model Ordinance language
  - With potential options
  - Find community or communities to implement as a model
- Outreach Opportunities

## Methodology

- Establish baseline – what has already been done in terms of ordinance development locally in Minnesota and in other states
- Work with in-house counsel and other partners familiar with ordinance development to help craft appropriate language
- Evaluate potential alternatives to accommodate options for small and larger cities to implement
- Work with a local unit of government willing to implement model ordinance
- Work with associations to raise awareness of model

## Target Audience

Local units of government
Residents seeking additional guidance to help develop an ordinance for their community

## Action Plan

| Task/Step | Timeframe | Partner(s) Responsible | Description of Activity |
|---|---|---|---|
| 1 | | MPCA | Determine needs, including counsel<br>Assess categories of information collection |
| 2 | | MPCA | Collect baseline information from other communities within Minnesota – initially targeting communities in Metro area counties and outer ring, in addition to |
| 3 | | MPCA | Collect baseline information from other states and communities outside Minnesota. |
| 4 | | MPCA, Partners | Based on gathered knowledge, establish categories to include in model; Develop approach |
| 5 | | MPCA, Partners | Develop language |
| 6 | | MPCA, Association of MN Counties, MN Association of Townships, League of MN Cities; | Work with Potential Implementer; Outreach |

## Drivers

Exposure concerns to neighbors; variety of ordinances currently in place; No statewide or national standard for equipment; increased use in populated areas.

## External Factors

| |
|---|
| Existing units may not be impacted by new ordinances; Development of NSPS for future units |

## Metrics

| |
|---|
| Developed ordinance language<br>Number of Opportunities to raise awareness of model<br>Number of Local ordinances incorporating model language |

## Communications

| |
|---|
| How will project partners share information?<br>• Periodic meetings<br>Report to the Work Group?<br>• Present updates in as appropriate<br>Share results with public?<br>• Post on MPCA website and others<br>• Work with partners on outreach opportunities (annual meetings, etc.) |

## Implementation Partners

| | Organization | Key Contact |
|---|---|---|
| **Partner #1** | PCA | |
| **Partner #2** | LMC, AMC, MAT | |
| **Partner #3** | MDH, LPHA | |

| | |
|---|---|
| **Project Manager** | MPCA |
| **Role of Env. Initiative** | |

## Potential

| | |
|---|---|
| **Reduced Emissions** | |
| **Reduced Exposure** | |
| **Reduced Costs** | **Likely increased if requiring cleaner burning units** |
| **Other** | **Looking at effectiveness of model ordinance** |

## Budget*

| | | |
|---|---|---|
| **Project Cost** | $ | *Attach full budget separately |
| **Available Funding** | $ | (List sources/partners) |
| **In-Kind Resources** | | (List sources/partners) |
| **Notes** | | |

## Approval

| | |
|---|---|
| **Approved by Partners** | (Date) |
| **Reviewed by CAM** | (Date) |

Environmental INITIATIVE

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# Clean Air Minnesota Project Summary

| | | |
|---|---|---|
| **Project Title** | VOC reduction small to mid-size auto maintenance/repair businesses | |
| **Category** | Area source VOC | |
| **Prepared By** | Mick Jost (MnTAP) | 612-624-4694 / jostx003@umn.edu |
| **Date** | 2/27/14 | |

## Statement of Need

Reduce solvent based liquid cleaner (degreasing) emissions at vehicle maintenance/repair shops. Current VOC emissions from auto maintenance and repair activities are estimated at 958,000 lb/yr. These emissions directly affect workers and work place air quality environment. Small shops can be located near residential areas increasing exposure to local communities.

## Background

The maintenance and repair industry is challenged with complex vehicles that require meticulous troubleshooting, disassembly, cleaning, and reassembly. While many parts are replaced, many other parts are removed, disassembled, and cleaned to inspect for failure or to rebuild and reinstall. Aerosol-packaged degreasing cleaners, and manual parts washing degreasing equipment are used in most small shops to do this kind of work.

## Objective

Decrease VOC emissions from auto maintenance and repair sector activities by up to 3%, 28,700 lb/yr. Develop pilot trials of environmentally preferable cleaners in volunteer shops and assess the success and barriers to how the products performed. Case studies and reports build the credibility and capability of participating Minnesota assistance and tech education providers. Successful pilots reduce shop workplace and surrounding neighborhood solvent exposure.

## Deliverables

1) Identify sector applicable aerosol products formulated with low/no VOC cleaners and propellants. Also promote the use of compressed air rechargeable aerosol containers that do not use VOC propellants to aerosolize product.
2) Identify sector-applicable bulk cleaning products formulated with low/no-VOC constituents.
3) Pilot candidate replacement cleaners in volunteer shops and measure acceptance, performance, and success and barriers to implementation.
4) Develop resource materials promoting results of pilot studies. Employ other mechanisms to deliver information and solicit further participation and acceptance.

## Methodology

1) Survey effort to identify solvent use aspects of Minnesota auto repair industry
Research to compile performance-equivalent alternatives with the advantages and any disadvantages
Assistance provider resource development, outreach, organization and Internet hosting
Partner with trade media, and associations to distribute survey and research information

Identify pilot shops willing to trial alternative cleaners. Work with cleaner vendor to measure effectiveness through operator interview, gathering qualitative information, and potentially vendor-sponsored analytic testing of cleaner efficacy over time. Include assistance on best management practices.

Data / client tracking and compilation in suitable client management system
Follow up

## Target Audience

Repair shops doing lots of rebuild repairs, inspections, and reinstallation activities where parts washers and aerosol cleaners are in heavy use.

Primary target smaller shops in urban areas. However, large shops (e.g. dealerships) are also included in this analysis and maybe good candidates for the pilot trials.

## Environmental Justice

Automotive repair and maintenance shops can be owned and operated by diverse minority population groups, and likewise maybe found in residential neighborhoods of like populations catering to their common interests, including language. Depending on zoning rules, repair and maintenance shops can be found in close proximity to residences. Environmental improvements made to repair operations would benefit the immediate workplace environment and the workers, and also the community in the general vicinity. Efforts will be included to include these diverse groups.

## Action Plan

| Task /Step | Start/End Dates | Partner(s) Responsible | Description of Activity |
|---|---|---|---|
| 1 | 12/1/13-12/31/14 | MnTAP | Research low/no VOC aerosol and bulk-use cleaning alternatives. |
| 2 | 5/1/14-8/1/14 | MnTAP | Survey shops in Minnesota on solvent use using directed outreach, trade media, other avenues as appropriate.<br>Two NAICS - 4111 automobile dealers..<br>8111 various automotive repair classifications.<br>The total target audience is between 5,354 and 5,546 shops.<br><br>Associations (AASP, GMADA, MADA) and trade publications (Auto Repair Journal, other) will be asked to circulate a survey on shop use of cleaners (aerosols and bulk)<br>Survey response rate goal of 5% (~265).<br>Results will be extrapolated to other like facilities based on employee size (Census data) to determine the impact of current use.<br><br>Results will also validate EPA VOC emissions per employee. |
| 3 | 2/1/14-11/30/14 | MnTAP; volunteer vendors | Engage vendors to determine suitable shops and products to use in alternative cleaner pilot trials. |
| 4 | 6/1/14-3/31/15 | MnTAP; volunteer vendors, | Trial products and measure performance.<br>Use the Survey or other promotion mechanism to solicit volunteer shops (5% of survey respondents or 12-15 shops) to try alternative cleaners.<br><br>Actual emission reductions will be compared in a before and after evaluation of pilot trials.<br>Percent volatility in common use aerosols, and common parts washer solvent will be compared to alternatives:<br>Number of cleaning tasks/day<br>Compare length of time to complete tasks<br>Tasks/yr for annual improvement<br>Compare VOC use to EPA emission factor prediction |
| 5 | 9/1/14-3/30/15 | MnTAP; volunteer vendors, MPCA, EI | Develop resource materials promoting results of trials. Employ mechanisms to deliver information and solicit further participation and acceptance. |

