Minnesota Pollution Control Agency
520 Lafayette Road North | St. Paul, Minnesota 55155-4194 | 651-296-6300
800-657-3864 | Use your preferred relay service | info.pca@state.mn.us | Equal Opportunity Employer

December 29, 2015

Ozone and PM Advance
c/o Ms. Laura Bunte
109 TW Alexander Drive
Mail Code C304-01
Research Triangle Park, NC 27711

RE: 2015 Minnesota Ozone Advance and PM Advance Updates

Dear Ms. Bunte:

The purpose of this letter is to provide the annual update on Minnesota's participation in the U.S. Environmental Protection Agency's (EPA) voluntary Ozone Advance and Particulate Matter (PM) Advance Programs.

The Minnesota Pollution Control Agency (MPCA) submitted the *Final Report: A Collaborative Plan to Reduce Emissions* (Report) from Minnesota's Clean Air Dialogue as our path forward in May 2013. The 24 recommendations in the Report have served to direct many of the non-point air pollution emissions reduction efforts of the MPCA and our partners as part of our participation in the Ozone and PM Advance Programs. The MPCA has many projects and programs to achieve voluntary emissions reductions from non-permitted sources. This annual advance report will focus on those projects that have been part of the Clean Air Minnesota (CAM) collaborative effort described below.

Highlights from this year's work on Ozone Advance and PM Advance projects include:

- Launched the BeAirAwareMN.org website to provide a resource for residents, communities, and businesses concerned about how air quality impacts health and suggest actions to take to reduce both exposure and emissions
- Exchanged 1,500 gas cans for spill-proof cans
- Completed retrofits for all eligible school buses and supported another 21 heavy-duty diesel engine improvement projects
- Initiated programs to help small businesses make facility improvements to reduce volatile organic compound (VOC) emissions and exposures

The Clean Air Minnesota collaboration among businesses, nonprofits, and governments, serves as the stakeholder group for our Ozone and PM Advance efforts.

The collaboration is convened by Environmental Initiative (a 501c3 nonprofit organization) and includes approximately 25 partner organizations. Information on the structure of CAM can be found in Attachment A. Detailed information on CAM; its members and projects; and agendas, notes, and materials from its meetings can be found on the CAM website: http://www.environmental-initiative.org/our-work/clean-air/clean-air-minnesota.

In the past year, Clean Air Minnesota chose to focus particular attention on certain high-priority projects. These project teams included:

- Air alert education and outreach
- Diesel and mobile sources
- Wood smoke
- Small business assistance and VOC reduction
- Community forestry
- Gas can exchange

In November 2014, CAM also held a public event called *Keeping Healthy Skies: Why We Need to Act Now for Cleaner Air*. The event discussed what new National Ambient Air Quality Standards might mean for Minnesota and included conversation on Minnesota-based solutions to environmental, public health, economic, and environmental justice challenges related to air pollution.

In 2015, CAM project teams reported estimated emissions reductions from their efforts over the last two-year funding period. A summary of the estimated emissions reductions can be found in Attachment A. Detailed project summaries and reports on estimated emission reductions can be found in Attachment C. The overall estimated emissions reductions for the two-year funding period and projected emissions avoided for the next ten years can be found in Table 1. The ten-year estimates attempt to capture the emissions avoided over ten years from the projects that occurred during the two-year funding period; they do not presume further funding or additional projects in the future.

Table 1: Emissions reductions achieved by CAM efforts in 2014-2015

Pollutant	**Two-year estimated emissions reductions**	**Ten-year projected emissions avoided**
Volatile organic compounds (VOCs)	297 tons	1,500 tons
Nitrogen oxides (NO_X)	38 tons	192 tons
Fine particulate matter ($PM_{2.5}$)	155 tons	905 tons

The project teams submitted data based on measures developed in conversation with EPA. The MPCA would welcome specific comments and recommendations from EPA on the methods and type of data collected. The MPCA and our partners are very interested in continuing to improve the data we collect on our non-point emissions reduction efforts.

The MPCA received funding from the Minnesota Legislature to further voluntary non-point air pollution reduction efforts and has contracted with Environmental Initiative to convene another two years of CAM.

In addition to convening CAM meetings, Environmental Initiative will coordinate project team work to achieve non-point air pollution emissions reductions. A detailed work plan for Environmental Initiative and CAM can be found in Attachment B.

The MPCA also continues to convene an internal work group relating to non-point sources of air emissions. The team meets monthly to discuss the status and budget of active projects, develop proposals for future efforts, and address questions or issues as they arise.

Non-point air pollution reductions are a key priority for the MPCA and addressing emissions from non-permitted sources is one of five air quality-related strategies incorporated into the MPCA's 2012-2017 strategic plan. Our strategic plan lays out the goals and actions we as an agency plan to take in our work towards our mission to protect and improve the environment and enhance human health. We continue to find the Ozone Advance and PM Advance structure a useful tool as we move forward in our efforts to find new and innovative ways to achieve voluntary emissions reductions across the state.

We look forward to continuing work with our partners and making further progress on our emission reduction initiatives and education efforts. If you have any questions, please contact Amanda Jarrett Smith of my staff at 651-757-2486 or amanda.smith@state.mn.us.

Sincerely,

J. David Thornton
Assistant Commissioner

JDT/AJS:ld

Attachments
Attachment A: 2013-2015 Clean Air Minnesota Final Report and Attachments
Attachment B: 2016-2017 Clean Air Minnesota Work Plan
Attachment C: 2013-2015 Clean Air Minnesota Project Summaries and Data Reports

Attachment A: 2013-2015 Clean Air Minnesota Final Report and Attachments

To: Mike Nelson, Minnesota Pollution Control Agency
From: Bill Droessler, Environmental Initiative
Date: 30 November 2015
Re: 2014 – 2015 Clean Air Minnesota Final Report

Environmental Initiative fulfilled the required elements of Minnesota Pollution Control Agency (MPCA) contract number CR6692 regarding the operations of Clean Air Minnesota (CAM). All financial reporting and tracking was successfully accomplished.

Much of the deliberation and decision-making within CAM occurred in the Core Team and the Work Group. The respective rosters are listed on Attachment 1. The Core Team's purpose was to provide feedback and input from the MPCA and other key stakeholders to Environmental Initiative on the dialogue process. The Core Team was made up of lead staff from the MPCA, select stakeholders representing a diversity of interests, and Environmental Initiative's project lead, facilitator, and support staff member. The responsibilities for the Core Team were to provide strategic insight and input into planning for the Work Group and other related meetings and events.

The Work Group's purpose was to serve as the stakeholder body where the issues at hand were debated and consensus developed. This body typically comprised 20 to 30 individuals from a diverse set of public and private sector backgrounds. Environmental Initiative, in coordination with the Core Team and other project funders, selected and vetted the individuals considered and selected for work group membership. Work Group members adequately and fairly represented the full range of opinions, perspectives, and viewpoints around air quality and voluntary emission reduction efforts. Over the two-year period, there was a strong Work Group focus on implementing recommendations from Minnesota's Clean Air Dialogue. For this reason, Work Group members heavily represented stakeholders who were key in the implementation of emissions reduction activities.

As outlined in Attachment 2, Environmental Initiative facilitated the requisite Clean Air Minnesota Work Group, Core Team, and Project Team meetings.

Clean Air Minnesota, a collaboration among leaders in business, nonprofits, and government, serves as the state's ongoing public-private partnership to improve air quality. In 2014 and 2015, regular meetings of the CAM Work Group sustained a cross-sector conversation on air quality, potential emission-reduction projects, and related communications, funding, and tracking and quantification activities. Following the recommendations of the Clean Air Dialogue process, Clean Air Minnesota partners identified, evaluated, and prioritized viable strategies for emissions reductions. The selected strategies were identified, researched, and project feasibility ascertained through work by the following CAM Project Teams:

1. Air Alert Education and Outreach
2. Gas Can Exchange
3. Diesel/Mobile Source

4. Community Forestry
5. Wood Smoke
6. Small Business/Volatile Organic Compound (VOC)

Attachment 3 shows the approximate Project Team meeting schedules.

In November 2014, CAM also held a public event, *Keeping Healthy Skies: Why We Need to Act Now for Cleaner Air.*[1] This event discussed what new federal air quality standards might mean for Minnesota businesses, units of government, and communities disproportionately affected by air pollution. This was a cross-sector conversation about Minnesota-based solutions to these economic, environmental, public health, and environmental justice challenges.

With MPCA representatives providing extensive technical expertise, a separate engagement was organized to track emissions reductions achieved by CAM project teams and other related public and private sector efforts. This engagement also organized and reported on these reductions through CAM.

The air emissions reductions achieved by the public and private actions under CAM were reported to the Work Group at the June 2015 meeting. Please see Attachment 4 for an overview of the reported actions and estimated associated emission reductions.

At the June 2015 Clean Air Minnesota meeting, each of the project teams presented their activities and associated emissions reductions, education gains, and plans for the future.

Project Team Highlights and Outcomes

Air Alert Education and Outreach Team

- Launched BeAirAware website (https://www.beairawaremn.org/) which is a resource for residents, communities, and businesses concerned about how air quality affects health.
- Increased the number of people and organizations receiving **air pollution health alerts** on poor air quality days.

Gas Can Exchange Team

- Exchanged **1,500 spill-proof gas cans** in Washington and Ramsey Counties.
- Established a successful exchange/education program model, reaching hundreds of first-time visitors and increasing public awareness of air quality and health.

Diesel/Mobile Source Team

- Completed **all eligible school bus retrofits** and supported another 21 heavy-duty diesel engine improvement projects.
- Updating plans for additional diesel fleet recruitment and collecting and analyzing fleet survey information for future emission reduction projects.

[1] http://www.environmental-initiative.org/our-work/clean-air/clean-air-minnesota/clean-air-minnesota-keeping-healthy-skies

Community Forestry Team

- Hennepin County installed a gravel-bed nursery to provide replacement trees for ones soon to be destroyed by emerald ash borer – a cost effective way for the county to replace trees on county property.
- Successful State grant proposal to build volunteer base and maintain trees.
- Completed health impact assessment related to community forestry issues and legislative funding proposals were introduced, all of which helps promote the many values of large-scale community forestry efforts.

Wood Smoke Team

- Education activities to raise awareness on the health effects of wood smoke and smarter ways to burn wood through the Minnesota State Fair Eco-Experience and American Lung Association in Minnesota's recent public outreach efforts.
- A Minnesota Power supported wood stove change-out project for Northeast Minnesota is in final preparation stages.

Small Business/VOC Team

- The MPCA and City of Minneapolis programs achieved multiple tons of emission reductions and both programs are hoping to expand in 2016.
- Outreach, education, and funding efforts continued through Environmental Initiative and the Minnesota Technical Assistance Program.

Project Team members and the Minnesota Pollution Control Agency compiled initial emission-reduction estimates for all of these activities. These figures were based upon information supplied by the project teams and combined with other related efforts (tire pressure campaign, B20 biodiesel, Minnesota Green Corps energy conservation, etc.). The emission reductions and associated costs were calculated for volatile organic compounds, nitrogen oxides, and fine particulate matter on both a projected 2-year and 10-year basis.

The estimated and projected emissions reductions are:

- Volatile Organic Compounds: 2-yr: 297 tons; 10-yr: 1,500 tons
- Nitrogen Oxides: 2-yr: 38 tons; 10-yr: 192 tons
- Fine Particulate Matter (PM 2.5): 2-yr: 155 tons; 10-yr: 905 tons

These initial returns are cost effective compared to similar efforts around the country. With new federal air quality standards declared in October, these emission-reduction projects are a good foundation upon which to build more and larger efforts.

Additional specific Environmental Initiative and Project Team highlights include:

- Arranged business participation, funding, and government support for diesel repowers, including two large unregulated marine engines on the *Becky Sue*, a towboat operating out of St. Paul. This repower alone removes more than 20 tons of combined air emissions, including over 1,300 pounds of fine particulates (equivalent to removing 12,000 cars

from the road each year) and leverages more than $320,000 of private investment in cleaner technology;[2]

- Coordinated partners, focused area source priorities, and planned expansion of Small Business/VOC area source work to St. Paul/Ramsey County;
- Crafted 3 VOC area source projects, which collectively reduce more than 19,000 pounds of VOC emissions annually, leveraged more than $350,000 in private investments, and leveraged significant funding from the City of Minneapolis business assistance program and OHSA;
- Environmental Initiative received a City of Minneapolis Award[3] and increased outreach/education efforts for air quality projects;
- Secured additional small business area source outreach funding for CAM from the City of Minneapolis Green Business Program, which will increase its effectiveness and reach in 2016.
- Building upon the MPCA funding, more than $1.2 million in private resources were also raised and dedicated to furthering CAM's priorities.

[2] See http://www.mprnews.org/story/2015/09/24/towboat-new-engines
[3] 2015 City of Minneapolis *Local Public Health Hero Award*

Attachment 1

Environmental INITIATIVE
Powerful Partnerships, Effective Solutions

Clean Air Minnesota

Work Group Roster

December 2015

(Alternates listed in italics)

Paul Aasen

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

Jessica Burdette, Minnesota Department of Commerce

Mike Cashin, Minnesota Power
Melissa Weglarz, Minnesota Power

Karen Clark, Women's Environmental Institute

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

Shalini Gupta, Center for Earth, Energy and Democracy

Mike Hansel, Barr Engineering

Zack Hansen, Ramsey County

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

Charlie Lippert, Mille Lacs Band of Ojibwe

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

Carl Michaud, Hennepin County
Rosemary Lavin, Hennepin County

Chris Nelson, 3M

Attachment 1

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

Sara Smith, Metropolitan Council

Scott Strand, Minnesota Center for Environmental Advocacy

David Thornton, Minnesota Pollution Control Agency

Jeff Travis, Local Public Health Association

Stephanie Zawistowski, City of Minneapolis
Patrick Hanlon, City of Minneapolis

Core Team Members

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

Paul Aasen

Mike Hansel, Barr Engineering

Anne Hunt, City of Saint Paul

Tony Kwilas, Minnesota Chamber of Commerce

Chris Nelson, 3M

Heather Rein, Flint Hills Resources

Dana Slade, HealthPartners

Scott Strand, Minnesota Center for Environmental Advocacy

David Thornton, Minnesota Pollution Control Agency

Stephanie Zawistowski, City of Minneapolis

Environmental INITIATIVE
Powerful Partnerships, Effective Solutions

Attachment 2

Clean Air Minnesota
Core Team and Work Group Meetings

Updated December 1, 2015

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

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

November 2014
- 11/7/14 Work Group meeting #11
- 11/12/14 Stakeholder Input Mtg.

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

June 2015
- 6/19/15 Work Group meeting #14
- 6/26/15 Core Team meeting #14

Environmental INITIATIVE
Powerful Partnerships, Effective Solutions

Attachment 3

Clean Air Minnesota
Project Team Meeting Schedule

Updated December 1, 2015

Air Alert Education and Outreach Team:
9 meetings

April 28, 2014
May 19, 2014,
May 20, 2014,
May 30, 2014
August 26, 2014
October 17, 2014
December 19, 2014
January 16, 2015
February 20, 2015

Gas Can Exchange Team: 6 meetings

January 13, 2014
October 14, 2014
January 13, 2015
February 12, 2015
March 16, 2015

Diesel/Mobile Source Team: 4 meetings

March 11, 2014
May 29, 2014
September 9, 2014
January 21, 2015

Community Forestry Team: 6 meetings

April 15, 2014
July 23, 2014
December 3, 2014
January 20, 2015
February 17, 2015
April 6, 2015

Wood Smoke Team: 13 meetings

March 13, 2014
April 24, 2014
May 22, 2014
June 26, 2014
July 18, 2014
August 28, 2014
October 2, 2014
November 20, 2014
January 22, 2015
February 26, 2015
March 26, 2015
April 29, 2015
June 18, 2015

Small Business/Volatile Organic Compound (VOC) Team: 7 meetings

March 10, 2014
April 28, 2014
October 27, 2014
December 8, 2014
January 15, 2015
February 18, 2015
March 30, 2015

Attachment 4

Clean Air Minnesota Project Teams Data							
Team	**Objective**	**Deliverables**	**Audience**	**Environmental Justice**	**Partners**	**Communications**	**Emissions reductions**
Mobile Diesel Source	*Provide financial incentives to fleet and equipment owners to implement pollution reduction equipment or replace older equipment with newer, less-polluting technology.*	• 108 retrofitted buses • 2 marine engines • 8 long-haul DPFs • 1 rock crusher • 5 hybrid diesel-electric delivery trucks • Fleet model contract	• Diesel fleets (private, government, on-road, off-road, stationary) • Association of General Contractors	• Higher priority for projects in areas with vulnerable populations	• MPCA • Environmental Initiative • American Lung Association • Center for Earth, Energy, and Democracy • Minnesota Power	• Website blogs of projects • Media coverage of engine retrofits	PM 2.5: 1.94 tons/yr VOC: 1.8 tons/yr
Community and Urban Forestry	*Strengthen and maintain the Twin Cities Metro Area's urban forests including tree planting, tree maintenance, tree removal, and involvement of community members in preserving and increasing urban trees.*	• Hennepin County gravel bed nursery • Legislative proposal • Emerald Ash Borer Health Impact Assessment			• MPCA • Department of Commerce • HealthPartners • Ramsey County • City of St. Paul • City of Minneapolis • Xcel Energy • MN Nursery and Landscape		Unknown

Attachment 4

	Measure and assess the current state of the Twin Cities' urban tree canopy and model the impact of the current and potential scenarios on air quality and urban temperatures.				Association • MN Shade Tree Advisory Committee • University of Minnesota • Metropolitan Council • Department of Natural Resources		
Wood Smoke	*Provide incentives to replace their old, high polluting wood-burning equipment with a natural gas or propane alternative.* *Motivate wood smoke emissions reduction through an education campaign focusing on the negative health impacts of wood smoke and encouraging usage of alternative fuels.*	• 2014 State Fair wood smoke display (2015 anticipated) • Hennepin County phone survey (n=340) • 3 MPCA metro wood smoke message focus groups • Department of Health educational bookmarks • American Lung: 96 radio ads, 8 bus ads, 40 billboards	• Urban, suburban, and rural wood burners		• MPCA • Environmental Initiative • Minnesota Department of Health • American Lung Association • U of MN School of Public Health • Mille Lacs Band of Ojibwe • Hearth, Patio, and Barbeque Association • Hennepin County		$PM_{2.5}$: 92.5 tons (Educational/ awareness estimates)
Area Source	*Outreach and*	• 13 businesses	• Small and	• Focus on	• MPCA	• 3 radio	VOC: 68 tons

Attachment 4

	education to small and medium-sized businesses on low-VOC products and VOC-reduction equipment.	received 2014 MPCA grants • 3 businesses received Minneapolis grants in 2014 • 4 businesses awarded 2015 Minneapolis grants • 3 MnTAP virtual painting demonstrations	medium-sized businesses	businesses in Met Council's Racially Concentrated Areas of Poverty	• University of Minnesota Technical Assistance Program • 3M • Environmental Initiative • City of Minneapolis • Hennepin County • Ramsey County • Local Public Health Association • Statewide Chambers of Commerce • Printers Industry of Minnesota	advertising spots • YouTube video • Duluth Radio interview • T.V. news coverage • Social media • 20,000 business mailings statewide	(MPCA grant anticipated in Q4, 2015).
Air Alert Education and Best Management Practices Outreach	*Coordinate outreach and education to promote awareness of the Minnesota Pollution Control Agency's air alert system, increase the number of people and organizations receiving air alerts, and increase adoption of emissions- reduction best management*	• Air Alert Website, June 2015 • Quarterly e-newsletters • MnDOT Air Alert road signs • Educational	• General population • Businesses	• Vulnerable populations website • Multi-lingual educational videos	• MnDOT • American Lung Association • Minnesota Department of Health • HealthPartners • Sierra Club • Transportation Management Organization • Ramsey County • MPCA	• Website • Public television • MnDOT Air Alert Road signs	VOC: 11lbs/person each air alert day NOx: 8lbs/person each air alert day

Attachment 4

	practices on air quality alert days.	videos					
Gas Can Exchange	*Gas Can Exchange Pilot was held at Ramsey and Washington County's household hazardous waste facilities the week of April 20. One thousand five hundred (1,500) 2.5 gallon vent-free, spill-proof cans will be provided to residents that exchange an old gas can.*	• 1,500 cans exchanged • Survey ○ 60% change gasoline habits ○ 25% first time visit to HHW site • Educational hang tags and labels	• Citizens in Ramsey and Washington Counties		• Ramsey County • Washington County • Environmental Initiative • Local Public Health Association	• Website and social media • Message in "Green Guide" mailer	VOCs: 2.75 tons

Cumulative 2013-2015 Clean Air Minnesota accomplishments:

VOCs reduced: 297 tons*
NOx reduced: 28 tons*
$PM_{2.5}$ reduced: 155 tons*

Total project costs: $4,634,116
Cost per ton: $9,440
Projected 10-year cost per ton: $1,780
Next 2-year phase of convening is funded by the State Legislature

*Calculations include reductions from MPCA Tire Pressure Campaign, B20 Biodiesel Mandate, Green Corps Energy Conservation, and Outdoor Wood Boiler Model Ordinance

Attachment B: 2016-2017 Clean Air Minnesota Work Plan

Minnesota Pollution Control Agency
520 Lafayette Road North
St. Paul, MN 55155-4194

Project Workplan

Doc Type: Contract

MPCA Use Only	
Swift #:	96514
CR #:	8412

Project Title: Clean Air Minnesota FY 16 17

1. Project Summary:

Organization: Environmental Initiative
Contractor contact name: Bill Droessler
Title: Senior Director of Strategic Project Planning
Address: 211 North First Street, Suite 250
Minneapolis, MN 55401
Phone: 612-334-3388 x 105
Email bdroessler@environmental-initiative.org

MPCA contact(s): *Brian Timerson, Supervisor; Rocky Sisk, Staff*
MPCA project manager: Rocky Sisk
Title: State Program Admin Coordinator
Address: 520 Lafayette Road
St. Paul, MN 55155
Phone: 651.757.2173
E-mail: rocky.sisk@state.mn.us

Project information

Start date: 09/11/2015 **End date:** 06/30/2017
Total cost: $200,000

2. Statement of Problems, Opportunities, and Existing Conditions

Under Minn. Stat. §116.07, subd. 2, the MPCA is charged with improving air quality by promoting, in the most practicable way possible, the use of energy sources and waste disposal methods which will produce or emit the fewest air contaminants, consistent with the agency's overall goal of reducing all forms of pollution.

In response to this mandate, and in support of the MPCA's strategic plans, this project is specifically designed to address the non-point air pollution reduction strategies needed to achieve these goals.

Additionally, the 2015 1st Special Session appropriated $100,000 each year for the MPCA to continue its efforts with CAM, and to allow the commissioner to enter into an agreement with the Environmental Initiative to support this effort.

3. Goals, Objectives, Tasks, and Subtasks

Air pollution reduction is the overall goal of this contract. In order to achieve that goal, Environmental Initiative will manage priority projects for 'Clean Air Minnesota' to reduce air pollution throughout Minnesota by working with a variety of partners, both public and private, in order to maximize and leverage available resources for a variety of voluntary emissions reduction projects.

Task 1: Clean Air Minnesota Convening

In consultation with the MPCA, Environmental Initiative will coordinate and administer the Clean Air Minnesota partnership. The partnership will have a greater emphasis on coordinated and comprehensive project development, project fundraising, and project implementation. Specific outcomes of the Clean Air Minnesota convening task include:

- Providing a forum for shared decision-making, prioritization of activities, and collaborative problem solving.
- Maintaining commitment of a diverse community of stakeholders to shared emission reduction goals and ongoing momentum toward long-term air quality outcomes.
- Engagement of partners around efforts to educate targeted decision-makers about Minnesota's air quality challenges, the benefits of emissions reductions, the health effects of air pollution, and implications of ever-changing federal air quality standards.
- An annual assessment of and summary report on the effectiveness of Environmental Initiative's convening and the Clean Air Minnesota partnership model to aid in future decision-making and action. The assessment will include discussion of the partnership model in terms of the number of projects completed, potential for and emissions reductions realized, and project funding opportunities, potential, and successes.

The major elements of the Clean Air Minnesota convening task are described below.

Process Facilitation & Set-Up

A new facilitation structure will be implemented. In consultation with MPCA and current Clean Air Minnesota partners, Environmental Initiative will identify and evaluate a set of facilitation and Work Group leadership options, attempting to balance, among other variables, quicker decision-making and greater partner involvement in project development, project fundraising, and communications activities. Based on this assessment, Environmental Initiative will design and implement the facilitation structure that is determined to be most effective and efficient.

Clean Air Minnesota Core Team

Environmental Initiative will retain a group of eight to twelve individuals (including Representatives of the MPCA) from the public and private sectors to advise Environmental Initiative's administration of the partnership. Current membership will be evaluated and at least two individuals on this team will be selected for their proven experience and expertise in strategic communications, planning, and implementation.

Environmental Initiative's Clean Air Minnesota project lead, support staff members, and facilitator/s will participate in and be responsible for coordination and facilitation of Core Team meetings.

The Core Team will:

- Meet approximately every two months to provide guidance on Work Group meeting agendas and outcomes. Core Team members will also utilize electronic communications in between face-to-face meetings.
- Be responsible for more immediate operational decision-making, and development and execution of workplan elements to guide emissions reduction project activities.
- Be directly involved in project fundraising and policy efforts (including local policy development and implementation, executive orders, and coordination of legislative outreach strategy).
- Provide guidance, recommendations, and strategic advice to the Clean Air Minnesota Work Group.
- Develop an overarching communications and outreach strategy to educate targeted decision-makers about Minnesota's air quality challenges, the benefits of emissions reductions, the health effects of air pollution, and implications of ever-changing federal air quality standards.
- Evaluate the Clean Air Minnesota partnership on an ongoing basis (twice a year) to review recruitment needs and progress toward goals.

Clean Air Minnesota Work Group

Environmental Initiative will retain a full contingent of stakeholders from business, government, and nonprofit sectors to serve as members of the Clean Air Minnesota Work Group. Current membership will be evaluated and new participants will be recruited to participate in the effort before the first meeting of the partnership in this next phase. Environmental Initiative will:

- Convene the Clean Air Minnesota Work Group approximately once per quarter.
- Communicate with Work Group members and other interested partners via email at least twelve times per year.
  - Meeting reminders – once per quarter
  - Meeting summaries – once per quarter
  - Clean Air Minnesota updates – at least four emails per year dispersed in between Work Group meetings.

This group will provide a forum for collaboration and shared overarching decision-making on emissions reduction activities across sectors. Specifically, Clean Air Minnesota Work Group members are charged with:

- Continuing to identify, evaluate, and prioritize overarching direction and strategies to reduce air pollution.
- Continuing to develop, fund, and implement projects to improve air quality.
- Motivating and engaging partners in emission-reduction activities and participation in the Clean Air Minnesota effort.
- Educating targeted decision-makers about Minnesota's air quality challenges, the benefits of emissions reductions, the health effects of air pollution, and implications of ever changing federal air quality standards.
- Quantifying and reporting emission reduction activities and tracking progress towards the partnership's 10% emission reduction goal.

Task 2: Project Development and Implementation

Development and implementation of new emission-reduction projects and scaling-up of existing projects will occur primarily through smaller Project Teams. Environmental Initiative will provide coordinated, cohesive, and comprehensive project development, assist with project fundraising, and project implementation to advance the Project Teams and Clean Air Minnesota's goals. Initial Project Teams will be led and facilitated by Environmental Initiative staff, and up to two additional Project Teams could be led and facilitated by Environmental Initiative as they emerge. In all cases, Environmental Initiative will help select and recruit Project Team members, contribute to the development of specific goals, workplans, and communication needs and opportunities. Clear mechanisms will also be established to ensure Project Teams regularly report to the Clean Air Minnesota Work Group on their progress toward set goals.

Specific outcomes of the project development and implementation task include:

- Coordinated efforts to reduce air pollution that engage multiple partners across sectors.
- Leveraging of public- and private-sector project funding to achieve emissions reductions at scale.
- A concerted effort to launch, pilot, and/or scale up at least four high-priority emissions reduction projects.
- Clear understanding and support between the Work Group and Project Teams to advance emissions-reduction activities and mutual accountability for the intended outcomes of established Project Teams.

Project Teams

Environmental Initiative will determine which Project Teams to constitute in consultation with Clean Air Minnesota partners and the MPCA. Three areas of focus provide a history of proven emission and exposure reduction outcomes, have immediate and long-term opportunities for greater outcomes, and are accompanied by opportunities to raise project funds and leverage resources. These teams can be put in place quickly, and these project areas have also been identified by the MPCA as priorities for dispersed, primarily non-permitted sources of emission reductions:

- *Area Sources* (MPCA Small Business/VOC Program; Minneapolis Green Business Assistance Program; or other).
- *Mobile Sources* (diesel engines; high emitting vehicles; idle reduction; or other).
- *Wood Smoke* (Minnesota Power Wood Stove change-out program; or other).

Communications and outreach activities will be embedded within each of the active Project Teams. Team membership should include communications expertise to ensure integration of messaging and outreach activities within Clean Air Minnesota's broader communications objectives.

Each Project Team will create an annual workplan, which will include the following elements: emission/exposure reduction opportunities and expectations, milestones/goals, reporting timeframe, communications, and evaluation. These workplans will be incorporated into the overarching Clean Air Minnesota workplan. Environmental Initiative will coordinate Project Team activities to maximize opportunities to leverage resources and communications objectives, and to maximize outcomes.

As resources permit, other Project Teams may be established in consultation with the MPCA, the Core Team, and Work Group. Other Project Teams may be formed on an ad hoc basis, with specific, concrete goals and objectives, and to be operated within a specified time frame. Environmental Initiative staff will provide facilitation, guidance, and oversight for all Project Teams.

Possible additional Project Teams could include:

- Community Forestry
- Gas Station Vapor Recovery
- Lawn Equipment Emission Reduction

Task 3: Communications and Outreach

Environmental Initiative and Clean Air Minnesota partners have committed to reducing fine particulate matter and ground-level ozone emissions by 10% from 2008 levels. In order to reach this goal, more organizations and people need to become aware of air quality challenges and the multiple co-benefits of voluntary emissions reductions. Millions of dollars from public and private sources will also need to be raised to support emissions reduction projects. Environmental Initiative will work with the Minnesota Pollution Control Agency, Clean Air Minnesota Core Team, and Clean Air Minnesota Work Group members to develop and implement an overarching communications and outreach strategy to raise awareness of .

Minnesota's air quality challenges, the health effects of air pollution, and changing federal air quality standards among the following target audiences:

- Businesses
- Area sources
- Regulated point sources
- Cities elected officials and staff
- Counties elected officials and staff
- Fleets
- Foundations
- Public Health Associates
- State legislators
- State administrative/ Governor's office

Environmental Initiative's Communications Director will serve as a member of the Clean Air Minnesota Core Team, and will retain responsibility for advising the development of an overarching communications and outreach strategy on air quality. Environmental Initiative's Communications Director may assist the Project Teams to advise on communications

elements of individual Project Team workplans, as well as to connect Project Team communication efforts to the larger Clean Air Minnesota strategies and goals.

Outcomes of the communications and outreach task include:

- Greater awareness and understanding of the connection between air quality and public health amongst key decision makers.
- A more engaged and mobilized Clean Air Minnesota Work Group – equipped to be carriers of air quality key messages to identified target audiences.
- Generate momentum to fuel ongoing dialogue, active partnership, project fundraising efforts, and emissions reduction outcomes.

4. Measurable Outcomes

As part of this contract, the contractor is required to write a final report. The final report will contain the measurable aspects of this endeavor, including summaries of each individual project managed by CAM throughout the course of this contract. These summaries will use project specific metrics to measure the progress and success of each project. These metrics will include pounds of pollution not released into the atmosphere as a result of this effort for each individual project where applicable.
Furthermore, the final report will also contain an overall cost benefit analysis for dollars spent and non-point air emissions reduced. Some of the pollutants targeted with this effort include VOC's, PM, and in some cases CO_2 and HC.

Attachment C: 2013-2015 Clean Air Minnesota Project Summaries and Data Reports

Clean Air Minnesota Project Summary:
July 2013 – June 2015

Project Title	Be Air Aware
Recommendation	Recommendation #13 – Air Alert Education and Best Management Practices Outreach
Category	(Minnesota Clean Air Dialogue category)
Prepared By	Rebecca Place (651) 757-2807 rebecca.place@state.mn.us
Date	April 15, 2015

Statement of Need

Air pollution affects all Minnesotans. Scientists are finding that lower concentrations of air pollutants can still harm people and the environment. Air Alert Education and Outreach is needed to ensure that as many Minnesotans as possible receive notifications of air alerts and act to protect their health and minimize contribution to pollution on bad air days.

Background

Building awareness of air quality and the air quality alert system is imperative to protecting human health and encouraging people to act on minimizing their health risk in addition to reducing air pollution. An education campaign for air alerts was the outcome of Clean Air MN 1. In 2003 there were only 200 people receiving air alerts. Clean Air MN worked with their 100 partners to ensure dissemination of air alert messages including large institutions like the University of Minnesota. It was estimated that the campaign resulted in 200,000 people receiving air alert messages. Over the years relationships with contacts were not fostered, people changed jobs and eventually the connections frayed resulting in declining numbers of people receiving air quality alerts.

A research project was complete in December 2013 by an intern at the MPCA determining what are best management practices for keeping air alert education programs and business partnerships thriving. Illinois Partners of Clean Air (IPCA) in Chicago, IL and Mid-America Regional Council Air Quality Program in Kansas City, MO both shared the details of successful programs in areas that were in non-attainment. Minnesota wants to be proactive and build successful partnerships to reduce air pollution *before* going into non-attainment and possibly prevent it from happening. It was determined that the Air Alert Education and Outreach Sub-team would have a two pronged approach to both large employers to reach many people in the workplace and an education campaign targeting the general public with environmental justice in mind.

Objective

I. Create a statewide air alert communications plan to increase the number of people receiving and acting upon the air alerts, and to educate and encourage more organizations to voluntarily implement various emissions-reduction best management practices. There are two broad elements:
   a) A strategy to communicate to the general population when air quality will be/is poor, and actions they should take to protect their health, as well as steps they can take to address poor air quality.
   b) A strategy to engage partner organizations to communicate about air alerts and encourage year-round emissions-reduction BMPs, at two levels
      i. During air alert situations, to ensure that partner organization's employees become aware of the alert
      ii. Steps that the organization and employees can take during alerts, and on a continual basis, to reduce emissions.

II. The project addresses both VOCs that contribute to the creation of ozone and particulate matter.

III. ½ FTE at the MPCA coordinates the air quality index. This staff will be the initial contact for upkeep

of the Be Air Aware Website and Business Partnerships. Planning is underway for Future resources needed to ensure these projects are kept fresh and attended to.

IV. There is not a specific air emission reduction effort for Air Alert Education and Outreach projects. The goal is to raise awareness and encourage people to take action.

Deliverables

There are three outcomes from the Air Alert Education and Outreach sub-team.

- The creation of an Air Aware Campaign to encourage employers in MN to sign up for air alerts and disseminate the alert to all employees. It is encouraged that businesses re-post the alert on social media outlets to maximize people receiving the alert. The alert includes tips for minimizing health risk and pollution reduction tips. There were flyers printed to advertise Be Air Aware.
- The Be Air Aware website is the second outcome, a collaborative website with Minnesota Department of Health and MPCA to educate the public on air quality and health.
- Lastly, videos were produced on air quality and health for non-English speaking communities. They were recorded in Hmong, Somali, Latino and English.

Methodology

The Air Alert Education and Outreach Team (Team) created a communication plan to guide our work to achieve the goals set forth by Clean Air MN. The Communication Goals are:

a) Initiate a coordinated outreach and education campaign to promote awareness of the Minnesota Pollution Control Agency's air alert system, with two objectives:
  i) Ensure awareness of poor air quality by all affected people, and of actions that they should take to protect their health; and
  ii) Increase adoption of emissions-reduction best management practices on air quality alert days, and during other parts of the year.

b) Air Quality Goal: Reductions in specific pollutants (VOC, NO_x, $PM_{2.5}$,)

The team focused on two objectives of raising awareness and encouraging that people take action. The plan describes the approach of working to education the general population and those most at risk of air pollution and also our major employers in the state as a conduit to relay information to thousands of people quickly.

Target Audience

1) Target Audience(s) – For General Public Outreach

a) **Primary audience(s)** — People who should receive messages
  i) People most at risk of adverse health events during air alerts
    (1) Elderly
    (2) Children under age 5
    (3) People with health conditions; likely more vulnerable to poor air quality:
      (a) cardiovascular disease,
      (b) respiratory disease, such as asthma, chronic bronchitis, emphysema
      (c) People with allergies,
      (d) Immuno-compromised individuals.
      (e) People with diabetes
  ii) People likely to be exposed to poor air quality
    (1) Healthy children that play outdoors
    (2) Healthy adults who exert themselves outdoors, such as construction workers
    (3) People who exercise outdoors

(4) People within urban centers, in close proximity to freeways and areas of traffic congestion

iii) The General Public, including people who can steps to make reductions and special segments of that population

(1) Commuters, people that use transit, traveling public

2) Target Audience(s) for Business Outreach

a) **Primary audience(s)** – People that should receive messages

i) Air alert coordinator(s) at partnering organizations

ii) Partnering organizations' employees (via air alert coordinators)

Environmental Justice

Yes this project will promote environmental justice by ensuring the fair treatment of all people regardless of race, color, national, origin or income. The production of Air Quality Index educational videos and vignettes in Hmong, Somali, Spanish and English will specifically target the 10% of Minnesotan's who speak another language at home.