## Project Partners

| Organization | Key Contact | Phone and Email |
|---|---|---|
| MnTAP | Mick Jost | 612-624-4694 / jostx003@umn.edu |
| MnTAP | Karl DeWahl | 612-624-4645 / dewah001@umn.edu |
| MnTAP | Laura Babcock | 612-624-4678 / lbabcock@umn.edu |
| MnTAP | Matt Domski | 612-624- 5119 / domsk004@umn.edu |
| MPCA | Eric David | 651-757-2218 / eric.david@state.mn.us |
| MPCA | Mike Nelson | 651-757-2122 / michael.nelson@state.mn.us |
| City of Minneapolis | Patrick Hanlon | 612-673-2319 / patrick.hanlon@minneapolismn.gov |
| Lake Street Council | Joyce Wisdom | 612-822-0232 / jwisdom@lakestreetcouncil.org |
| Latino Economic Development Center | Mario Hernandez | 612-734-5332 / mario@ledc-mn.org |
| Alliance for Automotive Service Providers (AASP) | Judell Anderson | 612-623-1110 / Judell@aaspmn.org |
| Volunteer product vendors | TBD | |
| Environmental Initiative | TBD | |

| | |
|---|---|
| **Project Manager** | MnTAP / Karl DeWahl / Mick Jost |
| **Role of Env. Initiative** | (Describe role, if any – planning, managing, supporting, etc.) |

## Drivers

Solvent use in the workplace presents a fire hazard, a worker exposure concern, and an insurance and hazardous waste management burden. Using large amounts of solvents can affect the air quality in the surrounding neighborhood.

Preferable cleaners lessen the exposure to the worker, potentially improving long-term health and daily productivity. They can also provide for overall better air quality in the workplace, and improved air quality in the surrounding community.

## External Factors

A solvent/cleaning work relationship can oftentimes be a well-established vendor/shop partnership difficult to re-orient to newer technologies. Long-standing, proven solvents can have advocates that may point to comparisons of quick performance results, ease of use, cost, and other factors that put up barriers to more preferable products.

There can be some degree of truth to the arguments against more preferable cleaners. They may well be more expensive and take longer to work. Expense in the form of presumed more expensive product(s) and lost productivity maybe an adoption barrier without significant justification and potentially financial incentives.

Not switching is a do nothing option until such time as unregulated solvent use is adjusted through exposure limits, or air quality restrictions, or phased out.

## Communications

Progress shared in CAM meetings; on MnTAP website, other partner websites, or other media as appropriate

## Project Potential (Metrics)

(For this scope of work: define metrics and/or performance measures to demonstrate quantifiable emissions reductions of PM, VOC, and NOx consistent with MPCA/EPA standard calculation methods. See Attachment C of EPA's Ozone Advance guidance: http://www.epa.gov/ozoneadvance/pdfs/2012404guidance.pdf. For questions, contact Rocky Sisk, MPCA.)

**** More detailed discussion attached below**

| | | |
|---|---|---|
| **Reduced Emissions** | Goals:<br>Pilots – 1800lb<br><br>Outreach - 28,700lb/yr goal | **For Pilot tests**<br>Measure status quo and alternative solvent usage for "typical" tasks<br>Use product information (VOC content etc) and exposure monitoring to estimate the reduction in VOC and HAP emissions per task and to annual reductions<br>**Outreach impacts**<br>Survey(s) the industry to estimate the conversion rate to alternative solvents in the broader industry resulting from outreach on pilot test successes. Use pilot results to estimate broader industry impacts<br><br>Details on planned metrics analysis are included below |
| **Reduced Exposure** | Depends on alternatives found and their diffusion into use | **For Pilot tests**<br>Measure status quo and alternative solvent usage for "typical" tasks<br>Use product information (VOC content etc) and exposure monitoring to estimate the reduction in VOC and HAP emissions per task and to annual reductions<br>**Outreach impacts**<br>Survey(s) the industry to estimate the conversion rate to alternative solvents in the broader industry resulting from outreach on pilot test successes. Use pilot results to estimate broader industry impacts<br>Details on planned metrics analysis are included below |
| **Reduced Costs** | TBD – cost neutral is the goal | **For Pilot tests**<br>Combine current pricing information from vendor partners with pilot consumption measurements and any productivity or other quantifiable costs to estimate the economic impact of the change.<br>**Outreach impacts**<br>Survey(s) the industry to estimate the conversion rate to alternative solvents in the broader industry resulting from outreach on pilot test successes. Use pilot results to estimate broader industry impacts<br><br>Details on planned metrics analysis are included below |
| **Co-Benefits /Other** | **TBD** | Improved workplace environment (worker health, productivity; air quality)<br>• Worker and management interviews<br>Green marketing / business viability<br>• Owner/management interviews |

## Budget*

| | | |
|---|---|---|
| **Project Cost** | Previous est $ | *Attach full budget separately |
| **Available Funding** | Previous est $ | Funding for MnTAP staff (0.25 FTE). |
| **In-Kind Resources** | | Additional MnTAP in-kind time. |
| **Notes** | Vendor and associations may be interested for the media coverage and advertising to support pilot trials especially. | |

## Approval

| | |
|---|---|
| **Approved by Partners** | (Date) |
| **Reviewed by CAM** | (Date) |

Updated 4/16/14

**Reduction**
Pilot testing of alternatives:

- Estimate, measure or count the number of cleaning tasks/day
- Measure the usage of the status quo degreasing product for a representative number of cleaning tasks.
- Compare "typical" usage to actual consumption (purchases over time)
- Measure the usage for a representative number of cleaning tasks for an alternative degreasing product(s).
- Actual emission reductions will be compared in a before and after evaluation of pilot trials.

Percent volatility in common use aerosols and common parts washer solvent will be compared to alternatives:
Compare length of time to complete tasks and tasks/yr for annual improvement.
Also compare actual product consumption / VOC release to the EPA emission factor to gauge the significance of the sector.

Survey(s) the industry to estimate the conversion rate to alternative solvents in the broader industry resulting from outreach on pilot test successes. Use pilot results to estimate broader industry impacts
How many surveys over what period of time?
Should we only survey respondents made changes? Or is some extrapolation to non-respondents warranted based on response demographics?

**Exposure**
Measure main VOC ingredient exposure for a degreasing task, comparing a status quo solvent cleaner and an alternative for 10 trials. Replicate exposure measurements at 2-3 trials and with the submission of blank samples.
Use UMN SPH sampling pumps and commercially available exposure badges or media. Use the MnTAP PID meter for initial screening and additional measurement.
Select the highest volume component to measure and extrapolate exposures to other components to exposure to the primary component.

Exposure reduction will be due to the alternative cleaner, and potentially part engineering controls, and part procedural changes.
Alternatives may have odor, and functional challenges for shop workers to get used to. VOC exposure is expected to be reduced with a successful alternative.

Survey(s) the industry to estimate the conversion rate to alternative solvents in the broader industry resulting from outreach on pilot test successes. Use pilot results to estimate broader industry exposure impacts – same questions as for emission reduction.

**Cost**
Evaluate costs in detail during the pilot test
Get current pricing information on degreasers from pilot facilities and vendor partners.
Evaluate additional relevant Pilot trial costs and changes in costs for factors including: other supplies and equipment, labor, productivity and possibly energy or insurance if reduced emissions can reduce ventilation needs or other energy consumption or process risk.
Determine cost reduction during pilot trials precisely and extrapolate to annual cost impacts from the number of degreasing task performed.
Use any significant cost reduction found, as a key motivator in outreach materials to the broader industry.
Survey(s) the industry to estimate the conversion rate to alternative solvents in the broader industry resulting from outreach on pilot test successes. Use pilot results to estimate broader industry impacts based on reported alternative product inroads – same questions as for emission reduction.