Action Plan

Task/Step	Start/End Dates	Partner(s) Responsible	Description of Activity
1	July through December 2013	Air Alert Education and Outreach Sub-Team	Assemble Team and create Communication Plan. Split into teams, activate plan
2	January 2014 through current	Rick Rosvold/Rebecca Place	Be Air Aware Business Outreach Campaign
3	July 2014 through current	Rebecca Place/Mary Dymond	Be Air Aware Website
4	January 2015 through current	Zack Hansen/Rebecca Place	Contract with ECHO for production of Air Quality Index Educational videos

Project Partners (see list of AQI Education and Outreach Team Members)

Organization	Key Contact	Phone and Email
ECHO	Lillian McDonald	(651) 789-4342 <mcdonald@echominnesota.org>
All partners who are members of Clean Air Minnesota	Gena Gerard	(612)334-3388 X 103 ggerard@environmental-initiative.org
Ramsey County Environmental Health	Zack Hansen	(651) 266-1160 <Zack.Hansen@CO.RAMSEY.MN.US>
Xcel Energy	Rick Rosvold	(612) 330-7879 Richard.a.Rosvold@xcelenergy.com

Project Manager

Rebecca Place

Role of Env. Initiative

Environmental Initiative connected with each Clean Air MN partner to encourage their business to Be Air Aware and sign up to receive air quality alerts and disseminate the alerts to all of their employes.

Drivers

The driver for our general public target audience is protecting yourself and your loved ones from the health impact of air pollution. For Employers in the state the drivers are, taking action to prevent the high costs of non-attainment, performing best practices to reduce air pollution and advertising success as well as enabling

employees to act to protect their health and minimize air pollution.

External Factors

There were not many external factors that prevented our team from being successful. Our main contributing external factor was the active participation from our sub-team members. Without their dedication and hard work we would not have been able to complete the projects. Mary Dymond (MPCA) and Chuck Stroebel (MDH) have been working hard to lead the production of the Be Air Aware website. That project combined with the efforts of the Joint Initiative work ongoing with PCA and MDH external from the Clean Air MN efforts. Their work has been instrumental in the Be Air Aware Website success.

Communications

Air Alert Education and Outreach Sub-team has presented our Be Air Aware campaign at several speaking engagements to a total of approximately 200 people. There were flyers printed to advertise the campaign for those events. The majority of our communication will take place after June 3,0 2015 due to our projects wrapping up in June. There is a press release being planned by MPCA and MDH to advertise the project outcomes that have been completed to raise awareness of air quality and health.

Project Outcomes (Metrics): July 1, 2013 – June 30, 2015

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. List assumptions made for each emission calculation and where they came from, (reports, other groups using them, etc.) See Attachment C of EPA's Ozone Advance guidance: http://www.epa.gov/ozoneadvance/pdfs/2012404guidance.pdf (some links are no longer active). For questions, contact Brian Timerson, MPCA: 651-757-2785 or Brian.Timerson@state.mn.us.

Metric	Data	Notes
1. Reduced emissions: VOC*	**Total 2 year reductions: 0.02 (tpy) Total 10 year reductions: 0.73 (tpy)**	Metric 1 – Emissions: describe calculations or attach separately. List assumptions.
2. Reduced emissions: PM 2.5*	**N/A**	Metric 1 – Emissions: describe calculations or attach separately. List assumptions.
3.Reduced NOx emissions:	**Total 2 year reductions: 0.04 (tpy) Total 10 year reductions: 0.53 (tpy)**	
4. Cost per pound of pollutant reduced*	**Total cost per pound (2 Year) = $654/lb (10 Year) = $31.2/lb**	Metric 3 – Emissions: costs for each project partner, including operating costs and grants, excluding salaries. List assumptions.
5. Emissions data related MN DOT traffic signs	**See Spreadsheet Titled Air Alert Ed and Outreach Emissions Estimator**	**See Spreadsheet Titled Air Alert Ed and Outreach Emissions Estimator**
6. ECHO Videos		**See Spreadsheet Titled Air Alert Ed and Outreach Emissions Estimator**
7. Air Alert Emails		**See Spreadsheet Titled Air Alert Ed and Outreach Emissions Estimator**
8. MPCA/MDH Be Air Aware Website on Air Quality and Health		**See Spreadsheet Titled Air Alert Ed and Outreach Emissions Estimator**
9. Heard Air Alert on the News		**See Spreadsheet Titled Air Alert Ed and Outreach Emissions Estimator**
9. # People who act to protect themselves and others	**10% of those who saw the air alert**	**See Spreadsheet Titled Air Alert Ed and Outreach Emissions Estimator**
10. $ Value of co-benefits (e.g., public health, reduced VMT, water efficiencies, etc.)		Metric 3 – Economics: describe or attach separately; include direct cost and direct staff costs related to the project. List assumptions.

11. Total project cost	**BOTH** 2-year (actual) and 10-year period (projected)	Metric 3 – Economics: describe or attach separately; insert budget total from below.
12. Economic benefits		Metric 3 – Economics: describe or attach separately. List assumptions.
13. Education/outreach activities and participation		Metric 4 – Education: # attendees, # contacts, # associations, etc.; describe or attach separately. List assumptions.
14. # Drivers who see MnDOT changeable signs		Metric 4 – Education: describe or attach separately. List assumptions.
15. # Employers sharing air alert messages and the data they collect about employee behavior		Metric 4 – Education: describe or attach separately. List assumptions.
16. Co-Benefits/Other		Describe calculations or attach separately. List assumptions. Qualitative description.

*High priority metrics

Budget

Project Cost	$78,480.	Attach full budget separately
Available Funding	$	(List sources/partners)
In-Kind Resources	Printing resources for Be Air Aware cards	MPCA
Notes		

Approval

Approved by Partners	(Date)
Reviewed by CAM	(Date)

Updated 2/5/15 AS

CAM Quantification Sheet - Air Alert Team

	Daily VOC Reduction (tpy)	2-Year VOC Reduction (tpy)	10-Year VOC Reduction (tpy)	Daily NOx Reduction (tpy)	2-Year NOx Reduction (tpy)	10-Year NOx Reduction (tpy)
DOT Sign Boards	0.00219660	0.00878639	0.28995099	0.00158051	0.00632206	0.20862796
ECHO Videos	0.00000007	0.00000220	0.00002674	0.00000005	0.00000158	0.00001924
Be Air Aware e-mails	0.00007756	0.00038778	0.01031486	0.00005580	0.00027902	0.00742184
PCA / MDH Website	0.00000078	0.00002340	0.00230081	0.00000056	0.00001684	0.00165550
Heard on News	0.00327154	0.00981463	0.42857236	0.00235397	0.00706191	0.30836997
Total	0.00554655	0.01901440	0.73116576	0.00399090	0.01368140	0.52609451

CAM Quantification Sheet

DOT Sign Boards

Description: The number of people estimated to have seen the sign is the average number of cars that traveled underneath the sign each day for 4 days.

Emissions Reduction Calculation:

Number of days sign boards have been used =	4	days
Estimated number of people seeing sign boards each day =	893,958	people
Percent of people expected to make behavior change =	10	%
Impacts of behavior change on VOC emissions =	4.91432E-05	lb VOC reduced/day
Impacts of behavior change on NOx emissions =	3.53599E-05	lb NOx reduced/day
Total estimated events over 10 year period =	16	events per year (MPCA report, average from 2003-2013)

VOC Reductions = 4 days x 893,958 people x 10/100 % x 4.91432E-05 lb VOC reduced/person per day x ton VOC/2000 lb VOC

VOC Reductions (Daily) =	0.002197	tons VOCs
VOC Reductions (2-yr Total)=	0.008786	tons VOCs
VOC Reductions (10-yr Total)=	0.289951	tons VOCs

Equals daily times average number of events per year times 8 years plus 2-yr total

NOx Reductions = 4 days x 893,958 people x 10/100 % x 3.53599E-05 lb NOx reduced/person per day x ton NOx/2000 lb NOx

NOx Reductions (Daily) =	0.001581	tons NOx
NOx Reductions (2-yr Total)=	0.006322	tons NOx
Nox Reductions (10-yr Total)=	0.208628	tons NOx

Equals daily times average number of events per year times 8 years plus 2-yr total

Basis for Emission Reduction Values:

Number of days sign boards have been used =	Days used in 2014-2015 since program started, provide by MN DOT
Estimated number of people seeing sign boards each day =	Provided by MN DOT
Percent of people expected to make behavior change =	Conservative Estimate based on an average of multiple studies from across the US. See attached sheet for references. 1
Impacts of behavior change on VOC emissions =	Estimate based on avg vehicle emissions (EPA), average vehicle miles traveled per day (EPA), assumes each person changing behavior cuts average daily vehicle miles traveled in half for affected days. Average Vehicle emissions from EPA publication EPA420-F-08-024, October 2008; VOC rate = 1.034 grams per VMT. Chart shows the median percent of drivers at 9%, which correlates to ~20 miles one-way commute.

Cars: 1.034 grams/vmt x 40 miles/day round trip - person x lb/453.59 grams x ton/2000 lb = 4.55918E-05 tons VOC/person

Light Trucks: 1.224 grams/vmt x 40 miles/day round trip - person x lb/453.59 grams x ton/2000 lb = 5.39694E-05 tons VOC/person

Fleet: 53 % cars on road; 39 % light trucks on road; 92 sum of %

combined average = 53/92 x 4.56E-05 tons VOC/person + 39/92 x 5.39694E-05 tons VOC/person

combined average = 4.91432E-05 tons VOC/person

Impacts of behavior change on NOx emissions =	Estimate based on avg vehicle emissions (EPA), average vehicle miles traveled per day (EPA), assumes each person changing behavior cuts average daily vehicle miles traveled in half for affected days. Average Vehicle emissions from EPA publication EPA420-F-08-024, October 2008; VOC rate = grams per VMT. Chart shows the median percent of drivers at 9%, which correlates to ~20 miles one-way commute.

Cars: 0.693 grams/vmt x 40 miles/day round trip - person x lb/453.59 grams x ton/2000 lb = 3.05562E-05 tons VOC/person

Light Trucks: 0.95 grams/vmt x 40 miles/day round trip - person x lb/453.59 grams x ton/2000 lb = 4.1888E-05 tons VOC/person

Fleet: 53 % cars on road; 39 % light trucks on road; 92 sum of %

combined average = 53/92 x 3.06E-05 tons VOC/person + 39/92 x 4.1888E-05 tons VOC/person

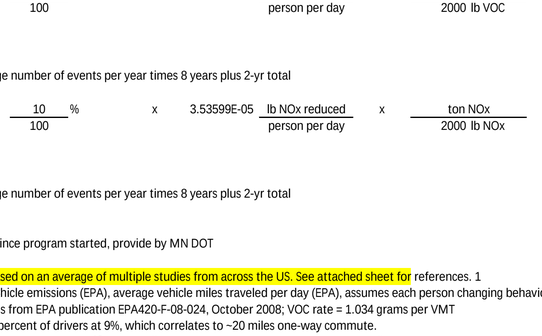
combined average = 3.53599E-05 tons Nox/person

Commuter Statistics:

Source: National Household Travel Survey, US Department of Transportation, Bureau of Transportation Statistics, 1/1/2014 Research Date

American Commute Distance - one way

(miles)			Percent	Mean	Median
1	to	5	29	13	9
6	to	10	22	13	9
11	to	15	17	13	9
16	to	20	10	13	9
21	to	25	7	13	9
26	to	30	5	13	9
31	to	35	3	13	9
>35	to	>35	8	13	9
		mean =	13		
		median =	9		



CAM Quantification Sheet

ECHO Videos

Description: The number of people is estimated by previous projects ECHO has completed. It includes TPT viewership, Webpage views, people e-mailed, and clicks on the ECHO You Tube Channel to watch the videos. It does not include social media which may potentially add up to 15,0000 views.

Emissions Reduction Calculation:

Number of days in year =	365	days
Estimated number of people seeing video each year =	10,884	people
Percent of people expected to make behavior change =	10	%
Impacts of behavior change on VOC emissions =	4.91432E-05	lb VOC reduced/day
Impacts of behavior change on NOx emissions =	3.53599E-05	lb NOx reduced/day

VOC Reductions = 10,884 people/year x 10/100 % x 4.91432E-05 lb VOC reduced/person x ton VOC/2000 lb VOC x year/365 days

VOC Reductions (Daily) =	7.32705E-08	tons VOCs
VOC Reductions (2-yr Total)=	2.19812E-06	tons VOCs
VOC Reductions (10-yr Total)=	2.67437E-05	tons VOCs

30 days of viewings possible (June 2015); Daily times 30 days

Equals daily times average number of events per year times 8 years plus 2-yr total

NOx Reductions = 365 days x 10,884 people x 10/100 % x 3.53599E-05 lb NOx reduced/person per day x ton NOx/2000 lb NOx x year/365 days

NOx Reductions (Daily) =	5.27202E-08	tons NOx
NOx Reductions (2-yr Total)=	1.58161E-06	tons NOx
Nox Reductions (10-yr Total)=	1.92429E-05	tons NOx

30 days of viewings possible (June 2015); Daily times 30 days

Equals daily times average number of events per year times 8 years plus 2-yr total

Basis for Emission Reduction Values:

Estimated number of people seeing messages each year = Estimate based on 600 views per year on website, 1000 DVDs distributed-assume 10 views per DVD

Percent of people expected to make behavior change = Conservative estimate based on research data. See References tab, #1

Impacts of behavior change on VOC emissions = Estimate based on avg vehicle emissions (EPA), average vehicle miles traveled per day (EPA), assumes each person changing behavior cuts average daily vehicle miles traveled in half for affected days.
Average Vehicle emissions from EPA publication EPA420-F-08-024, October 2008; VOC rate = 1.034 grams per VMT
Chart shows the median percent of drivers at 9%, which correlates to ~20 miles one-way commute.

Cars	1.034	grams/vmt	x	40 miles/day round trip - person	x	lb/453.59 grams	x	ton/2000 lb	=	4.55918E-05	tons VOC/person	
Light Trucks	1.224	grams/vmt	x	40 miles/day round trip - person	x	lb/453.59 grams	x	ton/2000 lb	=	5.39694E-05	tons VOC/person	
Fleet	53	% cars on road		combined average =		53/92	x	5E-05 tons VOC/person	+	39/92	x	5.39694E-05 tons VOC/person
	39	% light trucks on road										
	92	sum of %		combined average =		4.91432E-05 tons VOC/person						

Impacts of behavior change on NOx emissions = Estimate based on avg vehicle emissions (EPA), average vehicle miles traveled per day (EPA), assumes each person changing behavior cuts average daily vehicle miles traveled in half for affected days.
Average Vehicle emissions from EPA publication EPA420-F-08-024, October 2008; VOC rate = grams per VMT
Chart shows the median percent of drivers at 9%, which correlates to ~20 miles one-way commute.

Cars	0.693	grams/vmt	x	40 miles/day round trip - person	x	lb/453.59 grams	x	ton/2000 lb	=	3.05562E-05	tons VOC/person	
Light Trucks	0.95	grams/vmt	x	40 miles/day round trip - person	x	lb/453.59 grams	x	ton/2000 lb	=	4.1888E-05	tons VOC/person	
Fleet	53	% cars on road		combined average =		53/92	x	3E-05 tons VOC/person	+	39/92	x	4.1888E-05 tons VOC/person
	39	% light trucks on road										
	92	sum of %		combined average =		3.53599E-05 tons Nox/person						

Commuter Statistics: See DOT tab

CAM Quantification Sheet

Be Air Aware

Description:

Emissions Reduction Calculation:

Number of days e-mails sent out =	5	days
Estimated number of people exposed to the message each day =	31,563	people
Percent of people expected to make behavior change =	10	%
Impacts of behavior change on VOC emissions =	4.91432E-05	lb VOC reduced/day
Impacts of behavior change on NOx emissions =	3.53599E-05	lb NOx reduced/day
Total estimated events over 10 year period =	16	events per year (MPCA report, average from 2003-2013)

VOC Reductions = 5 days x 31,563 people x 10/100 % x 4.91432E-05 lb VOC reduced / person per day x ton VOC / 2000 lb VOC

VOC Reductions (Daily) =	7.76E-05	tons VOCs
VOC Reductions (2-yr Total)=	0.000388	tons VOCs
VOC Reductions (10-yr Total)=	0.010315	tons VOCs

Equals daily times average number of events per year times 8 years plus 2-yr total

NOx Reductions = 5 days x 31,563 people x 10/100 % x 3.53599E-05 lb NOx reduced / person per day x ton NOx / 2000 lb NOx

NOx Reductions (Daily) =	5.58E-05	tons NOx
NOx Reductions (2-yr Total)=	0.000279	tons NOx
Nox Reductions (10-yr Total)=	0.007422	tons NOxs

Basis for Emission Reduction Values:

Number of days e-mails sent out =	Days used in 2014-2015 since program started
Estimated number of people seeing sign boards each day =	Provided by MPCA
Percent of people expected to make behavior change =	See References tab, number 1
Impacts of behavior change on VOC emissions =	Estimate based on avg vehicle emissions (EPA), average vehicle miles traveled per day (EPA), assumes each person changing behavior cuts average daily vehicle miles traveled in half for affected days. Average Vehicle emissions from EPA publication EPA420-F-08-024, October 2008; VOC rate = 1.034 grams per VMT Chart shows the median percent of drivers at 9%, which correlates to ~20 miles one-way commute.

Cars: 1.034 grams/vmt x 40 miles/day round trip - person x lb/453.59 grams x ton/2000 lb = 4.55918E-05 tons VOC/person

Light Trucks: 1.224 grams/vmt x 40 miles/day round trip - person x lb/453.59 grams x ton/2000 lb = 5.39694E-05 tons VOC/person

Fleet: 53 % cars on road; 39 % light trucks on road; 92 sum of %

combined average = (53/92 x 4.55918E-05 tons VOC/person) + (39/92 x 5.39694E-05 tons VOC/person) = **4.91432E-05 tons VOC/person**

Impacts of behavior change on NOx emissions =

Estimate based on avg vehicle emissions (EPA), average vehicle miles traveled per day (EPA), assumes each person changing behavior cuts average daily vehicle miles traveled in half for affected days.
Average Vehicle emissions from EPA publication EPA420-F-08-024, October 2008; VOC rate = grams per VMT
Chart shows the median percent of drivers at 9%, which correlates to ~20 miles one-way commute.

Cars: 0.693 grams/vmt x 40 miles/day round trip - person x lb/453.59 grams x ton/2000 lb = 3.05562E-05 tons VOC/person

Light Trucks: 0.95 grams/vmt x 40 miles/day round trip - person x lb/453.59 grams x ton/2000 lb = 4.1888E-05 tons VOC/person

Fleet: 53 % cars on road; 39 % light trucks on road; 92 sum of %

combined average = (53/92 x 3.05562E-05 tons VOC/person) + (39/92 x 4.1888E-05 tons VOC/person) = **3.53599E-05 tons Nox/person**

Commuter Statistics: See DOT tab

CAM Quantification Sheet

MPCA / MN DOH Website

Description:

Emissions Reduction Calculation:

Number days per year =	365	days per year	
Estimated number of people seeing website =	115,856	people/year	Based on number of people who viewed our latest news release in one week, multiplied by 52 weeks in one year
Percent of people expected to make behavior change =	10	%	
Impacts of behavior change on VOC emissions =	4.91432E-05	lb VOC reduced/person	
Impacts of behavior change on NOx emissions =	3.53599E-05	lb NOx reduced/person	

VOC Reductions = 115,856 people x 10/100 % x 4.91432E-05 lb VOC reduced/person x ton VOC/2000 lb VOC x year/365 days

VOC Reductions (Daily) =	7.79936E-07	tons VOCs
VOC Reductions (2-yr Total)=	2.33981E-05	tons VOCs
VOC Reductions (10-yr Total)=	0.002300812	tons VOCs

Website available for 30 days in June 2015
Equals daily times average number of days per year times 8 years plus 2-yr total

NOx Reductions = 115,856 people x 10/100 % x 3.53599E-05 lb VOC reduced/person per day x ton NOx/2000 lb NOx x year/365 days

NOx Reductions (Daily) =	5.61186E-07	tons NOx
NOx Reductions (2-yr Total)=	1.68356E-05	tons NOx
Nox Reductions (10-yr Total)=	0.0016555	tons NOx

Basis for Emission Reduction Values:

Number of days sign boards have been used =	Days used in 2014-2015 since program started, provide by MN DOT
Estimated number of people seeing sign boards each day =	Provided by MN DOT
Percent of people expected to make behavior change =	Conservative Estimate based on ...
Impacts of behavior change on VOC emissions =	Estimate based on avg vehicle emissions (EPA), average vehicle miles traveled per day (EPA), assumes each person changing behavior cuts average daily vehicle miles traveled in half for affected days. Average Vehicle emissions from EPA publication EPA420-F-08-024, October 2008; VOC rate = 1.034 grams per VMT Chart shows the median percent of drivers at 9%, which correlates to ~20 miles one-way commute.

Cars: 1.034 grams/vmt x 40 miles/day round trip - person x lb/453.59 grams x ton/2000 lb = 4.55918E-05 tons VOC/person

Light Trucks: 1.224 grams/vmt x 40 miles/day round trip - person x lb/453.59 grams x ton/2000 lb = 5.39694E-05 tons VOC/person

Fleet: 53 % cars on road; 39 % light trucks on road; 92 sum of %

combined average = (53/92) x 4.55918E-05 tons VOC/person + (39/92) x 5.39694E-05 tons VOC/person

combined average = **4.91432E-05 tons VOC/person**

Impacts of behavior change on NOx emissions =

Estimate based on avg vehicle emissions (EPA), average vehicle miles traveled per day (EPA), assumes each person changing behavior cuts average daily vehicle miles traveled in half for affected days.
Average Vehicle emissions from EPA publication EPA420-F-08-024, October 2008; VOC rate = grams per VMT
Chart shows the median percent of drivers at 9%, which correlates to ~20 miles one-way commute.

Cars: 0.693 grams/vmt x 40 miles/day round trip - person x lb/453.59 grams x ton/2000 lb = 3.05562E-05 tons VOC/person

Light Trucks: 0.95 grams/vmt x 40 miles/day round trip - person x lb/453.59 grams x ton/2000 lb = 4.1888E-05 tons VOC/person

Fleet: 53 % cars on road; 39 % light trucks on road; 92 sum of %

combined average = (53/92) x 3.05562E-05 tons VOC/person + (39/92) x 4.1888E-05 tons VOC/person

combined average = **3.53599E-05 tons Nox/person**

Commuter Statistics: See DOT tab

CAM Quantification Sheet

Heard on Nightly News

Description:

Emissions Reduction Calculation:

Number of days news covered air alert/advisory =	3	days
Estimated number of people hearing message on news each day =	1,331,433	people
Percent of people expected to make behavior change =	10	%
Impacts of behavior change on VOC emissions =	4.91432E-05	lb VOC reduced/day
Impacts of behavior change on NOx emissions =	3.53599E-05	lb NOx reduced/day
Total estimated events over 10 year period =	16	events per year (MPCA report, average from 2003-2013)

Star Tribune daily circulation of 242,000 times 2.5 plus Pioneer press circulation 235,968 X 2.5 based on American Lung Association methodology

VOC Reductions = 3 days x 1,331,433 people x (10/100) % x 4.91432E-05 lb VOC reduced / person per day x ton VOC / 2000 lb VOC

VOC Reductions (Daily) =	0.003271545 tons VOCs
VOC Reductions (2-yr Total)=	0.009814634 tons VOCs
VOC Reductions (10-yr Total)=	0.428572358 tons VOCs

Equals daily times average number of events per year times 8 years plus 2-yr total

NOx Reductions = 3 days x 1,331,433 people x (10/100) % x 3.53599E-05 lb NOx reduced / person per day x ton NOx / 2000 lb NOx

NOx Reductions (Daily) =	0.002353969 tons NOx
NOx Reductions (2-yr Total)=	0.007061908 tons NOx
Nox Reductions (10-yr Total)=	0.30836997 tons NOx

Basis for Emission Reduction Values:

Number of days news covered air alert/advisory =	Provided by MPCA
Estimated number of people hearing message on news each day =	Star Tribune daily circulation of 242,000 times 2.5
Percent of people expected to make behavior change =	Conservative estimate based on research data. See References tab, #1
Impacts of behavior change on VOC emissions =	Estimate based on avg vehicle emissions (EPA), average vehicle miles traveled per day (EPA), assumes each person changing behavior cuts average daily vehicle miles traveled in half for affected days. Average Vehicle emissions from EPA publication EPA420-F-08-024, October 2008; VOC rate = 1.034 grams per VMT. Chart shows the median percent of drivers at 9%, which correlates to ~20 miles one-way commute.

Cars: 1.034 grams/vmt x 40 miles/day round trip - person x lb/453.59 grams x ton/2000 lb = 4.55918E-05 tons VOC/person

Light Trucks: 1.224 grams/vmt x 40 miles/day round trip - person x lb/453.59 grams x ton/2000 lb = 5.39694E-05 tons VOC/person

Fleet: 53 % cars on road; 39 % light trucks on road; 92 sum of %

combined average = (53/92) x 4.55918E-05 tons VOC/person + (39/92) x 5.39694E-05 tons VOC/person = **4.91432E-05 tons VOC/person**

Impacts of behavior change on NOx emissions = Estimate based on avg vehicle emissions (EPA), average vehicle miles traveled per day (EPA), assumes each person changing behavior cuts average daily vehicle miles traveled in half for affected days. Average Vehicle emissions from EPA publication EPA420-F-08-024, October 2008; VOC rate = grams per VMT. Chart shows the median percent of drivers at 9%, which correlates to ~20 miles one-way commute.

Cars: 0.693 grams/vmt x 40 miles/day round trip - person x lb/453.59 grams x ton/2000 lb = 3.05562E-05 tons VOC/person

Light Trucks: 0.95 grams/vmt x 40 miles/day round trip - person x lb/453.59 grams x ton/2000 lb = 4.1888E-05 tons VOC/person

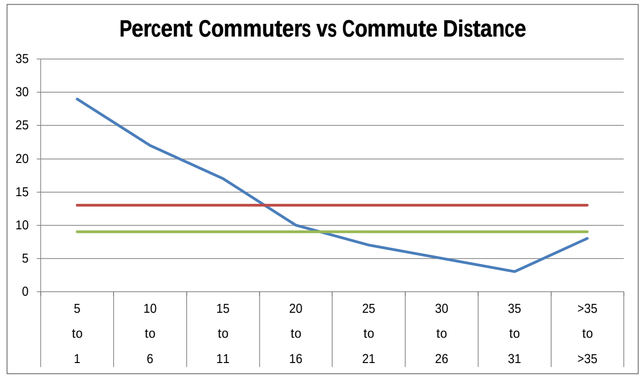
Fleet: 53 % cars on road; 39 % light trucks on road; 92 sum of %

combined average = (53/92) x 3.05562E-05 tons VOC/person + (39/92) x 4.1888E-05 tons VOC/person = **3.53599E-05 tons Nox/person**

Commuter Statistics:

Source: National Household Travel Survey, US Department of Transportation, Bureau of Transportation Statistics, 1/1/2014 Research Date

American Commute Distance - one way (miles)			Percent	Mean	Median
1	to	5	29	13	9
6	to	10	22	13	9
11	to	15	17	13	9
16	to	20	10	13	9
21	to	25	7	13	9
26	to	30	5	13	9
31	to	35	3	13	9
>35	to	>35	8	13	9
		mean =	13		
		median =	9		



1 http:www.sparetheair.com/survey.cfm

Sacremento area at 11% behavior change rate

General Results from 2013: (4% drove less specifically because they heard Spare

http://www.sciencedirect.com/science/article/pii/S0013935108000704

An average of all studies found yielded 11.5 % change. Woodsmoke CAM group used the same methodology and found 10%.

In order to be conservative and consistant Air Alert Education and Outreach also used 10%

http://www.convinceandconvert.com/social-media-research/11-shocking-new-social-media-statistics-in-america/

22% of people on social media check it several times per day.

66,776 people will receive air alerts via social media - approximately 22% will see it.

Air quality alerts are similar to weather alert systems directed to inform the public of an alert so that they can take action to protect themselves. CAM's Air Alert Education and Outreach's sub-teams goal is to increase the number of people receiving air alert messages and to encourage people to take actions to protect their health and to improve air quality.

Deliverables and Lessons learned:

Creation of "Be Air Aware" Campaign **Cost – In Kind**

- Minnesota is home to many large employers. If we are able to convince Minnesota's top 25 employers to "Be Air Aware" and send their employees air quality alerts with action items we would reach as many as 400,000 people.
    - It takes time for a company to consider the Be Air Aware program and sign on. We need confirmation from all CAM partners.
    - We encourage the use of social media.
- Be Air Aware partners range large and small employers, local government, apartment associations, and non-profits for a total of 31,563 people

Be Air Aware Website for information on Air Quality and Health **Cost - $30,000**

- MPCA and MDH partnered together through the joint initiative to design an air quality and health website for a variety of audiences. We found in target market research, people are eager for information and need a clear message on air quality and health.
- The website targets people who want information out indoor air quality, outdoor air quality, sources of air pollution, impacts air quality has on their health, success stories from local unit of government, actions for businesses and employers, actions for homeowners and generally where to find more information on air quality and health data
- The website will launch on June 30th

Multilingual Air Quality and Health Videos Produced by Emergency Community Health Outreach (ECHO) **Cost- $49,200**

- In order to promote environmental justice by ensuring the fair treatment of all people regardless of their race, color, national origin or income the Air Alert Education and Outreach Sub-team contracted with ECHO to produce multi-lingual air quality videos.
- One long video (5 minutes) describes Air Quality, Health Impacts and actions people can take to protect themselves. Videos are available in English, Hmong, Latino and Somali languages.
- Four short "vignettes" approximately 45 seconds in length with take away action items
    - What is the Air Quality Index,
    - What are the Health impacts of Air Quality,
    - What to do when Air Quality is Moderate,
    - What to do during an Air Alert
- ECHO Video Dissemination: ECHO videos will be broadcast on TPT television, available on ECHO's social media, website and You Tube channel. The videos will be on the Be Air Aware Website, MPCA's website and disseminated in hard copy versions to ECHO's community partners as well as distributed to two e-mail list serves with a total of 4500 recipients.

Clean Air Minnesota Project Summary: July 2013 – June 2015

Project Title	Small Business VOC Reduction grants	
Recommendation	Recommendation #1 – Education and Outreach to Reduce VOC Emissions from Small to Mid-Sized Businesses	
Category	Area Source Recommended Actions	
Prepared By	Eric David	651-757-2218, eric.david@state.mn.us
Date	April 2015	

Statement of Need

As point sources continue to reduce their emissions, nonpoint sources have become a bigger source of overall emissions. This project seeks to address the emissions from small businesses in Minnesota by providing grant funding to implement projects that reduce VOCs. VOCs are being targeted because the federal EPA is tightening the ozone standard and Minnesota will be in danger of violating the new standard.

Background

This is the first time the state has awarded grant funding to reduced VOCs. It originated from the Clean Air Minnesota recommendations for improving air quality.

Objective

The objective of this project is to reduce VOC emissions from small businesses. This grant funding is expected to reduce approximately 6.68 tons of VOCs per year. These implementation projects will be sustainably run by the business and will not require further funding.

Deliverables

Main deliverables will be in the form of VOC reductions and reduced exposure to employees and community members. Individual businesses submit final reports detailing their exact VOC emissions reductions.

Methodology

Grant projects are administered and managed by Minnesota Pollution Control Agency staff. Individual business technologies vary by sector but revolved around implementing alternatives to solvent use.

Target Audience

The target audience was small businesses with 100 or fewer employees.

Environmental Justice

Environmental justice was considered in the evaluation process and there are several businesses that were awarded grant funding to implement VOC reduction technology in areas of concentrated poverty, as determined by the Metropolitan Council map.

Action Plan

Task/Step	Start/End Dates	Partner(s) Responsible	Description of Activity
1	May 12, 2014-August 13, 2015	MPCA	Grant RFP open
2	May 12, 2014-August 13, 2015	MnTAP, EI, MPCA	Technical and Outreach assistance for grant applicants
3	4th quarter 2014- early 2015	MPCA	Awarding grant funding
4	2015	MPCA	Implementing grant projects

Project Partners

Organization	Key Contact	Phone and Email
Minnesota Technical Assistance Program	Laura Babcock	612-624-4678
City of Minneapolis	Patrick Hanlon	612-673-2319
Environmental Initiative	Bjorn Olson	612-334-3388 ext 108

Project Manager

Minnesota Pollution Control Agency

Role of Env. Initiative

Outreach to Minneapolis auto body shops

Drivers

Businesses have a variety of reason for implementing technologies to reduce VOCs: improving the health of their employees and community, saving the business money, giving the business a market advantage, staying ahead of regulations, leaving a positive legacy, etc.

External Factors

The amount of grant funding available limited the project scope.

Communications

Internally, the MPCA staff met multiple times to evaluate applications, look at work flow, and determine future steps. The MPCA VOC Communications team continues to meet to discuss marketing of grantees. The CAM implementation sub-group meets bi-weekly and the CAM VOC team meets monthly.

Project Outcomes (Metrics): July 1, 2013 – June 30, 2015

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. List assumptions made for each emission calculation and where they came from, (reports, other groups using them, etc.) See Attachment C of EPA's Ozone Advance guidance: http://www.epa.gov/ozoneadvance/pdfs/2012404guidance.pdf (some links are no longer active). For questions, contact Brian Timerson, MPCA: 651-757-2785 or Brian.Timerson@state.mn.us.

Metric	Data	Notes
1. Reduced emissions: VOC*	**2 year: 13.36 tons** **10 year: 66.8 tons**	**Individual applicants calculated their emissions gained with assistance**

		from MnTAP, the numbers here reflect the total of all awarded grants.
2. Reduced emissions: PM 2.5*	**2 year: 2,260 lbs** **10 year: 11,300**	**These numbers also came from individual grant applications (1 grant award).**
3. Cost per pound of pollutant reduced*	**<u>State Portion</u>** **1 year: $37.57/lb** **2 year: $18.78/lb** **10 year: $3.76/lb** **<u>Total Project</u>** **1 year: $63.61/lb** **2 year: $31.81/lb** **10 year: $6.36/lb**	**State Portion is only the amount of grant funding awarded for the project. Total Project is the full project cost for both state and private match. In total, businesses matched approximately 40% of the 60% state grant award. Calculations do not take into account costs such as staff time to administer, outreach hard costs, partner technical assistance, etc.**
4. Number and type of installs, change-outs, etc. (e.g. # of coating applicators with improved efficiency and estimate of efficiency improvement)	**Total of 13 grants:** **3 auto service degreasing, 9 auto body, 1 powder coater—all of these mainly revolved around switching solvent use**	Metric 1 and 3 – Emissions: describe or attach separately. List assumptions.
5. Usage (Reduced gallons of cleaning solvent used, reduced VOC content of cleaning solvent and coatings, etc.)	**Reducing 6.68 tons of VOC/year**	Metric 1 – Emissions: describe or attach separately. List assumptions.
6. Location: city/county/zip	• **Redwood Falls/Redwood County/56283** • **Wabasso/Redwood County/56293** • **Redwood Falls/Redwood County/56283** • **Annandale/Wright County/55302** • **Elbow Lake/Grant County/56531** • **St Paul/Ramsey County/55106** • **Hastings/Dakota County/55033** • **Bloomington/Hennepin County/55420** • **Maplewood/Ramsey County/55113** • **Inver Grove Heights/Dakota County/55076** • **St Paul/Ramsey County/55104** • **Minneapolis/Hennepin County/55408** • **Lake City/Wabasha County/55041**	Metric 2 – Exposure: describe or attach separately. List assumptions. (Will be used to relate to health data from MDH.)
7. Percent of installs at businesses located in RCAPs.	**23-30%**	Metric 2 – Exposure: describe or attach separately. List assumptions.