Calculate a pilot cost of VOC reduction ($ per ton of VOC reduced) (materials and assistance hours)
Calculate an alternatives cost of VOC reduction ($ per ton of VOC reduced) for alternative implementation

**Co-Benefits**
Collect anecdotal information from Worker and facility management interviews during pilot tests on:
Improved workplace environment (worker health, productivity; air quality)
Green marketing / business viability

Million Dollar Directory employment and facility counts for non-manufacturing degreasing NAICs sectors, with estimated VOC emissions using the EPA emission factor (30lb/y per employee). Core automotive degreasing sectors in orange – core = sectors most involved with degreasing - focus of this effort

| NAICs4 | description | employment | facility count | emission |
|---|---|---|---|---|
| **4411** | CAR DEALERS | **18,072** | **1441** | 542,160 |
| **4412** | RECREATIONAL VEHICLE DEALERS - boat, motor cycle, ATV etc | **4,515** | **830** | 135,450 |
| **4413** | AUTOMOTIVE PARTS, ACCESSORIES AND tire STORES | **6,757** | **1020** | 202,710 |
| **4831** | ship transportation - great lakes & deep sea | **8** | **5** | 240 |
| **4832** | INLAND WATER FREIGHT and passenger TRANSPORTATION | **46** | **11** | 1,380 |
| **4841** | GENERAL FREIGHT TRUCKING | **21,743** | **4776** | 652,290 |
| **4842** | SPECIALIZED FREIGHT TRUCKING | **3,985** | **449** | 119,550 |
| **4851** | BUS AND MOTOR VEHICLE and rail TRANSIT SYSTEMS | **1,953** | **102** | 58,590 |
| **4852** | INTERURBAN AND RURAL BUS TRANSPORTATION | **581** | **29** | 17,430 |
| **4853** | LIMOUSINE and taxi SERVICE | **2,133** | **437** | 63,990 |
| **4854** | SCHOOL AND EMPLOYEE BUS TRANSPORTATION | **4,093** | **138** | 122,790 |
| **4855** | CHARTER BUS INDUSTRY | **1,303** | **63** | 39,090 |
| **4859** | ALL OTHER TRANSIT AND GROUND PASSENGER TRANSPORTATION | **1,085** | **89** | 32,550 |
| **4881** | AIRPORT OPERATIONS - traffic control, support activities | **3,087** | **349** | 92,610 |
| **4882** | SUPPORT ACTIVITIES FOR RAIL TRANSPORTATION | **2,699** | **140** | 80,970 |
| **4883** | SUPPORT ACTIVITIES FOR WATER TRANSPORTATION | **370** | **59** | 11,100 |
| **4884** | OTHER SUPPORT ACTIVITIES FOR ROAD TRANSPORTATION, incl towing | **2,491** | **546** | 74,730 |
| **4885** | FREIGHT TRANSPORTATION ARRANGEMENT | **5,481** | **424** | 164,430 |
| **4889** | OTHER SUPPORT ACTIVITIES FOR TRANSPORTATION | **3,266** | **1161** | 97,980 |
| **8111** | Automotive maintenance and repair | **23,235** | **6026** | 697,050 |
| | ALL OTHER AUTOMOTIVE REPAIR AND MAINTENANCE | 2,210 | 293 | |
| | AUTOMOTIVE BODY- PAINT- AND INTERIOR REPAIR AND MAINTENANCE | 5,633 | 1370 | |
| | AUTOMOTIVE EXHAUST SYSTEM REPAIR | 426 | 116 | |
| | AUTOMOTIVE GLASS REPLACEMENT SHOPS | 610 | 128 | |
| | AUTOMOTIVE OIL CHANGE AND LUBRICATION SHOPS | 352 | 67 | |
| | AUTOMOTIVE TRANSMISSION REPAIR | 511 | 138 | |
| | CAR WASHES | 2,342 | 432 | |
| | GENERAL AUTOMOTIVE REPAIR | 9,088 | 2813 | |
| | OTHER AUTOMOTIVE MECHANICAL AND ELECTRICAL REPAIR AND MAINTENANCE | 2,063 | 669 | |
| **8112** | ELECTRONIC AND PRECISION EQUIPMENT REPAIR AND MAINTENANCE | **3,549** | **793** | 106,470 |
| | total transportation related repair | 106,903 | 18,095 | 3,207,090 |
| | Core automotive repair & maint | 31,944 | 5,354 | 958,320 |

Environmental INITIATIVE
Powerful Partnerships, Effective Solutions

# Clean Air Minnesota Project Summary

| | |
|---|---|
| **Project Title** | VOC reduction small to mid-size auto refinishing businesses |
| **Category** | Area source VOC |
| **Prepared By** | Mick Jost (MnTAP) 612-624-4694 / jostx003@umn.edu |
| **Date** | 4/15/2014 |

## Statement of Need

Reduce solvent based liquid coating emissions at vehicle refinishing shops. Current VOC emissions from auto body refinishing are estimated at 400,000 lb/yr. This emission directly affects workers and work place air quality environment. Small shops can be located near residential areas increasing exposure to local communities.

## Background

Refinishing industry is challenged with meeting OEM finish appearance and durability. OEM manufacturers have moved from solvent based to aqueous based top coating(s). Refinishing is slower to adopt. NESHAP 6H also requires new performance and equipment standards for refinishing industry that should improve efficiency of painting.

## Objective

Decrease VOC emission from auto body refinishing sector by up to 25%, 100,000 lb/yr. Develop training credibility and capability for Minnesota assistance and tech education providers. Engagement and successful implementation reduces shop spray painter and surrounding neighborhood solvent exposure.

## Deliverables

1) Spray painter training program(s) using virtual technologies to improve transfer efficiency skills
2) Peer shop demonstration(s) of aqueous paint system switch and successful implementation
3) Resource materials developed promoting business assistance, safety in industry, financial opportunities, and networking.

## Methodology

1) Virtual technologies that impart realistic performance-action measurement and immediate calculated performance feedback for spray painter
2) Peer supported demonstration and information networking events
On-line survey and event registration tools

3) Assistance provider resource development, outreach, organization and Internet hosting

Data / client tracking and compilation in suitable client management system
Follow up

## Target Audience

Spray paint operators in automotive shops for improved transfer efficiency.
Body shop owners for conversion to aqueous paint system alternatives.
Primary target smaller shops in urban areas.

## Environmental Justice

Refinishing shops can be owned and operated by diverse minority population groups, and likewise maybe found in neighborhoods of like populations catering to their common interests, including language. Depending on zoning rules, refinishing shops can be found in close proximity to residential areas. Environmental improvements made to refinishing operations would benefit the immediate workplace environment and the workers, and also the community in the general vicinity. Efforts are currently underway to distribute information and access to activities in the Spanish language.

## Action Plan

| Task/Step | Start/End Dates | Partner(s) Responsible | Description of Activity |
|---|---|---|---|
| 1 | October 2013 | MnTAP | Research virtual painting technologies for painter training as well as low VOC paint technologies |
| 2a | January 2014<br><br>April 30, 2014 event | MnTAP; MPCA; volunteer shop and vendors | Hands-on / information related to aqueous paint system advantages- include live demonstrations, information on safety, financing, other assistance for questions<br>March 13 event at Mulroy's Bodyshop in Minneapolis cancelled due to low registration rescheduled for Apr 30 at PPG in Edina |
| 2b | May1-9, 2014 | MnTAP; MPCA; volunteer shop and vendors | Evaluate impact of April 30 event- make plans to replicate or re-strategize |
| 2c | TBD | | Additional lunch and learn sessions are scheduled, advertised, and delivered |
| 3a | TBD | MPCA | External contracting to deliver virtual painting training |
| 3b | TBD | MPCA, IWRC or other*, MnTAP, local host resources | Training is delivered, |
| 3c | TBD | MPCA, IWRC or other*, MnTAP, local host resources | Evaluate impact of the event: direct impact of training; measure short term training impact on actual paint consumption at 1(to3)? facilities |
| | | MnTAP | information on virtual impacts compiled and extrapolated to state wide painter populations to determine the VOC impact of additional training sessions |
| | | MPCA, IWRC or other*, MnTAP, local host resources | replicate the training to3-5? additional groups / locations if result warrant, or re-strategize |
| | | MnTAP | Survey facilities with trained painters to estimate actual VOC reductions for trained painters |
| | | | Determine feasibility and value of creating permanent virtual painter training capability within Minnesota |
| | | | |

## Project Partners

| Organization | Key Contact | Phone and Email |
|---|---|---|
| MnTAP | Mick Jost | 612-624-4694 / jostx003@umn.edu |
| MnTAP | Karl DeWahl | 612-624-4645 / dewah001@umn.edu |
| MnTAP | Laura Babcock | 612-624-4678 / lbabcock@umn.edu |
| MnTAP | Matt Domski | 612-624- 5119 / domsk004@umn.edu |
| MPCA | Eric David | 651-757-2218 / eric.david@state.mn.us |
| MPCA | Mike Nelson | 651-757-2122 / michael.nelson@state.mn.us |
| City of Minneapolis | Patrick Hanlon | 612-673-2319 / patrick.hanlon@minneapolismn.gov |
| PPG | Shawn Ryan | sryan@ppg.com |
| PPG | Chuck Hayes | chayes@ppg.com |
| Lake Street Council | Joyce Wisdom | 612-822-0232 / jwisdom@lakestreetcouncil.org |
| Latino Economic Development Center | Mario Hernandez | 612-734-5332 / mario@ledc-mn.org |
| Iowa Waste Reduction Center (IWRC) | Jeremiah Treloar | 319-277-4668 x 19 / jeremiah.treloar@uni.edu |
| Environmental Initiative | TBD | T |
| | | |
| | | |

**Project Manager**

MnTAP / Karl DeWahl / Mick Jost

**Role of Env. Initiative**

(Describe role, if any – planning, managing, supporting, etc.)

**Drivers**

Spray paint transfer efficiency relates to the optimized application of paint onto the part, meeting criteria for correct thickness, smoothness and appearance of finished coat, and the insurance time efficiency of the repair job. Improving transfer efficiency reduces emissions and waste, and speeds up production.

Switching to a refinishing paint system that has less VOCs provides for better air quality in the workplace, reduces painter exposure to solvent(s), and improves the air quality in the surrounding community.

**External Factors**

Painting techniques can always be improved, and there are quick, proven tools that can significantly aid in making those improvements. Time and commitment to send solo, or lead painters to transfer efficiency training involves loss of shop production, revenue, and job scheduling conflicts that a small shop may not be able to easily accommodate.

Switching refinishing paint systems from solvent borne to aqueous (waterborne) involves capital expense for new equipment, as well as a certain amount of time to adjust to a different system. Expense is expected to be a major barrier without the addition of significant financial incentives. Time for painters to adjust is lost productive time / profit. Not switching is a do nothing option until such time as paint manufacturers or regulations phase out current solvent borne systems.

## Communications

| |
|---|
| Progress shared in CAM meetings; on MnTAP website, other partner websites, or other media as appropriate |

## Project Potential (Metrics)

(For this scope of work: define metrics and/or performance measures to demonstrate quantifiable emissions reductions of PM, VOC, and NOx consistent with MPCA/EPA standard calculation methods. See Attachment C of EPA's Ozone Advance guidance: http://www.epa.gov/ozoneadvance/pdfs/2012404guidance.pdf. For questions, contact Rocky Sisk, MPCA.)

| | | |
|---|---|---|
| **Reduced Emissions** | Earlier est 100,000 lb/yr<br><br>300-900lb/100 trained | **2) Switching from solvent to aqueous paint systems**<br>Identify 5 shops that recently switched. Work with shop to administratively quantify:<br>Records of paint purchases.<br>VOC content.<br>Paint sprayed (area).<br>Compare annual benefits of reduced VOCs in aqueous switch.<br><br>Work with paint vendors and cities to identify shops that switch in the next year.<br><br>**3) Virtual painter training**<br>Collect before and after results for trainees for immediate impact estimate<br>Retest a sampling of trained painters at a later date for a better estimate of long term impact.<br>Extrapolate to trained population. |
| **Reduced Exposure** | UNK | 2)Extrapolate from VOC reduction in aqueous paint<br>3) Extrapolate from paint use reduction |
| **Reduced Costs** | TBD | **2) Switching from solvent to aqueous paint systems**<br>Work with the 5 recently switched shops (above) to perform an economic analysis comparing the systems costs in the switch.<br>**3) Virtual painter training improved transfer efficiency**<br>Purchase cost of paint used in job (area)<br>Minus 10%=reduced cost |
| **Co-Benefits/Other** | TBD | Improved workplace environment<br>• Worker interviews<br>Green marketing / business viability<br>• Owner/management interviews |

## Budget*

| | | |
|---|---|---|
| **Project Cost** | Earlier est. $ | *Attach full budget separately |
| **Available Funding** | $ | Funding for MnTAP staff (0.25 FTE) |
| **In-Kind Resources** | Additional MnTAP in-kind time. | |
| **Notes** | *MPCA verbal agreement to fund contract for **1) Virtual Training** event(s) likely requires open vendor bid process that may preclude work with IWRC exclusively | |

## Approval

| | |
|---|---|
| **Approved by Partners** | (Date) |
| **Reviewed by CAM** | (Date) |

## Reduced emission and cost metric discussion and plan

**1) Virtual painter training**
The virtual training system and software tracks paint consumption, thickness and coverage from the triggering duration and orientation of the gun which generates the amount of virtual paint used by a painter to achieve a specified coverage and thickness. Compare consumption for a standard part between pre- and post-training tests to determine the short term pounds of VOC reduced by a trained painter.

For long term training impact try to get a few trained painters to retest after 6 months to determine effect longevity

If necessary we might be able to get shops to allow us to measure actual
Method 1
Measure paint jobs using paper masking to estimate overspray weight per area sprayed.
Calculate VOC content of oversprayed paint per job (area) per painter.
Recalculate VOC emissions based on painters better performance.
Method 2
Use a paint meter to measure consumption for before and after paint jobs (this is rarely available)
Method 3
Use 3M PPS cups and measure paint consumption for before and after paint jobs

This direct measurement of painter performance conducted 6 months later would be a 2nd way to determine long-term training impact

Calculate a training cost of VOC reduction ($ per ton of VOC reduced) for virtual training

Extrapolate actual or long-term training impact to trained population

a. Extrapolate the reduction and program cost for replicated virtual painter training
b. Extrapolate the reduction and program cost for permanent virtual painter training capability in Minnesota.

Exposure

Crude exposure = lb released  Estimate exposure reduction be the % use reduction from training

Better exposure is lbs in breathing zone coupled with a measure of risk if the chemicals change (aqueous coating)
A simplified approach might be the vapor hazard ratio to determine which scenario is more likely to exceed the PEL – otherwise
Another method might be measuring exposure (badge or PID)

Cost reduction

**2) Switching from solvent to aqueous paint systems**
Work with the 5 recently switched shops (above) to perform an economic analysis comparing the systems costs in the switch.