Refer to RCAP map.		
8. Total project cost	**<u>State Portion</u>** **1 year: $501,615** **2 year: $501,615** **10 year: $501,615** **<u>Total Project</u>** **1 year: $849,400** **2 year: $849,400** **10 year: $849,400**	State Portion reflects grant funding awarded, Total Project reflects grant portion and private match for project.
9. Economic benefits	**Too early to calculate**	Metric 3 – Economics: describe or attach separately. List assumptions.
10. Education/outreach activities and participation (workshops, newspaper articles, etc.)	• **Postcard- 12,000 businesses** • **Small Business Enterprise- 2,400** • **VOC email list- 207** • **AirMail- 1,232** • **Facebook clicks- 1068** • **Flyer handouts- 300** • ***African News Journal* newspaper article- 10,000 subscribers** • ***Minnesota Spokesman-Recorder*: 3 articles and 3 ads - 40,000** • **KFAI radio advertisements in 5 different languages- 20,000** • **KQRS radio ad- 194,300** • **Radio Rey radio ad- 20,000** • **6 different associations- 3,000** • **MPCA website- 1,244** • **5 metro Counties- 750** • **10 local Chambers of Commerce- 25,000**	Metric 4 – Education: # attendees, # contacts, # associations, etc.; describe or attach separately. List assumptions.
11. Co-Benefits/Other	**All 6.68 tons of VOC will directly reduce exposures in small businesses. This benefit is specific to area source as they are stationary and not moving around like mobile sources.**	Describe calculations or attach separately. List assumptions.

*High priority metrics

Budget

Project Cost	$501,615	Attach full budget separately
Available Funding	$501,615	2014 Legislature
In-Kind Resources		
Notes		

Approval

Approved by Partners	(Date)

Reviewed by CAM	(Date)

Updated 2/5/15 AS

Clean Air Minnesota Project Summary:
July 2013 – June 2015

Project Title	Area Source VOC – Small Business Outreach	
Recommendation	Recommendation #1 – Education and Outreach to Reduce VOC Emissions from Small to Mid-Sized Businesses	
Category	Area Source Recommended Actions	
Prepared By	Bjorn Olson	(612) 612-3344 x 108 bolson@environmental-initiative.org
Date	4/14/15	

Statement of Need

Ground-level ozone is formed when NOx and volatile organic compounds (VOCs) are together in the presence of heat and sunlight. Though VOC emissions from individual area sources are relatively small, collectively their emissions can be of concern, particularly where large numbers of sources are located in heavily populated areas. Outreach is needed to expand and support VOC-reduction activities of small and medium-sized businesses.

Background

VOC-reduction efforts have been ongoing throughout the metro area. The Minnesota Technical Assistance Program has ongoing programs offering interns and site assessments for businesses looking to reduce waste, emissions, and energy and water consumption, among other things. The City of Minneapolis offers a Green Business Grant to businesses looking to reduce air emissions. The grants offer a 1/3 match up to $20,000 for auto body shops and $45,000 for innovative emission reduction projects. However, due to the limited geographic scope of the Minneapolis grants and the vast array of small to medium-sized businesses in the metro, additional efforts for outreach, education, and emission reductions are needed.

Objective

This project will accomplish increasing outreach, awareness, and education to metro businesses about VOC emissions, reduction techniques and technologies, and the multiple benefits and opportunities to reduce air pollutants. The role of Environmental Initiative will be to augment the City of Minneapolis resources with staff time and outreach if supplemental financial resources are available. This project will follow the directive of the Minneapolis program that focuses on reducing VOCs, PM, or other significant Hazardous Air Pollutants. The project will be fiscally sustained through annual budgetary approval of the City of Minneapolis, additional fundraising by Environmental Initiative, and potential additional funds through the MPCA Small Business Environmental Assistance Grant Program. Specific focus will include the auto body sector and potentially the printing sector.

Deliverables

Annual reports will assess yearly efforts, accomplishments, and recommendations moving forward for Environmental Initiative. Metrics will include number of businesses reached, emission reduction projects completed, air emissions reduced through projects, private and public fiscal support leveraged for projects, cost-effectiveness of emission reduction, and demonstrations/trainings hosted.

Methodology

Outreach will be conducted through compiling City of Minneapolis data on current painting booths and auto body shops in use. Contacting trade associations such as the Association of Automotive Service Providers (AASP) and the Printing Industry of Minnesota (PIM) will be crucial in identifying relevant businesses, additional contacts, and possible innovators that would be willing to participate in the program. Calls and meetings will be required with individual businesses to explain the context of the program and eligible projects for funding. Further facilitation will be needed between applicants and City/State application processes, equipment vendors, and others involved in the process. Follow-up promotion of the program and project successes will also be required.

Target Audience

Sector emphasis will be placed on the auto body and printing industries. Other potential areas of interest will be metal stamping/finishing, semiconductor manufacturing, foundries, and hydraulic/lubricant-intense industries. Current geographic location is limited to the boundaries of Minneapolis, but focus will be expanded with additional private funding or public funding involving an expanded scope. Environmental Initiative currently has funds to potentially supplement the City of Minneapolis' resources for 3-5 projects in 2015.

Environmental Justice

Environmental justice is an important component of this program. Pollution-emitting businesses are often located in disadvantaged neighborhoods. The City of Minneapolis' map of Green Business Program projects overlaying Met Council's Racially Concentrated Areas of Poverty (attached) clearly shows the correlation and the inherent environmental justice component of this program.

Action Plan

Task/Step	Start/End Dates	Partner(s) Responsible	Description of Activity
1. Assist with 2014 City of Minneapolis Grant solicitation	3/14 – 6/14	City of Minneapolis, Environmental Initiative	Outreach to solicit applications to fulfill the City's allocated budget for the Green Business Grant Program
2	6/14 – 4/15	City of Minneapolis, Environmental Initiative	Outreach and awareness about the City's Green Business Grant Program. Further exploration of other VOC sectors.
3	10/14 – 4/15	City of Minneapolis, Environmental Initiative	Outreach to solicit applications to fulfill the City's allocated budget for the Green Business Grant Program
4			

Project Partners

Organization	Key Contact	Phone and Email
City of Minneapolis	Patrick Hanlon	612-673-2319 Patrick.Hanlon@minneapolismn.gov
University of Minnesota Technical Assistance Program (MnTAP)	Laura Babcock	612-624-4678 lbabcock@umn.edu
Minnesota Pollution Control Agency – Small Business Environmental Assistance Program	Eric David	651-757-2218 eric.david@state.mn.us

Project Manager

Bill Droessler, Environmental Initiative

Role of Env. Initiative

Planning, coordinating, fundraising, implementing

Drivers

Drivers for business engagement include a 1/3 grant match up to $20,000 from Minneapolis, decreasing VOC/ozone exposure for workers and surrounding community, potential decrease in pollution permitting fees, potential decrease in hazardous waste disposal, and avoiding potential EPA/MPCA regulation and adopting new technology.

External Factors

External factors that may impact projects are available City and State grant resources as well as private resources to fund Environmental Initiative's contributions. Another external factor will be the EPA Ozone standard set in October. If Minnesota is found in non-attainment, compliance may become regulation with focus on specific sectors and high-emitters. This would significantly affect outreach, education, and available resources to provide to businesses (if any).

Communications

Partners will share information via reporting to the Work Group and collaborating with the CAM Communications Team. Efforts have already included a press event/demonstration at Dunwoody Institute of Technology and articles submitted to the Association of Automotive Service providers and Fender Bender newsletters.

Project Outcomes (Metrics): July 1, 2013 – June 30, 2015

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. List assumptions made for each emission calculation and where they came from, (reports, other groups using them, etc.) See Attachment C of EPA's Ozone Advance guidance: http://www.epa.gov/ozoneadvance/pdfs/2012404guidance.pdf (some links are no longer active). For questions, contact Brian Timerson, MPCA: 651-757-2785 or Brian.Timerson@state.mn.us.

Metric	Data	Notes
1. Reduced emissions: VOC*	2-year: 0 lbs 10-year: 0 lbs	Environmental Initiative had no programmatic or financial contributions to the projects at the time. All reductions will be claimed by the City of Minneapolis or MPCA's Small Business Environmental Assistance Program.
2. Reduced emissions: PM 2.5*	2-year: 0 lbs 10-year: 0 lbs	Environmental Initiative had no programmatic or financial contributions to the projects at the time. All reductions will be claimed by the City of Minneapolis or MPCA's Small Business Environmental Assistance Program.
3. Cost per pound of pollutant reduced*	2-year: N/A 10-year: N/A	Environmental Initiative had no programmatic or financial contributions to the projects at the time. All reductions will be claimed by the City of Minneapolis or MPCA's Small Business Environmental Assistance Program.
4. Number and type of installs, change-outs, etc. (e.g. # of coating applicators with improved efficiency and estimate of efficiency improvement)	**0**	Environmental Initiative had no programmatic or financial contributions to the projects at the time. All reductions will be claimed by the City of Minneapolis or MPCA's Small Business Environmental Assistance Program.
5. Usage (Reduced gallons of cleaning solvent used, reduced VOC content of cleaning solvent and coatings, etc.)	**0**	Environmental Initiative had no programmatic or financial contributions to the projects at the time. All reductions will be claimed by the City of Minneapolis or MPCA's Small Business Environmental Assistance Program.
6. Location: city/county/zip	**N/A**	Environmental Initiative had no programmatic or financial contributions to the projects at the time. All reductions will be claimed by the City of Minneapolis or MPCA's Small Business Environmental Assistance Program.
7. Percent of installs at businesses located in RCAPs. Refer to RCAP map.	**N/A**	Environmental Initiative had no programmatic or financial contributions to the projects at the time. All reductions will be claimed by the City of Minneapolis or MPCA's Small Business Environmental Assistance Program.
8. Total project cost	2-year: $0.00	Environmental Initiative had no programmatic

	10-year: $0.00	or financial contributions to the projects at the time. All reductions will be claimed by the City of Minneapolis or MPCA's Small Business Environmental Assistance Program.
9. Economic benefits	**N/A**	Environmental Initiative had no programmatic or financial contributions to the projects at the time. All reductions will be claimed by the City of Minneapolis or MPCA's Small Business Environmental Assistance Program.
10. Education/outreach activities and participation (workshops, newspaper articles, etc.)	**39 visits to 25 auto body shops** **20 attendees at demonstration/press event** **11 contacts with high-VOC emitters across various business sectors** **Articles submitted to Association of Automotive Service Providers (AASP) and Fender Bender**	Metric 4 – Education: # attendees, # contacts, # associations, etc.; describe or attach separately. List assumptions. The focus of the first year (2014) of grants was to the auto body industry. The focus of the second year (2015) was expanded to larger emitters across various business sectors. Large emitters were qualified by emitting more than 1 ton of VOCs per year.
11. Co-Benefits/Other		Describe calculations or attach separately. List assumptions.

*High priority metrics

Budget

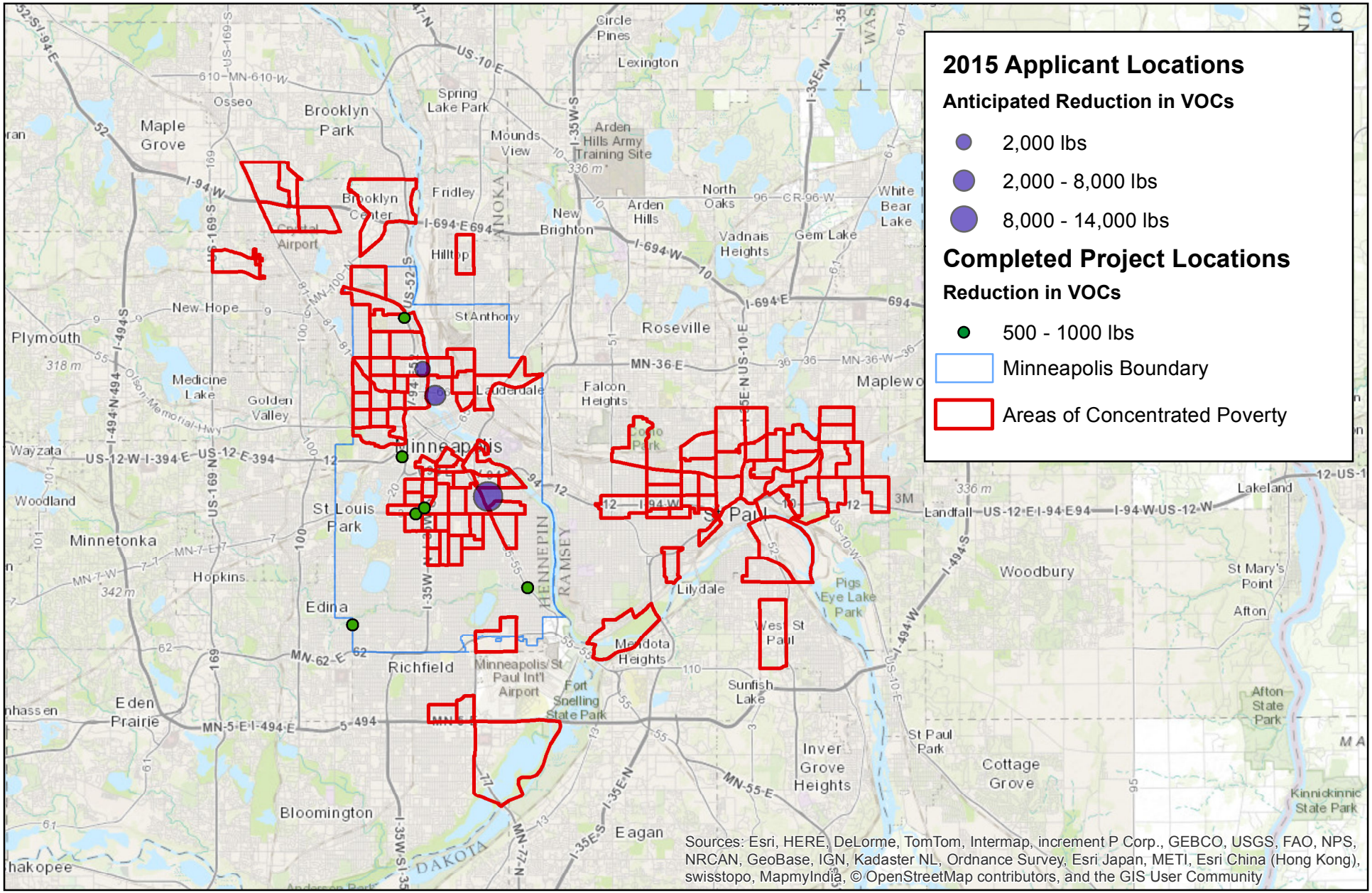
Project Cost	$ 0.00	Attach full budget separately
Available Funding	$ 0.00	(List sources/partners)
In-Kind Resources		(List sources/partners)
Notes		

Approval

Approved by Partners	(Date)
Reviewed by CAM	(Date)

Updated 2/5/15 AS

Minneapolis Green Business Projects and Areas of Concentrated Poverty



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	Updated 4/29/15

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

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 minority population groups, and are often found in neighborhoods of color. Refinishing shops can be found in 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 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 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	Matt Domski	612-624- 5119 / domsk004@umn.edu
MPCA	Eric David	651-757-2218 / eric.david@state.mn.us
City of Minneapolis	Patrick Hanlon	612-673-2319 / patrick.hanlon@minneapolismn.gov
PPG	Chuck Hayes	chayes@ppg.com
Lake Street Council	Joyce Wisdom	612-822-0232 / jwisdom@lakestreetcouncil.org
ProPaint	Jim Lepley	jimlepley@msn.com
Keystone LKQ	Jim Dow	jdow@lkqcorp.com
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
Project Manager	MnTAP / Mick Jost	612-624-4694 / jostx003@umn.edu

Role of Env. Initiative	Some outreach to shops in Minneapolis

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 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 Outcomes (Metrics): July 1, 2013 – June 30, 2015

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. List assumptions made for each emission calculation and where they came from, (reports, other groups using them, etc.) See Attachment C of EPA's Ozone Advance guidance: http://www.epa.gov/ozoneadvance/pdfs/2012404guidance.pdf (some links are no longer active). For questions, contact Brian Timerson, MPCA: 651-757-2785 or Brian.Timerson@state.mn.us.

Metric	Data	Notes
1. Reduced emissions: VOC*	**Daily: 10.9lb** **2 year: 2.7 tons** **10 year: 6.6 tons**	Paint use data from 2 EA grant applicants: 300lb/y of paint sprayed per painter; Use IWIR 30% transfer efficiency improvement factor for their training
2. Reduced emissions: PM 2.5*		
3. Cost per pound of pollutant reduced*	**$1.50-2.00/lb transfer efficiency training** **$20-400/lb Water-based paint conversion**	$3000 IWRC event charge; 24-30h of admin time @$100/hr to organize training; 6h/painter paid attendance time @$50/h; 1 year of savings WB conversion from EA grant
4. Number and type of installs, change-outs, etc. (e.g. # of coating applicators with improved efficiency and estimate of efficiency improvement)	**31 painters full trained; 30%** **13 partly trained; 15%**	IWRC reduction factors for their training.
5. Usage (Reduced gallons of cleaning solvent used, reduced VOC content of cleaning solvent and coatings, etc.)	**5500lb of paint not sprayed due to less wasteful technique**	Metric 1 – Emissions: describe or attach separately. List assumptions.
6. Location: city/county/zip	**Annandale, 55302,** **Austin, 55912,** **Brownsdale, 55918,** **Cold Spring, 56320,** **Ceder, 55011,** **Eden Prairie, 55347** **Elbow Lake, 56531,** **Hastings, 55033,** **Hermantown, 55812,** **Lakeland, 55043,** **Lake City, 55041,** **Minneapolis, 55408 (2)**	Metric 2 – Exposure: describe or attach separately. List assumptions. (Will be used to relate to health data from MDH.)

	Minneapolis, 55405, **Minneapolis, 55413** **Monticello, 55363** **Ogilvie, 56358** **Rosemount, 55068** **Roseville, 55113,** **Sauk Rapids, 56379,** **St Cloud, 56303, (2)** **St Cloud, 56301, (2)** **St Paul, 55110,** **St Paul, 55075,** **St Paul, 55113,** **St Paul, 55114,** **St Paul, 55130, (2)** **St Paul, 55106** **St Paul, 55107,** **Willernie, 55090,** **Winona, 55987,** **White Bear Lake, 55110**	
7. Percent of installs at businesses located in RCAPs. Refer to RCAP map.	**23%**	Metric 2 – Exposure: describe or attach separately. List assumptions.
8. Total project cost	**2 year: $31,000** **10 year: $31,000**	Virtual painter training: $3000 IWRC event charge; 24-30h of admin time @$100/hr to organize training; 6h/painter paid attendance time @$50/h Waterbased paint events: 24h of admin time @$100/hr to organize training; 2h/painter paid attendance time @$50/h
9. Economic benefits	**$86,000**	One year paint savings by trained painters
10. Education/outreach activities and participation (workshops, newspaper articles, etc.)	**Survey to 55** **webpage clicks- 24** **8 articles in the Autobody journal;** **55 WB event invitations** **9 minority painters visited** **Sector factsheet published** **EA grant support: reduction analysis, application aid**	Metric 4 – Education: # attendees, # contacts, # associations, etc.; describe or attach separately. List assumptions.
11. Co-Benefits/Other	**Reduced worker and community exposure** **Ozone impacts are expected to be higher than VOC impacts base on typical photochemical reactivity.** **2 technical colleges investigating adding virtual painter training to their curriculum** **Identified low VOC paint and low VOC prep products as a future opportunity to explore**	Describe calculations or attach separately. List assumptions.