**3) Virtual painter training improved transfer efficiency**
Get average paint cost and paint use per painter from shops and vendors
Cost reduction = typical paint consumption X % reduction form training X typical paint cost

Environmental INITIATIVE
Powerful Partnerships, Effective Solutions

# Clean Air Minnesota Project Summary

| | | |
|---|---|---|
| **Project Title** | **VOC Reduction Small to Mid-Size Businesses** | |
| **Category** | **Area Source VOC** | Vegetable Oil Processing |
| **Prepared By** | Karl DeWahl | 612-624-4645 dewah001@umn.edu |
| **Date** | 2/6/14 | |

## Statement of Need

Reduce hexane losses through emission for vegetable oil processing facilities. Current VOC emissions from vegetable oil processing are estimated at 4.3 million lb/yr. The solvent losses range from 0.56 to 1.11 lb per ton processed depending on the facility (MPCA EIS). This industry is a point source and not an SME, however, there appears to be a path to improvement.

## Background

Focus area comes out of an analysis of EIS reports (2010-2012) for 6 MN oilseed plants and apparent differences in 'hexane loss efficiencies'.

## Objective

Decrease hexane emission from Minnesota vegetable oil processing facilities up to 50%, 1,000,000 lb/yr.

## Deliverables

Best practices review with six Minnesota sites (focus on two).

## Methodology

Identify hexane control and recovery best practices. Site visits to discuss relative emission profile per facility and best management practice options for improvement. Possible Challenge/Recognition program opportunity.

## Target Audience

Six oil seed operations in Minnesota.

## Environmental Justice

Closest exposures are to populations in rural to medium sized towns – likely to majority race populations. No significant environmental justice factor identified

## Action Plan

| Task/Step | Start/End Dates | Partner(s) Responsible | Description of Activity |
|---|---|---|---|
| 1 | 8/13- 2/14 | MnTAP staff | EIS analysis |
| 2 | 2/14-5/14 | MnTAP student | Best practices identification |
| 3 | 5/14-8/14 | MnTAP staff | Confirm assumptions with industry |
| | | MnTAP – MPCA? | Develop challenge/recognition program |

| | | | |
|---|---|---|---|
| 4 | 4/14-7/14 | MnTAP staff | Develop message for each site |
| 5 | 6/14-12/14 | MnTAP staff | Contact oil seed plants – visit or meeting |
| 6 | 8/14-5/15 | MnTAP staff | Follow up |

## Project Partners

| Organization | Key Contact | Phone and Email |
|---|---|---|
| MPCA SBA | Eric David | |
| (Partner 2) | | |
| (Partner 3) | | |

## Project Manager

MnTAP – Karl DeWahl

## Role of Env. Initiative

(Describe role, if any – planning, managing, supporting, etc.)

## Drivers

Material cost savings; decrease reporting burden?

## External Factors

Large facilities with numerous priorities. This may not be considered necessary.

## Communications

MnTAP website, newsletters, tracking in client mgmt. system, periodic updates to CAM

## Project Potential (Metrics)

(For this scope of work: define metrics and/or performance measures to demonstrate quantifiable emissions reductions of PM, VOC, and NOx consistent with MPCA/EPA standard calculation methods. See Attachment C of EPA's Ozone Advance guidance: http://www.epa.gov/ozoneadvance/pdfs/2012404guidance.pdf. For questions, contact Rocky Sisk, MPCA.)

| | | |
|---|---|---|
| **Reduced Emissions** | **1,000,000 lb/yr** | **attached** |
| **Reduced Exposure** | | (Describe calculations or attach separately) |
| **Reduced Costs** | **$500,000-1,000,000** | **attached** |
| **Co-Benefits/Other** | | (Describe calculations or attach separately) |

## Budget*

| | | |
|---|---|---|
| **Project Cost** | $20,000 | *Attach full budget separately |
| **Available Funding** | $20,000 | (List sources/partners) |
| **In-Kind Resources** | | (List sources/partners) |
| **Notes** | | Funding for MnTAP staff (0.2 FTE). |

## Approval

| | |
|---|---|
| **Approved by Partners** | (Date) |

| Reviewed by CAM | (Date) |
|---|---|

Updated 1/24/13

**Emission reduction potential calculation** – numbers are from the 2012 Emissions Inventory System reports

| Max of Throughput Amount 2012 | Plant | A | B | C | D | E | F | Tot. ton/yr | Tot. lb/yt |
|---|---|---|---|---|---|---|---|---|---|
| **units =TON** | GRAIN | 815,419 | 1,140,042 | 1,421,988 | 303,660 | 771,927 | *930,019* | | |
| | SOYBEAN | 578,739 | *950,035* | 1,271,185 | 253,060 | 324,225 | *775,016* | | |
| | Gr:SB ratio | 1.4 | *1.2* | 1.1 | 1.2 | 2.4 | *1.2* | | |
| | SOYBEAN MEAL | *578,739* | *950,035* | 1,271,185 | 303,660 | 481,280 | 775,016 | | |
| | SOLVENT | 640 | 524 | 395 | 108 | 232 | 250 | 2,150 | 4,299,000 |
| possible emission reduction @ 0.60 lb/ton raw grain | SOLVENT | **396** | **182** | *-32* | **17** | *0* | *-29* | 595 | 1,190,371 |
| Hexane emission efficiency | | | | | | | | Max:Min | |
| | lb/ton meal | ***2.21*** | *1.10* | 0.62 | 0.71 | 0.96 | 0.65 | 3.56 | |
| | lb/ton grain | **1.57** | 0.92 | 0.56 | 0.71 | 0.60 | *0.54* | 2.83 | |
| reduction potential to .6lb/tonraw grain | | **503,841** | **396,367** | -113,746 | 47,523 | 1,404 | -107,904 | | |

**Note - values in orange are extrapolated from ratios at other plants – they are not reported

Possible savings at $0.50/lb = $509,500/yr

Possible savings at $1.00/lb = $1,190,000/yr

Actual reductions will be determined from future EIS reports and/or directly from plant staff

**ATTACHMENT 5: Clean Air Minnesota Project Status Updates: Activities May 2013 – May 2014**

## **Recommendation:** 1a VOC Outreach
## **Lead Partner:** MPCA and Minnesota Technical Assistance Program (MnTAP)

MPCA Business Assistance Unit

- Project lead position hired (1 FTE) for small business outreach and grant coordination
- Received $320,000 in legislative funding to use for grants directed at VOC reductions for small to mid-size businesses
    - Postcard announcing grant was sent to approximately 20,000 businesses
    - Print information distributed by metro County HW inspectors
    - Press release to media, Chambers of Commerce, Associations
    - Article in AirMail e-newsletter
- Project web site, Reducing VOC emissions in small businesses

MnTAP

MnTAP has been actively engaged in developing and implementing programs to reduce area source VOC emissions as part of the Minnesota efforts to improve air quality. The following is a summary of major activities that have been launched during FY 2014 and are ongoing.

Outreach

- Visited 80% of metro counties to share information with inspector on program and target business sectors - automotive repair and painting, industrial painting, degreasing, and general solvent use.
- Requested and received contact information and referrals for businesses associated with program focus areas for target outreach campaigns and onsite visits from county regulators.
- Partnering with the City of Minneapolis to take referrals for site assessments, promote grant opportunities and options for VOC reduction.
- Exploring how program efforts below can be promoted within under-served communities

Resources

- Developed general VOC informational handout describing VOC relationship to air quality
- Developed outreach informational piece for automotive refinishing industry sector
- Developed outreach informational piece for industrial degreasing sector
- Launched new website for Air Quality project promotion, materials, case studies, and information sharing. http://www.mntap.umn.edu/industries/air/airquality.html
- Will be including air quality efforts in upcoming print and electronic newsletters.

Automotive (carrier solvents and degreasing chemicals)

- Held one autobody refinishing workshop to demonstrate aqueous coating technologies and are planning several more.
- Participating in direct site visits to automotive repair and maintenance facilities to promote alternatives and finance opportunities to assist with change.
- Writing articles on VOC solvent reduction options for automotive refinishing and automotive repair bimonthly magazine.

Industrial Coating (carrier solvents)

- Engaging University of Northern Iowa to present Virtual Paint Training in MN for at least one event to foster best practices and optimize transfer efficiency.
- Participated in two Chemical Coaters Association meetings to promote non-solvent based alternatives to industrial coating.
- Participating in planning for Chemical Coaters Association biannual meeting to promote case studies and demonstrations of non-solvent based alternatives to industry practitioners.

Degreasing (halogenated and volatile solvents)

- Analyzed industry sector to identify industrial maintenance operations as a focus sector for substitution of VOC and HAP containing degreasing agents.
- Using EPA PARIS III tool to assess current and alternative solvents to optimize performance and minimize hazard.
- Held several meetings with degreasing solvent suppliers to review current use profile, available alternatives, and potential barriers to outreach. Continuing supplier engagement.
- Partnered with faculty in the Environmental Health Sciences Division of University of Minnesota to engage students in a graduate level risk assessment class project to evaluate common VOC based degreasing solvents and alternatives based on currently available literature and generate a summary of their findings.
- Submitted application for EPA Region 5 2014 Source Reduction Assistance grant to provide low VOC, low HAP degreasing materials as demonstration in up to 20 facilities to generate case studies and success examples.

Oil Seed Milling (hexane)

- Hired a chemical engineering undergraduate student to conduct an analysis of best practices in oil seed milling for minimizing hexane release.
- Interviewed equipment manufacturers and industrial practitioners for input to content
- Verifying utility of best practices review with facilities in MN to promote process assessments and implementation of practices that minimize hexane release.

**Recommendation:** 1b VOC Outreach
**Lead Partner:** City of Minneapolis

Minneapolis' Environmental Services maintains a Minneapolis Green Business web page that covers sustainability as well as information about the city's VOC reduction initiative.

A grant program for VOC reductions has been funded and the application period was announced. Applications are due by June 20, 2014. Owners must be able to provide 2/3 matching funds for their project. The grant categories are:

- **Vehicle Repair, Service, and Maintenance Businesses.** The City of Minneapolis is offering grants up to $20,000 each to help fund vehicle repair, service, and maintenance businesses move to painting, cleaning alternatives, and repair processes that reduce emissions, hazardous waste, or energy usage. Owners must be able to provide 2/3 matching funds for project.
- **Innovative Green Grant.** The City of Minneapolis is offering grants, up to $45,000 each, to help fund innovative green business practices that focus on air quality improvement by reducing VOC emissions, particulate matter emissions, or other significant Hazardous Air Pollutants. Eligible applicants are any business in the City of Minneapolis that pays a Pollution Control Annual

Registration. The grant applicant must be able to demonstrate that the project has measurable pollution reduction.

Minneapolis' Environmental Services is also conducting local VOC monitoring during the period of 2013 through 2015. In November, 2014, approximately 100 air sampling canisters were placed in 34 zones throughout the city to obtain data for 77 different chemicals.

## **Recommendation:** 5a Urban Forestry (Emerald Ash Borer (EAB) / Urban Heat Island (UHI))
## **Lead Partner:** MPCA

The project will identify relationships between the urban forest and human health and map them against vulnerable populations of people and ash trees in St. Paul.

Major project activities to date: Finished scoping phase and entered assessment phase.

Partners/stakeholder involvement: The partners and stakeholders have finalized the research questions and health pathways that will be investigated. Partners are now assisting by providing data and interviews.

Timelines: Findings and recommendations are slated to be available in summer 2014, with a full report will be available in late fall 2014.

## **Recommendation:** 5b Urban Forestry
## **Lead Partner:** Hennepin County

Hennepin County is developing a tree program which we anticipate will include some type of grant program. To date, we have surveyed the cities in the county regarding their activities related to trees. The survey revealed varying levels of tree planning activities and identified some areas where cities need technical and financial assistance. We plan to organize facilitated discussions with the cities this summer to further develop what is needed and how a grant program and other resources might fit.

We are in the process of submitting an application for a Green Corps person to assist with the overall canopy analysis in the county and to address educational needs related to the overall value of trees, planting and maintenance, and the impacts of EAB (emerald ash borer).

We will be working through the Hennepin County/University of MN partnership to develop a capstone project for this fall which will help us to research best practices related to trees/tree canopy work throughout the country.

We continue to work with internal county department partners (Property Services, Transportation, Housing Community Works and Transit, and Resident and Real Estate Services) on tree issues related to county owned property. This is with a focus on response to EAB and to protect/enhance the tree canopy on county properties. We also will be working on partnerships with the state agencies (DNR and PCA) and through CAM to explore how those partnerships could help to facilitate this work.

**Recommendation:** 5c Urban Forestry
**Lead Partner:** Ramsey County

Ramsey County's role in urban forestry is related to the County's extensive yard waste management program. Because Ramsey County is in quarantine for Emerald Ash Borer, we have worked closely with the Minnesota Departments of Agriculture and Natural Resources to properly manage wood from ash trees, as well and educating residents about proper ash wood disposal. The yard waste sites have also served as receiving points for vehicles discovered leaving the quarantine area with EAB regulated articles, directed there through coordinated regulatory efforts by MDAg and Minnesota Highway Patrol. The sites have also served as outdoor classrooms for MDA to provide training to local agency staff on ash wood identification. Finally, with regard to EAB, Ramsey County is actively participating in the MPCA's Health Impact Assessment on the effects of EAB on the urban forest.

An important part of the County's program is outreach and promotion on proper care of trees and shrubs – essential to maintaining a healthy urban forest. Besides extensive information on the County's web site, as well as frequent advertising and outreach, the County partners with University of Minnesota Extension and funds the Ramsey County Master Gardener program. Nearly 150 volunteer Master Gardeners carry messages into the County about proper care of trees and shrubs

**2013 Results**

- Total number of visits by residents to yard waste sites: 417,249
- Number of visitors that delivered woody waste: 157,825
- Volume of leaves/grass collected: 141,084 cubic yards
- Volume of woody waste collected and processed: 142,900 cubic yards
- Number of individual consultations by Master Gardeners: 1,785
- Outreach data related to solid waste: 21.5 million impressions

This includes written, direct mail, web, social media, television, radio, about a wide variety of solid waste issues, but a large proportion is related to yard waste management. (For example, 212,000 copies of Ramsey County Going Green were delivered to households in the County; that guide includes information and resources about yard waste, tree care, and EAB. Similarly, over 131,000 post cards were direct mailed to single family households about yard waste. TV ads on TPT Channel 2 reached 640,000 people in March, 2013.)

<u>Partners/stakeholder involvement</u>
In 2013 Ramsey County worked on wood waste management with:

- University of Minnesota Extension –Master Gardeners
- Department of Agriculture
- Department of Natural Resources
- Minnesota Pollution Control Agency
- City of Saint Paul

<u>Timelines</u>

In 2014 Ramsey County continues to provide services in the same manner, and work with the same partners, on an ongoing basis. Messages will be expanded to include information about recreational fires and awareness of air quality issues.

## **Recommendation:** 5d Urban Forestry
## **Lead Partner:** City of Minneapolis

**Project Summary**
Emerald Ash Borer is devastating ash trees in the Minneapolis urban forest. These trees play an important role in reducing fine particulate matter in the neighborhoods, reducing storm water run-off, and mitigating urban heat island effects. The City of Minneapolis is interested in replacing the ecological benefits of the trees being lost to the infestation.