Budget*

Project Cost	$37,300	*Attach full budget separately
Available Funding	$ 37,300	MPCA CAM12k; MnTAP 25.3k
In-Kind Resources	Additional MnTAP in-kind time.	
Notes		

Approval

Approved by Partners	(Date)	
Reviewed by CAM	(Date)	

Environmental INITIATIVE

Powerful Partnerships, Effective Solutions

Clean Air Minnesota Project Summary

Project Title	VOC Outreach #1a	
Category	**Area Source VOC**	Degreasing, Industrial maintenance & auto repair
Prepared By	Pamperin, Jost, DeWahl	612-624-1826 janep2@umn.edu
Date	14 Feb 2014	Updated 4/29/15

Statement of Need

We have a group of NAICS codes identified by the EPA to perform area source industrial degreasing. According to EPA emission factors, this group accounts for 7.7 million lbs VOC emissions which is close to 1% of all VOC emissions and about 18% of all industrial/commercial VOC releases. The estimated auto repair portion of this is estimated to be just under 1 million lb/yr.

Background

This emission factor is based on employment numbers alone, and was developed in the 1980's, so its current accuracy is unknown.

Many industries that do not utilize degreasing as part of their primary production processes may still have a need for degreasing in the maintenance of their equipment or fabrication of tools and production aids. Although many of these maintenance degreasing users are small, they can have a significant combined impact, because they are so widespread across many industries throughout the state.

Auto maintenance and repair emissions directly affect workers and work place air quality environment. Small shops can be located near residential areas increasing exposure to local communities. 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

Understand the current state of area source degreasing in MN (sources, chemicals, and volumes), and compare release volumes for degreasing sectors with the emission factor model where possible.

Identify best practices for small scale industrial degreasing, including work practices and greener alternative chemicals.

Provide samples and support to a group of pilot companies to encourage the adoption of best practices and greener chemicals.

Deliverables

1) Identify aerosol products formulated with low/no VOC cleaners and propellants. Also promote the use of rechargeable aerosol containers that do not use VOC propellants to aerosolize product.

2) Identify 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.

5)Understand the barriers and points of resistance to adopting lower VOC degreasing chemicals and operating practices.

Methodology

Survey 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, chemical distributors, industry associations (such as Association for Facilities Engineers) and existing business connections to understand current situation and identify best practices, chemical alternatives, and participants for pilot projects.
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.
Track implementation

Target Audience

Small businesses using industrial degreasing in Minnesota. Metal shops, maintenance departments in manufacturing facilities, auto repair shops

Environmental Justice

Some Industrial auto repair facilities are located in or near lower income neighborhoods and some are owned or staffed by minorities.

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	4/15/14-8/1/14		Survey AFE and repair shops to determine current state of degreasing
3	5/1/14-11/1/14		Recruit partners for pilot projects
4	5/15/14-3/1/15		Run pilot projects
5	9/1/14-4/1/15		Prepare best practice/ alternative chemicals information and distribute along with results of pilot projects
6	4/1/15-5/1/15		Conduct final survey to determine effectiveness of outreach information from step 4. (due to poor response of the initial survey this set canceled)
7	5/1/15-6/1/15		Calculate/estimate overall results.
8	9/1/14-9/30/15		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**
Accociation for Facilities Engineers	Al Meinke	
ZEP products	Barry Thomas	
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

Project Manager	MnTAP – Jane Pamperin & Mick Jost

Role of Env. Initiative	Outreach to auto repair shops in Minneapolis

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.

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 is a common perception that environmentally preferable cleaners are more expensive, take longer to work and are less effective cleaners.

Communications

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

Project Outcomes (Metrics): July 1, 2013 – June 30, 2015

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. List assumptions made for each emission calculation and where they came from, (reports, other groups using them, etc.) See Attachment C of EPA's Ozone Advance guidance: http://www.epa.gov/ozoneadvance/pdfs/2012404guidance.pdf (some links are no longer active). For questions, contact Brian Timerson, MPCA: 651-757-2785 or Brian.Timerson@state.mn.us.

Metric	Data	Notes
1. Reduced emissions: VOC*	**Daily: 7.7lb** **2 year: 1.9 tons** **10 year: 9.78 tons** **Ozone reductions are expected to be twice the VOC impacts based on photochemical reactivity changes**	Implementation is at 4 completed pilot of 11 begun (target of 20 pilots total). Pilots lay the foundation for broader outreach
2. Reduced emissions: PM 2.5*		
3. Cost per pound of pollutant reduced*	**$2.70-26.00/lb reformulate** **$4.60/lb aqueous parts washer conversion**	Based on one year of emissions reduction; assumption based on experience that alternatives cost the same as originals; takes 8 hours of staff time @ $50/h to verify the 1st alternative is effective and 40 hours if additional alternatives require evaluation Aqueous washer from EA grant
4. Number and type of installs, change-outs, etc. (e.g. # of coating applicators with improved efficiency and estimate of efficiency improvement)	**12 alternative degreasers implemented**	Implementation is at 4 completed pilot of 11 begun
5. Usage (Reduced gallons of cleaning solvent used, reduced VOC content of cleaning solvent and coatings, etc.)	**1600 lb/y of 6 solvent cleaners was converted to 3 aqueous cleaners; 100 lb of 2 solvent cleaners was converted to 2 less photochemically reactive cleaners; 50gpy of toluene paint solvent was converted to acetone**	Implementation is at 4 completed pilot of 11 begun
6. Location: city/county/zip	**Minneapolis, 55427,** **Rochester, 55906,**	Metric 2 – Exposure: describe or attach separately. List assumptions. (Will be used to relate to health data from MDH.)

	Lakeville, 55044, Cedar, 55011, Maplewood, 55109, Minneapolis, 55414, Lake City, 55041, St Louis Park, 55416, Anoka, 55303 Minneapolis, 55407 Forest Lake, 55025, Fridley, 55432, Stillwater, 55082, Monticello, 55362	
7. Percent of installs at businesses located in RCAPs. Refer to RCAP map.	**7%**	Metric 2 – Exposure: describe or attach separately. List assumptions.
8. Total project cost	**2 year: $41,500 10 year: $41,500**	State Portion reflects grant funding awarded, Total Project reflects grant portion and private match for project.
9. Economic benefits	**Alt product costs generally = original**	Metric 3 – Economics: describe or attach separately. List assumptions.
10. Education/outreach activities and participation (workshops, newspaper articles, etc.)	**calls to 24 facilities 8 articles in the Auto repair journal; 8 in Northern Autoomotive Recycler survey - 2 replys Contacted 22 facilites, identified 2 as success stories; piloting at 11 facilities, with 12 product changes implemented. Identified 5 minority owned suppliers of cleaners; 2 supply the degreasing sector;.**	Metric 4 – Education: # attendees, # contacts, # associations, etc.; describe or attach separately. List assumptions.
11. Co-Benefits/Other	Reduced VOC and HAP exposure; 500 lb solid waste reduction **Sector factsheet published** Relevant findings: chemical vendors indicated degreasing sales have gone down by 30-50% over the last 15 y. County HW Programs said the same and added that a lot of parts washer cleaning has been converted to aerosols. Pilot facilities are using substantially less than 30lb/employee-yr of VOC degreasers. The result is that the emission factor used by the EPA for emission estimates is likely high	Describe calculations or attach separately. List assumptions.

Budget*			
	Project Cost	$167,000	*Attach full budget separately
	Available Funding	$167,000	CAM-MPCA 79k; EPA degreasing 28k; MnTAP88k
	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 Summary

Project Title	**VOC Reduction Small to Mid-Size Businesses**	
Category	**Area Source VOC**	Fiberglas Reinforce Plastics Manufacture
Prepared By	DeWahl; Paulson	612-624-4645 dewah001@umn.edu
Date	4/30/15	

Statement of Need

Current VOC emissions from the manufacture of Fiber Reinforced Plastics (FRP) products are estimated at 918,000 lb/yr and a large part of these emissions is the HAP styrene.

Background

Objective

Evaluate what an E3 / lean assistance approach could do to reduce emissions

Deliverables

E3 assessments at 4 facilities; best practices training event; research to evaluate alternative (low styrene) resins for small shop production use

Methodology

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Target Audience

Small fiberglass shops in MN.

Environmental Justice

FRP shops tend to be in smaller communities where they are close to residential populations, some of which are poor

Action Plan

Task/Step	Start/End Dates	Partner(s) Responsible	Description of Activity
1	8/13- 9/15	MnTAP	Program development, newsletter distribution
2	11/14	MnTAP	Best practices training event
3	10/14-6/15	MnTAP	E3 assessments: energy efficiency (E2), pollution prevention(P2), and lean
4	4/14-7/15	U Mass-Lowell	Alternative resin development – match glass to resin

Project Partners

Organization	Key Contact	Phone and Email
(Partner 2)		

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 Outcomes (Metrics): July 1, 2013 – June 30, 2015

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. List assumptions made for each emission calculation and where they came from, (reports, other groups using them, etc.) See Attachment C of EPA's Ozone Advance guidance: http://www.epa.gov/ozoneadvance/pdfs/2012404guidance.pdf (some links are no longer active). For questions, contact Brian Timerson, MPCA: 651-757-2785 or Brian.Timerson@state.mn.us.

Metric	Data	Notes
1. Reduced emissions: VOC*	**Daily: 0lb** **2 year: 0 tons** **10 year: 0 tons**	facilities are 70%, 25%, 10% complete with assessments but none are at the implementation stage yet.
2. Reduced emissions: PM 2.5*		Expect PM reduction from coming energy conservation measures
3. Cost per pound of pollutant reduced*	**1 year: $/lb**	
4. Number and type of installs, change-outs, etc. (e.g. # of coating applicators with improved efficiency and estimate of efficiency improvement)	**0**	All companies engaged in the project are already using up to date spray equipment, reducing opportunities for additional VOC reduction.
5. Usage (Reduced gallons of cleaning solvent used, reduced VOC content of cleaning solvent and coatings, etc.)	**0**	Metric 1 – Emissions: describe or attach separately. List assumptions.
6. Location: city/county/zip	**Menahga, 56464** **Little Falls, 56345** **Mounds View, 55112,** **Wyoming, 55092,** **Detroit Lakes , 55750,** **St. Cloud, 56303,**	Metric 2 – Exposure: describe or attach separately. List assumptions. (Will be used to relate to health data from MDH.)

	Lino Lakes, 55014, **Grove City, 56243,** **Le Center, 56057,** **Melrose, 56352,** **St. Paul, 55101,** **Lino Lakes, 55014** **Minneapolis, 55403**	
7. Percent of installs at businesses located in RCAPs. Refer to RCAP map.	**8%**	Metric 2 – Exposure: describe or attach separately. List assumptions.
8. Total project cost	**2 year: $170,000** **10 year: $170,000**	250 hrs of industry time (per site) @ $75/h; +$15,000 lean provider per site
9. Economic benefits	**$0**	No implementation yet
10. Education/outreach activities and participation (workshops, newspaper articles, etc.)	**2 scoping visits; 2 P2/E2 assessments; 1 lean project so far** **Best Practices training 30 attend from 101 invitations**	Metric 4 – Education: # attendees, # contacts, # associations, etc.; describe or attach separately. List assumptions.
11. Co-Benefits/Other	Relevant finding: FRP Companies currently using up to date spray equipment. This was an expected opportunity. Other opportunities: metering systems and keeping vessels closed are still being studied and/or quantified.	Describe calculations or attach separately. List assumptions.

Budget*

Project Cost	$195,000	*Attach full budget separately
Available Funding	$230,000	E3 $150k; styrene $80k
In-Kind Resources		(List sources/partners)
Notes		Funding for MnTAP staff (0.2 FTE).

Approval

Approved by Partners	(Date)
Reviewed by CAM	(Date)

Clean Air Minnesota Project Summary: July 2013 – June 2015

Project Title	MPCA CLEAN DIESEL	
Recommendation	Recommendation # 10A MPCA Clean Diesel -- Emissions Impacts from Diesel Engines	
Category	High Priority / Mobile Sources	
Prepared By	Mark Sulzbach	651-757-2770 Mark.Sulzbach@state.mn.us
Date	April 29, 2015	

Statement of Need

The need is still great – based on MPCA emissions inventory/health risk of Diesel PM2.5 inhalation Cancer Risk and respiratory health risks. MPCA studies show: **Minnesota's top three statewide *vehicle* emission sectors for PM2.5 are: Diesel on-road vehicles, waste disposal and recycling, and non-road diesel. On-road and non-road diesel total 17%. These rates can be higher in urban areas.** Example: In Ramsey County on-road and off-road diesel totals 21%.

Diesel emissions from diesel engines made prior to 2007, have a disproportionately high level of fine particulate matter (PM2.5) -- especially when compared to gasoline vehicles. New clean diesel engines are amazing low in PM2.5 – even when compared to gasoline vehicles. In fact, some diesels have lower emissions according to a recent U of M study that looked at GDI (gasoline direct injection) car engines.

Background

MPCA Clean Diesel efforts go back to 2005 when an air quality SIP ended up funding 25 DOC retrofits in Washington County School District and a similar number in the Rochester area. MPCA worked with EI and was a founding member of Project Green Fleet. MPCA continued to give state ($2.4 million) and Federal (approx. $256,000) to continue the work of retrofitting school buses primarily with DOC exhaust systems – implemented by EI.

Meanwhile MPCA launched its own APU loan program that resulted in 130 APU loans that used federal DERA funding.
In 2009, MPCA utilized DERA Stimulus funds to improve 290 engines across the state. Likewise, it used CMAQ funds to retrofit 425 heavy duty public trucks in the metro area.

Since 2011, MPCA has used DERA funds for 65 diesel projects using a variety of clean diesel technologies while APU loans and school bus efforts have wound down.

Objective

This project was launched to reduce diesel PM2.5 emissions. MPCA has directly *funded* 26.73 tons of PM2.5 reductions – its primary target. Deducting the school buses that MPCA funded but EI implemented, MPCA estimates its program has reduced 15.1 tons of PM2.5. We are trying to reach another 15 tons of PM2.5 – essentially doubling our efforts from 2005 to 2013.

Co-benefits of clean diesel work including significant reductions in NOx, CO2 and CO. Smaller reductions are found in VOCs (as HCs) and CO2.

Sustaining clean diesel efforts far into the future is uncertain. But the next two years seem likely to have stable support from MPCA funds and should still have federal funds through DERA.

Deliverables

Deliverables include actual measurable emission reductions, along with quarterly and annual reports to EPA about those emissions.

Methodology

The primary methods include competitive RFPs for grant awards.
Primary emissions estimates use EPA's Diesel Emission Quantifier (DEQ) and some follow-up project reviews to verify unlisted co-benefits (for example improved fuel economy) that the DEQ may not acknowledge.

Target Audience

Our primary target audience is owners of 2006 and older diesel engines over 175 horsepower (HP). Our focus area is the Twin Cities 7-county metro area. Those that operate in the twin cities 7-county metro area get extra points during the application scoring process. All MN is eligible and points are also given for percent of fuel used in MN.
We also believe that older off-road construction equipment holds the most cost effective emission reduction promise. Another niche on-road sector is garbage trucks, which get only 4-5 MPG and operate in metro areas.

Environmental Justice

MPCA RFPs for clean diesel grants give applicants extra scoring points for the percentage of fuel used in the 7-county metro area. Remembering of course, the difficulty in trying to pinpoint or sustain location of operations with mobile source projects.

Action Plan

Task/Step	Start/End Dates	Partner(s) Responsible	Description of Activity
1	10-1-12 – 9-30-13	MPCA/ EPA	2012/13 DERA Grant
2	10-1-13 – 9-30-14	MPCA/ EPA	2013/14 DERA Grant
3	10-1-14 – 9-30-15	MPCA / EPA	2014/15 DERA Grant projects begin in late May and end by late August
4	10-1-15 – 9-30-16	MPCA/EPA	2015/16 DERA Grant (applied for May 2015)

Project Partners

Organization	Key Contact	Phone and Email
MPCA	Mark Sulzbach	651-757-2770 Mark.Sulzbach@state.mn.us
EPA	Tony Maietta Lisa Holscher	312-353-8777 maietta.anthony@epa.gov 312-886-6818 holscher.lisa@epa.gov
EI	EI: Bill Droessler Bjorn Olson	EI = 612-334-3388 bdroessler@environmental-initiative.org bolson@environmental-initiative.org

Project Manager

MPCA Mark Sulzbach

Role of Env. Initiative

Cooperative

Drivers

Federal DERA funding for diesel engine pollution reductions, probable and potential state funding including a portion of the 690 funding. Drivers for diesel owners (target audience) include funding that helps them upgrade their fleet, fuel savings and improved performance.

External Factors

Lack of funding, due in part because MN is in attainment for criteria air pollutants…therefore MN businesses do not have to make any changes. It's all voluntary.

Communications

MPCA will give Clean Diesel updates at CAM meetings

Project Outcomes (Metrics): July 1, 2013 – June 30, 2015

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. List assumptions made for each emission calculation and where they came from, (reports, other groups using them, etc.) See Attachment C of EPA's Ozone Advance guidance: http://www.epa.gov/ozoneadvance/pdfs/2012404guidance.pdf (some links are no longer active). For questions, contact Brian Timerson, MPCA: 651-757-2785 or Brian.Timerson@state.mn.us.