Because of the increased number young trees planted in public boulevards, planting practices, including soil amendments that enhance establishment, reduce short-term mortality, and increase long-term survival of young boulevard trees in Minneapolis are of increasing interest. This project is designed to examine the effects that biochar and compost organic matter amendments have on tree survival and overall performance.

This study will evaluate 7 different treatment options including a no-treatment control for 11 tree species. The study is completely randomized with boulevard trees placed across the entire city. About 600 trees will be included in the study. Stem diameter and mortality will be measured years 1 through 5. Stem and crown condition rating will be determined years 2 through 5.

Partners/Stakeholders
City of Minneapolis
Minneapolis Park and Recreation Board (MPRB)
Minneapolis Tree Advisory Commission
University of Minnesota
Shakopee Mdewakanton Sioux Community

Timeline
May 1, 2014 - biochar and compost delivered to MPRB tree staging area.
May 2 through May 5, 2014 – Prepare treatments.
May 12, 2014 – Tree crews begin planting study trees; U of M collects initial data.
May 30, 2014 – Planting complete
June 2015 – First year data collected
July, 2015 – First evaluation presented to MPRB and tree Advisory Commission

## **Recommendation:** 6 GreenCorps Expansion
## **Lead Partner:** MPCA

MPCA has received funding from the Corporation for National and Community Service (CNCS) to continue and expand the AmeriCorps-supported program, Minnesota GreenCorps. The number of members serving at the community level will increase from from 28 to 40.

MPCA's application to CNCS listed specific project activities to be carried out by Minnesota GreenCorps members to improve ambient air quality in Minnesota. The activities include actions, to be carried out at the community level, to reduce fine particles, as well as the precursors to ozone generation (e.g., high ambient air temperatures and VOCs).

MPCA's proposal includes air-related member activities for green transportation, public sector energy conservation activities, urban forestry, and 'living green' activities that community residents can carry out to prevent and reduce air pollution.

Partners/stakeholder involvement
The Clean Air Dialogue process was used to develop and recommend this project.

This project will directly involve forty public sector/nonprofit organizations as host communities as well as the members themselves.

Timelines
The members will begin their service term in September 2014 and end their 11 months of national service in August 2015.

## **Recommendation:** 7b Alternative Fuel Infrastructure
## **Lead Partner:** American Lung Association

**Alternative Fuel Infrastructure Grants**
Summary: Funding assistance for fuel retailers to help defray the costs of infrastructure upgrades necessary to sell E85 and other higher ethanol fuel blends. Forgivable loans provide a reimbursement for a portion of the total installation costs related to a retail location upgrading their facility to sell E85 and other ethanol blends in percentages higher than the state-required ten percent found in 87 octane gasoline. Project goal is for 40 or more retail locations.

Partners: Minnesota Corn Research and Promotion Council, Minnesota Department of Agriculture, American Lung Association in Minnesota, Growth Energy and Minnesota Biofuels Association.

Timeline: July 2013 – June 2015. The first retail location to receive funding through this program began sales in October 2013. Seven retail locations have begun selling higher ethanol blends to date. Approximately 20 additional stations are currently in various stages of the application/installation process.

**Additional alternative fuel infrastructure progress:**
In addition to the grant funded sites, Kwik Trip, one of the largest retail chains in Minnesota, has plans to install E85 dispensing equipment at eight new locations within the next seven months. A new Holiday Stationstore recently opened with E85 in Minneapolis, MN and several additional Holiday locations are being considered for E85 dispensing equipment installations.

Sales vary widely by location and may expect to sell between 5,000 and 50,000 gallons of FlexFuel blends per month.

While no funding is currently available for natural gas infrastructure, interest is high and several installations are occurring over the next several months. In 2013, three public natural gas vehicle refueling locations opened in Minnesota. In 2014, five to eight locations are expected to open to the public and a few additional private fleets are expected to install their own refueling equipment.

Propane autogas may also see some infrastructure development this year. AmeriGas and Ferrellgas are both able to provide the fueling equipment to a fleet if the fleet signs a local fuel contract with them.

Beginning in July, 2014, the state of Minnesota will require a 10% biodiesel blend in all the #2 diesel sold in the state. This will be in effect through September. In 2015 and beyond, #2 diesel will contain 10% biodiesel for the months of April through September. From October through March, #2 diesel will contain 5% biodiesel. #1 diesel is exempt from the biodiesel requirement.

**National Park Electric Vehicle Supply Equipment**
Summary: Installation of Electric Vehicle Supply Equipment (EVSE) within the boundaries of the National Park Service's Mississippi National River and Recreation Area that overlays the river corridor through the Twin Cities metropolitan area. Twelve EVSEs in 11 different locations within the park overlay will be installed to be available to the public for recharging of electric vehicles.

Partners: U.S. National Park Service, U.S. Department of Energy, Twin Cities Clean Cities Coalition, City of Ramsey, Science Museum of Minnesota, Three River Parks District, Minnesota Department of Natural Resources, Minneapolis Parks & Recreation, Minnesota Historical Society, and City of Saint Paul.

Timeline: Funding awarded in 2013. Locations have been confirmed. Installations are expected to be completed by July, 2014.

## **Recommendation:** 10a Diesel Retrofits
## **Lead Partner:** MPCA

The MPCA continues its focus on reducing emissions from heavy duty diesel engines in fleets and construction equipment. This ongoing program has utilized state and federal funding since 2006 to improve or replace 4,000 diesel engines in Minnesota, focusing on reducing $PM_{2.5}$. The cumulative result is a reduction of nearly 26 tons of ground level $PM_{2.5}$ annually, which equates to taking 465,690 cars off the road.

**2013 Clean Diesel Project Summary**

- MPCA completed 55 clean diesel projects in 2013
- **CMAQ Grant**
    - 28 - Heavy duty Twin Cities Metro - public truck retrofits ( and grant ended – June 30, 2013)
        - Emissions Reduced: 0.49 tons of PM2.5/Year
        - Technology used : DOCs (diesel oxidation catalytic – exhaust system)
- **DERA Grant**
    - 5- new metro delivery trucks that replaced 5 trucks from 1997-98
        - Emissions Reduced: 0.23 tons of PM2.5/Year, 7.318 tons of NOx /Year

        - § Technology used: diesel-electric hybrid replacement
    - **1- rock crusher**, 450 hp engine repower (rural MN)
        - § Emissions reduced: 0.359 tons of PM2.5/Year, 2.76 tons of NOx/Year
        - § Technology: Tier-3 engine (equivalent) repower
    - **21 - school bus retrofits / fuel heaters** (PCA commitment ended in June)
        - § Emissions reduced: .077 tons of PM 2.5 /Year
        - § Technology: DOC retrofits

**2013 EMISSION REDUCTION TOTALS**

- Total 1.156 tons of PM & 10.078 Tons of NOx
    - – Total PM in Car Equivalents = 21,016 cars
    - Equates to 1,849 car equivalents (based on 10.9 lbs per avg car.)

    - Fall 2013 MPCA published an RFP that netted one applicant
        - Project: Diesel particulate Filter installed on a long-haul truck Not installed until Jan 2014
    - Feb 2014 – published a RFP
        - Late April closing
        - $200,000 in funding
        - 11 applications for $610,0000 worth of projects.

## **Recommendation:** 10b Diesel Retrofits
## **Lead Partner:** Environmental Initiative

Project Green Fleet

Activities from May 1, 2013-May 1, 2014: During the past year, fourteen vehicles were retrofitted, including: 2 pieces of construction equipment with engine repowers, 4 school buses with emission reducing DOCs, and 8 school buses with idle reduction technologies. The total project costs for these retrofits totaled $202,284.00. In addition to these retrofits, Project Green Fleet performed other activities to sustain the program which started in 2006 and continues today.