Metric	Data	Notes
1. Reduced emissions: VOC (this two year period)*	**2 year: 1.12744 tons** **10 year: 7.89208 tons**	Metric 1 – Emissions: Assumptions: HC as a subset of VOCs using EPA Diesel Emissions Quantifier (DEQ). Estimates for this summer and next summer based on previous two years with similar level of funding. Year 5 based on 3 times the funding in anticipation of $300k from ***690*** fund. I then doubled the 5-year total estimate for the 10.years estimate. We have no idea what type of grant projects or technologies will apply.
2. Reduced emissions: PM 2.5 (this two year period)*	**2 year: 1.0355 tons** **10 year: 7.2485 tons**	Metric 1 – Emissions: assumptions as mentioned above.
3. Cost per pound of pollutant reduced (this two year period)*	**Grant Costs PM + VOC** **2 year: $70.51/lb** **10 year: $70.51/lb** **Total Project Costs** **2 year: $294.57 /lb** **10 year: $294.57 /lb**	Metric 3 – Emissions: costs for each project? I added VOC and PM amounts together.(It didn't request I do one for each..?) **Grant Costs** - is only the amount of federal and state grant funding expended awarded for the projects. **Total Project** is the full project hard costs for both grant award and private match. In total, grantees paid approximately 50% to 75+% of each project's total cost, depending on year, and technology. Calculations do not take into account costs such soft costs as staff time to administer, outreach, partnerships, technical assistance, etc.
4. Number of businesses or non-profit entities granted DERA funds during the last two complete grant rounds.	**7 entities/grant contracts that represent 17 engines improved.**	Metric 1 Emissions: describe or attach separately. List assumptions.
6. Number and type of installs (clean vs. dirty emissions)	**1 - off-road repower** **7 - DPF retrofits** **9 - On-road**	Metric 1 Emissions: describe or attach separately. List assumptions.

	replacements	
7. Industry forecasts (new vs. conventional)		Metric 1 Emissions: describe or attach separately. List assumptions.
8. Location (zip codes)	**These are mobile source projects so each project operates in multiple zip codes.**	Metric 2 – Exposure: describe or attach separately. List assumptions. (Will be used to relate to health data from MDH.)
9. Percent of areas adopting which include RCAPs. Refer to RCAP map. If not in the Metro Area, qualitative description of impact on vulnerable populations.	**These are mobile source projects so each project operates in multiple zip codes**	Metric 2 – Exposure: describe or attach separately. List assumptions.
12. Total project cost	$1,274,263	Metric 3 – Economics: describe or attach separately; insert budget total from below.
13. Economic benefits		Metric 3 – Economics: describe or attach separately. List assumptions.
14. Education/outreach activities and participation	**Outreach:** **News release to news media, posted on Web page, and sent to direct email lists of 1200.** **Follow-up calls and emails to key communicators (Assoc. of Gen Contractors, MN Trucker's Assoc. etc.) and key equipment vendors.**	Metric 4 – Education: # attendees, # contacts, # associations, etc.; describe or attach separately. List assumptions.
15. Co-Benefits/Other	**1. These are ground level exposure reductions.** **2. Frequently NOx & CO , and sometimes CO2 are also reduced.**	Calculations rely on EPA's DEQ. Or actual CO2 benefits may be verified with real data 6-months or a year after the project completion.

*High priority metrics

Budget

Project Cost	$1,274,263 2 yrs	
Available Funding	$305,000 2 yrs.	DERA and MPCA match
In-Kind Resources	$969,263	Grantees match
Notes		

Approval

Approved by Partners	(Date)
Reviewed by CAM	(Date)

ATTACHMENT: Sent with this document.

Clean Air Minnesota Project Summary: July 2013 – June 2015

Project Title	Project Green Fleet	
Recommendation	Recommendation #10 – Incentives for Diesel Engine Retrofit/Repower/Rebuild/Replace	
Category	Mobile Diesel Recommended Actions:	
Prepared By	Bjorn Olson	612-334-3388 x. 108 bolson@environmental-initiative.org
Date	4/21/15	

Statement of Need

Diesel equipment emits both $PM_{2.5}$ and NO_x to the surrounding environment. Ground-level ozone is formed when NO_x and volatile organic compounds (VOCs) are together in the presence of heat and sunlight. Though the $PM_{2.5}$ and NO_x emissions from individual diesel sources are relatively small, collectively their emissions can be of concern, particularly where multiple fleets and equipment are located in heavily populated areas such as the Twin Cities. Incentives for cleaner diesel technologies are needed to support and expand Project Green Fleet activities focused on heavy-duty, off-road diesel equipment.

Background

Environmental Initiative has been reducing emissions through retrofitting, replacing, and repowering diesel equipment since 2005. To date, Project Green Fleet has retrofitted over 3,200 school buses and 400 heavy-duty diesel engines throughout the State. This has resulted in eliminating 27 tons of PM, 150 tons of hydrocarbons, and 250 tons of carbon monoxide per year.

Objective

The project will provide voluntary financial incentives for fleet and equipment owners to invest in pollution control or reduction equipment or to replace older equipment with newer, less-polluting technology. $PM_{2.5}$ and NO_x are the primary pollutants reduced. The 2-year objective was to complete retrofits on 89 buses and repower/retrofit 3 heavy-duty off-road diesel engines. If the project extends into the future, the emphasis will be on repowering/retrofitting remaining eligible heavy-duty, off-road construction equipment using private and public resources to incentivize equipment owners.

Deliverables

The deliverable results will be the completion of 89 school bus retrofits and the engine repower/retrofit of 3 heavy-duty, off-road diesel equipment.

Methodology

Information and contacts for various bus fleets throughout the state have been compiled through previous year's work. Outreach was conducted via phone to solicit any interest in the program in 2014. Diesel Oxidation Catalysts (DOCs) and Fuel-Operated Heaters (FOHs) will be offered free of cost and installation to any fleet interested in participation and will eligible buses. Orders will be placed before January 1, 2015.

Information and contacts for the heavy-duty, off-road diesel equipment will come from data gathered in previous years as well as existing contacts with fleet vendors and the Association of General Contractors (AGC). Potential fleet owners will be contacted via telephone to participate in the program. Three repowers/retrofits will be confirmed and processed by Environmental Initiative by July 1, 2015.

Target Audience

Target audiences were fleet/equipment managers of school bus fleets and heavy-duty, off-road diesel equipment. The construction sector was emphasized as well as transportation and maintenance. The

geographic focus was the 7-county metro area.

Environmental Justice

Environmental justice is always a consideration with emission reduction activities. Preference is given to projects that are within the 7-county metro area in order to better serve populations of higher densities as well as populations located within Metropolitan Council's Racially Concentrated Areas of Poverty (RCAP). Two marine engine replacements were located within RCAPs.

Action Plan

Task/Step	Start/End Dates	Partner(s) Responsible	Description of Activity
1	7/1/13 – 12/31/13	Environmental Initiative	Second half of outreach and solicitation for diesel engine retrofits for year 2013. Complete engine replacement for Paulson Rock Products, Mantorville, MN.
2	3/19/14 – 12/31/14	Environmental Initiative	Complete retrofit installation of DOCs or FOHs on 108 eligible buses in Minnesota.
3	1/1/15 – 6/31/15	Environmental Initiative	First half of outreach and solicitation for diesel engine retrofits for year 2015. Complete retrofit/repower for two marine propulsion engines for Upper River Services, St. Paul, MN.
4			

Project Partners

Organization	Key Contact	Phone and Email
Paulson Rock Products	Jim Paulson	507-635-3441 stussy@kmtel.com
Upper River Services	Lee Nelson	612-292-9293 lee@ursi.net

Project Manager

Bill Droessler

Role of Env. Initiative

Outreach, facilitation of installation, communications, fundraising

Drivers

Incentives to participate include reduced idling time and fuel savings for school bus fleets with FOHs and new equipment for DOCs. Reducing pollution exposure for children and drivers is also a motivating factor for participation. Incentives for heavy-duty off-road participation is increased fuel efficiency, increasing the lifespan of the equipment and engine, and having approximately 40% of the project costs paid for by grants. Again, reducing worker exposure and pollution emissions to the surrounding community are program incentives.

External Factors

External factors that may impact projects would include any additional DERA funding available or supplemental public/private financial resources to continue the program in the future. Another external factor will be the EPA Ozone standard set in October. If Minnesota is found in non-attainment, compliance may become regulation with focus on specific sectors and high emitters. This would significantly affect outreach, education, and available resources to provide to fleets.

Communications

Environmental Initiative will share updates and progress with the Work Group as well as project funders. Additional press releases and blogs will accompany project accomplishments. Individual communications pieces will be tailored to major project initiatives including completion of school bus retrofits and heavy-duty retrofit/repower projects. Funding is committed to develop a video communications piece to celebrate efforts and promote continuation of the program.

Project Outcomes (Metrics): July 1, 2013 – June 30, 2015

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. List assumptions made for each emission calculation and where they came from, (reports, other groups using them, etc.) See Attachment C of EPA's Ozone Advance guidance: http://www.epa.gov/ozoneadvance/pdfs/2012404guidance.pdf (some links are no longer active). For questions, contact Brian Timerson, MPCA: 651-757-2785 or Brian.Timerson@state.mn.us.

Metric	Data	Notes
1. Reduced emissions: VOC*	1.70 lbs/day 2-year: 620 lbs 10-year: 3,100 lbs	Calculations based on combined EPA DEQ calculations for diesel retrofits/repowers and school bus retrofits. VOCs were in the form of hydrocarbons emission reductions.
2. Reduced emissions: PM 2.5*	2.31 lbs/day 2-year: 844 lbs 10-year: 4,220 lbs	Calculations based on combined EPA DEQ calculations for diesel retrofits/repowers and school bus retrofits.
3. Cost per pound of pollutant reduced*	$477,101.42 total spent 1,464lbs pollutants reduced **$325.89/lb**	Reductions are averages of combined repowers and school bus emission reductions. Costs include equipment and labor.
3b. Cost per pound of pollutant reduced by technology	**DOC (School Bus)** **2-Year / 10-Year** *PM* $507.74 / $101.55 *VOC* $507.74 / $101.55 **FOH (School Bus)** **2-Year / 10-Year** *PM* $1,611.97 / $322.39 NO_x $38.34 / $7.67 **Engine Replacements** **2-Year / 10-Year** *PM* $413.06 / $82.61 NO_x $7.50 / $1.50 *VOC* $159.17 / $31.83	Calculations based on EPA DEQ calculations for school bus DOC + ULSD retrofits, FOHs, and engine replacement technologies. VOCs were in the form of hydrocarbons emission reductions.
4. Number and type of installs (number of retrofits, repowers, rebuilds, and replacements, including DOCs and APUs).	**60 School Bus DOCs** **48 School Bus FOHs** **2 Marine engine replacements** **1 Rock Crusher engine replacement**	

5. EPA DEQ: actual emissions reductions and health benefits	**School Bus** • $PM_{2.5}$: 2.13 tons • VOCs: 1.44 tons • NO_x: 29.01 tons **Repower 1** • $PM_{2.5}$: 3.959 tons • VOCs: 0 tons • NO_x: 370.25 tons **Repower 2** • $PM_{2.5}$: 2.099 tons • VOCs: 3.171 tons • NO_x: 33.175 tons	*School Bus:* • Avg engine year: 2000 • VMT: 13,000 (EPA default) • Fuel Use: 1,597gal/yr (EPA default) • Idling: 270 hr/yr (EPA default) • Lifespan: 15 yrs (DEQ estimate) *Repower 1* • Engine Year: 1998 • 500 hp • 4,000 operating hrs/yr • 19L displacement • 28 year lifespan (DEQ estimate) *Repower 2* • Engine Year: 1975 (est.) • 450 hp • 1,800 operating hrs/yr • 12.13L displacement • 15.1 year lifespan (DEQ estimate)
6. Industry standards/ tiers	**All school bus equipment is EPA/CARB certified** **Diesel engines upgraded from unregulated to EPA Tier III**	
7. Number of cars off the road (equivalent)	2-year: 7,673 10-year: 38,365	DEQ calculations divided by EPA estimates of 0.11 lbs of $PM_{2.5}$ per car per year.
8. Location: city/county/zip	**School Bus fleets were throughout the Metro and Greater MN** **Repowers were performed in St. Paul, MN and Mantorville, MN**	
9. Percent of installs on equipment used in RCAPs (especially school buses). Refer to RCAP map.	**School Bus: 0%** **Repower: 66%**	No school buses were located within Met Council's RCAP. The marine repowers were located within a RCAP area in South St. Paul.
10. Worker exposure (MAC study?)		
11. Economic benefits to fleet (cost savings)	**School bus fleets received $245,787.42 of free equipment and installation as well as a cumulative fuel savings of 3,400 gal/year.** **Off-road engine replacement fleets received $99,011 of incentive as well as a cumulative fuel savings of 16,500 gal/year.**	Metric 3 – Economics: describe or attach separately; include direct cost and direct staff costs related to the project. List assumptions.
12. Total project cost	2-year: $477,101.42 10-year: $477,101.42	Environmental Initiative's combined expenditures on repowers and school buses.
13. Economic benefits	**$305,800**	EPA DEQ calculations on estimated health benefits.
14. Co-Benefits/Other		Describe calculations or attach separately. List assumptions.

*High priority metrics

Budget

Project Cost	$477,101.42	Attach full budget separately
Available Funding	$344,798.42	Private corporate contributions through Environmental Initiative
In-Kind Resources	$132,303.00	Paulson Rock Products, Upper River Services, Minnesota Power
Notes		

Approval

Approved by Partners	(Date)
Reviewed by CAM	(Date)

Updated 2/5/15 AS

PROJECT	VOC (pounds) Daily	VOC (pounds) 2 year (FY14-FY15)	VOC (pounds) 10 years (projected FY14-FY23)
Wood Smoke Education & Outreach	273	199,056	995,280
B20 Biodiesel Mandate	207	151,250	1,089,000
VOC Grants	36	26,520	132,600
Auto Refinishing	7	5,400	27,000
Degreasing (auto repair)	5	3,800	19,000
Clean Diesel	3	2,255	15,784
Tire Pressure Campaign	1	940	4,700
Project Green Fleets	2	1,240	6,200
Fiberglass Reinforce Plastics	0	0	0
Urban Heat Island EAB Assessment	0	0	0
Gas Can Exchange	0	0	0
Urban Heat Island CEP	0	0	0
Area Source VOC- Small Bus. Outreach	0	0	0
Green Corps Energy Conservation*	0	0	0
Air Aware Web Outreach	11	40	1,460
Outdoor Wood Boiler Model Odrinance			
TOTAL	545	390,501	2,291,024

* = Still waiting for emissions #'s

PM 2.5 (pounds) Daily	PM 2.5 (pounds) 2 year (FY14-FY15)	PM 2.5 (pounds) 10 years (projected FY14-FY23)	NOx (pounds) Daily	NOx (pounds) 2 year (FY14-FY15)
254	185,328	926,640	0	0
159	115,883	833,998	0	0
3	2,260	11,300	0	0
0	0	0	0	0
0	0	0	0	0
3	2,071	14,497	15	11,110
0	2	10	0	0
2	1,404	7,020	90	65,548
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	8	80
421	306,948	1,793,465	113	76,738

NOx (pounds) 10 years (projected FY14-FY23)	Cost (FY14-FY15) Overall	Cost (FY14-FY15) Cost /lb (VOC + PM2.5+NOx)	10 Year Cost (FY14-FY23) Cost /lb (VOC + PM2.5+NOx)
0	$90,512	$0.24	$0.05
0	$0	$0.00	$0.00
0	$849,400	$29.51	$5.90
0	$37,300	$6.91	$1.38
0	$167,000	$43.95	$8.79
55,550	$1,274,263	$82.55	$14.85
0	$8,860	$9.41	$1.88
327,740	$477,101	$7.00	$1.40
0	$195,000	$0.00	$0.00
0	$0	$0.00	$0.00
0	$0	$0.00	$0.00
0	$130,000	$0.00	$0.00
0	$0	$0.00	$0.00
0	$100,000	$0.00	$0.00
1060	$78,480	$654.00	$31.14
384,350	$3,407,916	$4.40	$0.76

Clean Air Minnesota Project Summary:
July 2013 – June 2015

Project Title	MPCA TIRE PRESSURE CAMPAIGN	
Recommendation	Recommendation #? –	
Category	Mobile Source Emissions	
Prepared By	Mark Sulzbach	651-757-2770 mark.sulzbach@state.mn.us
Date	April 29, 2015	

Statement of Need

Based on the *2015 MPCA Air Pollution Report to Legislature*, 28-percent of our state's air pollution comes from on-road vehicles. Transportation is also responsible for about consuming around 2.5 billion gallons of gasoline in Minnesota. EPA states that transportation is responsible for 27% of the total U.S. greenhouse gas emissions in 2013.

Background

National studies show that 36% of vehicles on the road nationwide have improper tire pressure that on average results in a 3% increase in vehicle emissions because it reduces fuel efficiency by 3%.
MPCA staff felt strongly that an outreach effort could be low-cost yet had the potential for significant emission reductions including global warming gas CO2.

MPCA staff created an interactive Tire Pressure Exhibit for the 2014 Minnesota State Fair. The exhibit included a tire with two valves, two attached tire gauges, a compressor and four large, educational posters.

In addition MPCA offered free:

- 10,000 tire pressure gauges (courtesy of American Lung of MN)
- 15,000 window cling reminders to save 3% on fuel by checking tire pressure

Booth staff explained the importance of proper tire for:

- Improving fuel economy
- Reducing pollution
- Increasing safety

Part of the beauty of the tire pressure outreach campaign is truly is a *"one-size fits all"* message, because proper tire pressure will make the three improvements listed above -- in *all* on-road vehicles- whether they are motorcycles or 16-wheelers.

Visitors were asked if they checked their tire pressure, if they would like to save 3% on fuel and if they would like to try to check the tire pressure on the display. They were offered a tire gauge and window cling and a chance to win a drawing for a $100 gas card from Holiday – by sending in a postcard or a photo of themselves checking their tire pressure.

Objective

This project was launched to reduce vehicle pollution emissions and the global warming gas CO2.
Pollutants reduced include: PM2.5, NOx, VOCs, CO and CO2 (as mentioned above).
There was a strong educational component to teach:

- How to do it
- Why to do it
- When to do it

Deliverables

Deliverables include actual measurable:

- Visitors estimate - 262,000
- Actual number of gauges and window clings given away:
- 9,600 tire gauges and 2,800 window clings
- 94 people submitted a postcard or photo via email or text – to enter the gas card prize drawing.
- Estimated emission reduction potential:
- Based on 262,000 Eco Experience visitors - if half of them visited the tire pressure exhibit that would be 131,000 visitors who saw the Tire Pressure exhibit.
- 9,600 tire gauges were distributed if 10% of these change their behavior to check and adjust tire pressure that would be 960 vehicles.
- If 40% of those vehicles had low pressure we could assume a 3% average reduction in emissions. (*we use 40% due to Minnesota's cold climate and severe temp fluctuations.)
    - = 384 X avg. vehicle fuel use of 600 gal/year based on 20 MPG @12,000 miles/YR= 18 gal. of fuel saved
    - PM, VOC, NOx and CO2 reduced by 3% =
    - CO2 (3% of avg car's CO2/yr = 292.1232 lbs x 384) = 112,175 lbs of CO2 reduced/yr
    - PM = 1.2762 lbs =
    - NOX = 211 lbs
    - VOCs (as HC) = 315 lbs.