Here are the estimated annual reductions from these retrofit projects in short tons:

- NOx: 4.95
- $PM_{2.5}$: 0.68
- HC: 0.49

## **Recommendation:** 12 Air Alert System
## L**ead Partner:** MPCA / Mn DOT

The Minnesota Pollution Control Agency (MPCA) has received legislative funding to continue to work on the Clean Air Minnesota (CAM) recommendations. The Air Alert and Best Management Practices Outreach Team has outlined the framework of a campaign to achieve three goals:

1.) Assure awareness of air alerts by all affected people, and of actions they should take to protect their health;
2.) Increase adoption of emissions-reduction best management practices on air quality alert days.
3.) Promote emission reduction best management practices throughout the year, coordinating with other CAM Communication activities

Partnerships continue to be built and stakeholders are being contacted although to date the project has participation from Minnesota Department of Health, Minnesota Department of Transportation, Ramsey County Public Health, American Lung Association, Xcel Energy, and Minnesota Center of Environmental Advocacy and Health Partners. The Team has split into two subgroups to devise plans and timelines to achieve the goals. Preliminary recommendations on how MPCA can spend the funds will be communicated with MPCA by June 30, 2014

## **Recommendation:** 19A EV Infrastructure
## **Lead Partner:** MPCA

The MPCA coordinates Drive Electric Minnesota, a partnership of businesses, non-profits, state agency and local government, and utilities working to promote use of electric vehicles and charging infrastructure development. The U.S. Department of Energy National Charging Station map reports 107 public and private charging stations in our state. The Zero Emission Charging Challenge is underway to pair renewable solar or wind generated electricity with public charging stations for further emissions reduction.

At the beginning of 2014, there are 1,891 electric vehicles on Minnesota roads. Use of these vehicles, which have zero emissions from the tailpipe, contributes to improving air quality. Annually, air pollution is reduced by 61,000 pounds of nitrous oxide, 2,500 pounds of particulate matter, 61,000 pounds of volatile organic compounds, and 10,000 tons of greenhouse gas emissions.

EV Charging Station Installation Update – 92 installations June 30, 2014

- City of St Paul: 14 installed, with 2 additional installations by June 30, 2014
- City of Minneapolis: 36 installed
- Macalester College: 2 installed
- Metro Transit: 8 installations by June 30, 2014
- Minneapolis – St Paul International Airport: 14 installed
- Minneapolis Public Schools: 2 installed
- University of Minnesota: 12 installed
- Ramsey County: 2 installed

## **Recommendation:** 24a Wood Smoke Outreach
## **Lead Partner:** MPCA

Wood Smoke Outreach and Education

- Clean Air Minnesota (CAM) Wood Smoke subgroup has started meeting monthly. In addition to focusing on wood smoke education and outreach, it will also focus on wood stove/heater

change out program development. The group expressed interest in learning more about who burns wood in Minnesota and the motivators for reducing emissions from wood smoke.

- We are also working on an Air Quality Eco Experience exhibit for the Minnesota State Fair, of which one portion will focus on backyard recreational fires and steps people can take to reduce the impact of wood smoke on their neighbors and community.

Development of a Model Hydronic Heater Ordinance

- After benchmarking other examples of ordinances, both within the state and nationally, we are in the process of drafting a model. We intend to connect with other stakeholders as soon as a draft is available.

Proposed Federal New Source Performance Standard

- During the past few months, staff learned more about the proposed standard and communicated/met with Minnesota hydronic heater manufacturers to better understand equipment.

**Attachment 6**

## Non-Point Air Steering Team Meeting Notes

## May 8, 2014

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| **Attendees:** Brian Timerson, Mike Nelson, Mark Sulzbach, Mary Dymond, Rocky Sisk, Barbara Conti, Kari Palmer, Innocent Eyoh, Lisa Herschberger, Rick Patraw, Frank Kohlasch, Shannon Lotthammer, Ralph Pribble, Amanda Smith, Chris Pulley, Anne Claflin, Tanya Maurice, Shelley Burman | |
| **Agenda item** | |
| Air Regulatory & Technical Information listserv newsletter (Amanda) | The first "Air Mail" newsletter is scheduled to go out the week of May 12.<br><br>More information on the newsletter is available in the presentation at the following link: S:\Smith_Amanda.AS\Air Mail_nonpoint.pptx |
| Non-point air web page (Mark S) | There currently is not a MPCA web page devoted to non-point air sources/issues, hence no obvious location to list Clean Air Minnesota projects or MPCA projects related to non-point air sources. There are existing web pages related to several of the non-point air sources of concern, however. The suggestion was made that we might develop a landing page with links to those pages (some of which need to be updated and others that may need to be developed).<br><br>The MPCA Water main web page was reviewed as an example of non-point sources featured on the main page: http://www.pca.state.mn.us/index.php/water/index.html.<br><br>There have been efforts in the past to reorganize the content of the various Agency media main web pages to make them somewhat consistent. A small team of air staff worked with Theresa Gaffey a few years ago and drafted a possible outline for the main air page and sub-pages.<br><br>Ralph checked with Theresa on the status of the Agency media web page reorganization process. She said they keep running into technical roadblocks that have to do with the new Agency content management system (Drupal?) and did not know when that might be resolved. She suggested we move ahead working within the structure as it is. Theresa's suggestion is to make a new landing page under air pollutants. |
| Wood smoke updates (Mike N) | Mike and Lisa submitted comments on behalf of the MPCA on the Federal NSPS for various wood burning appliances. The MPCA is in favor of moving ahead on the standard. The comments included concerns of some MN manufacturers, including that they would like more time before the standard is implemented. The final standard needs to be final by January 2015. Mike is still talking to manufacturers about their concerns. The standards are based on old test methods that don't match actual operating conditions.<br><br>The Clean Air MN wood smoke sub-team focus is two-fold: (1) outreach and education (trying to understand who burns wood and why); and (2) woodstove change-outs. This group meets monthly.<br><br>The hydronic heater model ordinance is well underway. An air dispersion modeler is working with Lisa on a sensitivity analysis to determine which variables would not have a significant outcome on air concentrations in order to focus just on the important aspects in the ordinance, e.g., stack height and set-back distances.<br><br>The DNR is promoting increased wood-burning, including commercial-sized units, to |

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| | offset the propane shortage. MPCA is part of an inter-agency work group to increase awareness of the health issues that can be associated with biomass burning. MPCA is encouraging DNR and DEED to promote pellet-burning rather than larger wood fuels. This is cleaner, transport is easier and it would result in pellet production jobs. |
| Non-point name change (Brian) | David Thornton will check with EI on the progress of their branding efforts; conversations will then continue among management and, ultimately, the Commissioner's office. |
| Non-point air tracking system (Brian) | The need for projected monetary needs associated with projects was re-visited for budgeting purposes. All projects need to be considered simultaneously so the budgeted money can be distributed among them as realistically as possible. Project readiness information is important for managers to consider in moving the funds around. Need to indicate how much currently allotted *will not be spent*, if known.<br><br>There was agreement that it would, at the least, be encouraging if some small 'wins' could be made by the next legislative session.<br><br>X:\Programs\Nonpoint Air\Tracking Spreadsheet.xlsx |
| CAM update (Rocky) | The contract with MEI is being amended to change the number of stakeholder meetings to one annual meeting to be held late in 2014 (fiscal year 2014) rather than to have one in FY14 and one in FY15. The amended contract should be ready in a few weeks. EI has met all contract requirements to date.<br><br>The question was raised regarding the status of the CAM projects. The project managers are reporting to Barbara since she needs to report "Advance" progress to EPA. So far, the project work has mostly been administrative in nature. |
| Next Meeting: Thursday, June 12, 2:00 | |