After the fair we also continued to distribute window clings to key communicators and organizations for an additional 4,750. Assuming a 10% behavior change X 40% with low tire pressure creaete grand totals of:

- CO2 167,678 lbs./year
- VOC 470 pounds per year
- PM2.5 1.872 lbs. per year
- NOx 314 lbs. per year

Methodology

The Tire Pressure Team created a comprehensive outreach campaign to achieve goals of :

A. Attracting visitors to the booth.
B. Engaging visitors verbally and through hands on demonstrations /actions.
C. Educating or developing an awareness of how a simple action (checking and adjusting tire pressure) can achieve 3-goals
    - Save $ on fuel (a driver benefit)
    - Safer handling vehicle (a driver benefit)
    - And reduced pollution/reduced global warming (a benefit to all – but the goal of the MPCA exhibit.)
D. We were located near the Tesla so we had a good location and automatic crowd. The tire gauges were a popular draw and were perceived as valuable and I think the posters were very good – if people took the time to read them.
E. The exhibit itself was simple – a tire with two valve stems and two pressure gauges on chains – to allow people to actually try using a gauge.
F. We developed some simple one-liners for staff to engage the public. Ex. : When was the last time you checked your tire pressure? Or – How would you like to save 3% when you buy gas?
G. Challenging and encouraging positive actions (behavior change) of Behavior change measurements are exorbitantly expensive because it would require costly follow-up surveys to determine the exact number. We have spent a great deal of time reading related studies on various environmental behavior change projects. There is no – *one number* for the percent of people who will change their behavior.

Studies have shown the importance of engaging exhibitors both through dialogue and a hands on action

– to increase the likelihood of behavior change (per Doug McKenzie Mohr and others) In the environmental studies that we read, behavior change measurements ranged from 0 to 25 percent. We are using 10-percent and if anyone has a better number we will be glad to use it.

Target Audience

Our primary target audience is vehicle owners who don't check their tire pressure monthly. Especially those who do not have air pressure monitoring on their vehicle and rely only on their oil change service to properly inflate their tires.

Environmental Justice

A state fair exhibit includes visitors from across the state and may encompass those who reside in areas considered environmentally unfair.

Action Plan

Task/Step	Start/End Dates	Partner(s) Responsible	Description of Activity
1	10-1-12 – 9-30-13	MPCA/ EPA	2012/13 DERA Grant
2	10-1-13 – 9-30-14	MPCA/ EPA	2013/14 DERA Grant
3	10-1-14 – 9-30-15	MPCA / EPA	2014/15 DERA Grant projects begin in late May and end by late August
4	10-1-15 – 9-30-16	MPCA/EPA	2015/16 DERA Grant (applied for May 2015)

Project Partners

Organization	Key Contact	Phone and Email
MPCA	Mark Sulzbach Rocky Sisk	651-757-2770 mark.sulzbach@state.mn.us 651-757-2173 rocky.sisk@state.mn.us
American Lung Assoc. of MN	Jon Hunter Kelly Marczak	312-353-8777 Jon.Hunter@lung.org 651.268.7590 Kelly.Marczak@lung.org
Holiday gasoline	($100 gas card via ALA of MN)	

Project Manager

MPCA

Role of ALA of MN

Supportive: provided $6,200 for the tire gauges and gained a $100 free gas award from Holiday.

Drivers

Simple, low-hanging fruit for pollution reduction that benefits vehicle owners immediately.

External Factors

Communications

MPCA will give updates and reports at CAM meeting as requested

Project Outcomes (Metrics): July 1, 2013 – June 30, 2015

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. List assumptions made for each emission calculation and where they came from, (reports, other groups using them, etc.) See Attachment C of EPA's Ozone Advance guidance: http://www.epa.gov/ozoneadvance/pdfs/2012404guidance.pdf (some links are no longer active). For questions, contact Brian Timerson, MPCA: 651-757-2785 or Brian.Timerson@state.mn.us.

Metric	Data	Notes
1. Reduced emissions: VOC (this two year period)*	**2 year: 940 lbs.** **10 year: 4,700 lbs.**	Metric 1 – Emissions: Assumptions: We only did this for 1 state fair I will double that result for the 2-year info requested and multiply times 10 for the 10-year..HC as a subset of VOCs. .
2. Reduced emissions: PM 2.5 (this two year period)*	**2 year: 1.872 lbs.** **10 year: 9.36 lbs.**	Metric 1 – Emissions: assumptions as mentioned above.
3. Cost per pound of pollutant reduced (this two year period)*	**VOC Costs/lb.** **2 year: $9.43/ lb.** **10 year: $9.43/ lb.** **PM2.5 Costs/lb.** **2 year: $2,366 / lb.** **10 year $2,366 / lb.** **CO2 Costs/ lb.** **2 year: $ 0.53/ lb.** **10 year: $ 0.53/ lb.** **Total Project Costs** **2 year: $294.57 /lb** **10 year: $294.57 /lb**	Metric 3 – CO2 was worth mentioning because many mobile source projects do not reap CO2 reductions.
4. Number of estimated		Metric 10% response estimated. See attachment etc.
6.		Metric 1 Emissions: describe or attach separately. List assumptions.
7. Industry forecasts (new vs. conventional)		Metric 1 Emissions: describe or attach separately. List assumptions.
8. Location (zip codes)	**These are mobile source projects so each project operates in multiple zip codes.**	Metric 2 – Exposure: describe or attach separately. List assumptions. (Will be used to relate to health data from MDH.)
9. Percent of areas adopting which include RCAPs. Refer to RCAP map. If not in the Metro Area, qualitative description of impact on vulnerable populations.	**These are mobile source projects so each project operates in multiple zip codes**	Metric 2 – Exposure: describe or attach separately. List assumptions.

12. Total project cost	$8,860	Metric 3 – Economics: describe or attach separately; insert budget total from below.
13. Economic benefits		Metric 3 – Economics: describe or attach separately. List assumptions.
14. Education/outreach activities and participation	**Outreach: News release to news media, posted on Web page and social media.**	Metric 4 – Education: # attendees, # contacts, # associations, etc.; describe or attach separately. List assumptions.
15. Co-Benefits/Other	**Fuel savings /reduced vehicle operations costs. Tires may last longer. Safer handling/operating vehicle.**	Calculations rely on EPA's DEQ. Or actual CO2 benefits may be verified with real data 6- months or a year after the project completion.

*High priority metrics

Budget

Project Cost	$8,860 2 years	
Available Funding		None for this year
In-Kind Resources		
Notes	We still have leftover window clings so we'll use those and won't offer tire gauges this year.	

Approval

Approved by Partners	(Date)
Reviewed by CAM	(Date)

Attachment:

Metrics for 2014 State Fair Tire Pressure Exhibit/Campaign

Tire Pressure Campaign Concept

MPCA designed a comprehensive state fair exhibit and campaign to promote the importance of proper tire pressure. It was inspired by studies that show 36 percent of vehicles on the road nationwide (estimated 40% in MN) have improper tire pressure and that on average this results in a 3% increase in vehicle emissions as it reduces fuel efficiency by 3%. Secondary messages included: that proper pressure also helps tires last longer and provide better control and safety.

State Fair Exhibit – What We Learned…

The tire pressure exhibit was located adjacent to the Tesla exhibit so it had a prime location. The exhibit featured a tire with two valve stems, and a compressor to allow visitors to experience checking tire pressure. Many either had never checked their tire or hadn't done so in years. Most of these relied on their oil change visits to have their tires properly inflated for them. Many (but not all) with newer cars – have tire pressure warning lights on their dashboard.

What We Spent /Budget

- 10,000 tire pressure gauges - $6,200 from partner: American Lung Association of MN
  - $100 prize: Gas card gift certificate from Holiday via American Lung Association of MN
- 20,000 window cling pressure reminders MPCA - $1,200
- Exhibit display stand: $ 850 MPCA
- Four Exhibit Posters: $500 estimate MPCA
- 800 Tire Check Contest postcards: $10 estimate MPCA
  - **TOTAL $8,860**

EXHIBIT RESULTS

- An estimated 262,000 people visited the Eco Experience Building
- 9,600 tire gauges were given away
- 2,800 window clings given away at the Fair
- MPCA received about 100 responses to the Tire Check photo contest
- 1- TV news pickup of the tire pressure concept
- Based on 262,000 Eco Experience visitors - if half of them visited the tire pressure exhibit that would be 131,000 visitors who *saw* the Tire Pressure exhibit.
- 9,600 tire gauges were distributed. If 10% of these change their behavior to check and adjust tire pressure that would be 960 vehicles.
- There is no known number for behavior change because it is so expensive to do follow-up surveys on a large scale. We found several environmental behavior change studies that ranged from 0% to 25% and settled on 10%. We are open to using a different percentage.
- Here are a couple of links to reports about behavior change effectiveness.
- http://climatechangecommunication.org/sites/default/files/reports/NudgesforConservation_GMU_061013.pdf
- http://www.purdue.edu/discoverypark/climate/assets/pdfs/Patchen%20OP0601.pdf
- https://register.cbsm.com/about-the-presenter

- If 40% of those vehicles had low pressure we could assume a 3% average reduction in emissions.
  - = 384 X avg vehicle fuel use of 600 gal/year based on 20 MPG @12,000 miles/YR= 18 gal. of fuel saved
  - PM, VOC, NOx and CO2 reduced by 3% =
  - CO2 (3% of avg car's CO2/yr = 292.1232 lbs x 384) = 112,175 lbs of CO2 reduced/yr
  - PM = 1.2762 lbs =
  - NOX = 211 lbs
  - VOCs (as HC) = 315 lbs.

Post Fair Exhibit Results – Window Cling Distribution

American Lung Assoc. of MN	Sept. 2	1,000
The Lift Garage	9-16-14	1,000
Firestone – Hudson Road, St. Paul	9-17-14	500
Bill Droessler, EI	Fall 2014	250
Dorian Kvale, MPCA	Fall 2014	250

Brooklyn Center HS, Science	January 2015	500
Tom Vanderwal, EMS Northwest (Bemidji)	January 2015	1,250
	TOTAL	4,750

- **If 10% of the additional window clings distributed after the fair result in behavior change then we have an additional:**
  - **475 x 40% = 190 vehicles saving an average of 4% or about ½ of the emission reductions from the Fair exhibit.**
  - CO2 = 55,503 lbs of CO2 reduced/yr
  - PM = .6 lbs =
  - NOX = 103 lbs

Rough GRAND TOTALS: Adding the Fair and Post Fair results together:

- **CO2 = 167,678 lbs./ yr**
- **PM = 1.872 lbs / yr**
- **NOx = 314 lbs / yr**
- **VOC = 470 lbs /yr**

Return per pound if total exhibit costs were roughly $9,000

- **VOCs = $18.85 / lb. Reduced**
- **CO2 = $ 1.07 / lb. reduced**
- **PM = $4,733 / lb. reduced**
- **NOx = $ 28 / lb. reduced**

EXHIBIT DESCRIPTION

- Car tire with two valve stems mounted on a box/display stand
- Small compressor to add air
- Tire gauge or two on string to check pressure
- 10,000 Tire pressure gauges
- 20,000 2 1/8" round window cling pressure reminders
- 3-large posters
  - Save Fuel
  - Reduce Pollution
  - Drive Safer
- 1-2 small posters regarding the Giveaways AND the $100 gas card drawing courtesy of Holiday
  - Window cling reminders to check tire pressure (put inside your window like an oil change sticker)
    - With social median contact #tirecheck
  - Tire pressure gauges (800/day) car owners only? (These are **courtesy of American Lung of MN**)
- Postcards to enter the social media campaign drawing if they don't do the #tag thing…

MPCA staff training is required for working the various Eco Experience exhibits to help ensure a positive experience for the both the state fair visitors and staff. The following guidance was given to staff before the fair exhibit.

ENGAGING YOUR AUDIENCE / DEMONSTRATION SUGGESTIONS FOR STAFF

Engage people regarding the importance of proper tire pressure and checking their tires often. (Newer car owners have dashboard reminders but the rest of us don't). ***Examples:***

- *How would you like to save 10 cents a gallon on gas?!!*
- *When was the last time you checked your tire pressure?*
- *Did you know that 40% of Minnesotans don't have proper tire pressure?*
- *Those with low pressure can save 3% on average – that's like always having a coupon for 10 cents off per gallon!*
- *A 3% fuel-saving will also reduce all tailpipe emissions by 3%! Including global warming gases like CO2.*

Encourage visitors to:

- **Take a window cling as a reminder to check their tires when the get gas or at least once per month.**
- Go to the website livinggreen.org/tirecheck for more fuel saving tips and
- Send in a photo of themselves - checking their tires for a chance random drawing of one $100 gas card.
    - Or send in a postcard
- Take a tire gauge if they don't have one (car owners only please?)
- Save the world – one tire at a time!!

Clean Air Minnesota Project Summary:
July 2013 – June 2015

Project Title	Biodiesel use requirement
Recommendation	B20 Biodiesel Blend Mandate
Category	Recognized Other Important Initiative #1
Prepared By	American Lung Association in Minnesota 651-268-7601 Jon.Hunter@lung.org
Date	4/20/15

Statement of Need

Diesel vehicles are a significant source of air emissions in Minnesota. For example, according to MPCA's 2015 air quality report to the legislature, heavy duty trucks, agricultural equipment, and construction and mining equipment contribute close to 25% of fine particulates emissions. Heavy duty trucks also emit 10% of PAHs.

Background

Minnesota initially began using a 2% blend of biodiesel in 2007. In 2008, the legislature expanded biodiesel use to 5% (B5) beginning in 2009 and implemented criteria for using biodiesel at a 10% and 20% level in future years. In 2013, the commissioners of Commerce, Agriculture and Pollution Control determined all the conditions were met to begin using 10% biodiesel blends (B10) on July 1, 2014 during warm weather months (April to September) thereafter, with B5 used during the remainder of the year.

Objective

Biodiesel is now being blended into all #2 diesel fuel sold in Minnesota, with the exception of fuel used by a small number of users exempted by state law. From April 1 to September 30th of each year a 10% blend is required, with the remaining months using a 5% blend. Blending biodiesel into diesel fuel reduces fine particulate, unburned hydrocarbons, carbon monoxide, PAHs and lifecycle greenhouse gas emissions.

Deliverables

Gallons of biodiesel consumed.

Methodology

Biodiesel is blended into #2 diesel at the necessary level before delivery to a fuel retail location or at the point of sale, depending on the station's equipment and desires.

Target Audience

Diesel fuel users in Minnesota, minus those exempted by law.

Environmental Justice

Environmental justice is not an explicit component of this statewide program. As this program is most apt to reduce emissions along heavily traveled transportation corridors and industrial areas with higher use of diesel equipment, there may be higher benefits to communities located near those areas, which may be disproportionally low-income or communities of color.

Action Plan

Task/Step	Start/End Dates	Partner(s) Responsible	Description of Activity
1	July 1, 2014-Sept 30, 2014	Weights and Measures	B10 requirement implemented
2	April 1 – Sept 30, each following year	Weights and Measures	B10 use enforced
3			
4			

Project Partners

Organization	Key Contact	Phone and Email
American Lung Association in MN	Kelly Marczak	651-268-7590; Kelly.Marczak@lung.org
Weights and Measures	Julie Quinn	651-539-1556; julie.quinn@state.mn.us
MN Dept. of Agriculture	Kevin Hennessy	651-201-6223; Kevin.Hennessy@state.mn.us
Minnesota Soybean Research and Promotion Council	Mike Youngerberg	507-388-1635; Mike@MNsoybean.com

Project Manager

American Lung Association in MN prepared this summary

Role of Env. Initiative

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

Drivers

Use is required by law.

External Factors

The law allows for the use of biodiesel to be halted should there be concerns over the availability of biodiesel for blending or if there is reason to expect blending to cause a significantly higher price to diesel fuel. Availability concerns delayed the initial implementation of B10 use, but is not currently a concern.

Communications

The state has a biodiesel task force managed by the Minnesota Department of Agriculture comprised of interested parties, with meetings open to the public. A series of workshops for users and fuel suppliers were held throughout the state, mostly prior to the July 1, 2014, to discuss the requirements of the law.

Project Outcomes (Metrics): July 1, 2013 – June 30, 2015

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. List assumptions made for each emission calculation and where they came from, (reports, other groups using them, etc.) See Attachment C of EPA's Ozone Advance guidance: http://www.epa.gov/ozoneadvance/pdfs/2012404guidance.pdf (some links are no longer active). For questions, contact Brian Timerson, MPCA: 651-757-2785 or Brian.Timerson@state.mn.us.

Metric	Data	Notes
1. Reduced emissions: VOC*	2-year: estimated reduction of 151,250 lbs of hydrocarbons from the added use of B10, compared to using B5 year round.	Initial emission reduction estimates provided by National Biodiesel Board and extrapolated for future years. See spreadsheet for full details. Assumes 900m gallons of diesel per year, with the B10 months and B5 months consuming approximately the same amount

	10-year: reduction of 1,089,000 lbs of hydrocarbons from the use of B10, compared to using B5 year round.	of diesel. B10 used for six months in the two-year calculation (July-Sept. 2014 & April-June 2015). The 10-year projection assumes a 5% decrease in the biodiesel emission benefits each year due to newer vehicles replacing older ones in the fleet. The reduction estimates subtract emission reductions that would have occurred with using B5 year round, as that was already in place prior to July 2013. However, if you include B5 use from Oct. 2014 to March 2015 and the full emission reductions during B10 use, total hydrocarbon reductions would be 431,250 lbs. The 10-year reduction is estimated to be 3,105,000 lbs of hydrocarbons if you include total biodiesel use. The 10-year estimate does not include any added reductions that would result from using B20 beginning in 2018, if our blend increases as stated in current law.
2. Reduced emissions: PM 2.5*	2-year: estimated 115,883 lbs of particulates reduced from the B10 addition. 10-year: 833,998 lbs from additional biodiesel in B10.	See note in cell above for assumptions and explanation. Biodiesel's total estimated emission reductions (not subtracting B5) for particulates are: 2-year - 325,883 lbs; and 10-year - 2,345,998 lbs.
3. Cost per pound of pollutant reduced*	**N/A**	The fiscal note prepared for the legislation in 2008 requiring the expanding use of biodiesel did not expect any added costs related to the mandate. The lack of cost was attributed to the fact that existing agency staff would be responsible for its implementation as part of their routine duties.
4. Gallons of biodiesel consumed	Approximately 67.5 million gallons	Assuming 900 million gallons of qualified diesel using each year in Minnesota, approximately half would be consumed as B5 and half as B10.
5. Location: city/county/zip	Statewide	
6. Total project cost	$0	As mentioned above, cost to the state is assumed to be zero through use of existing state employees. Provisions in the law can suspend the biodiesel requirements if they are expected to adversely impact consumers.
7. Economic benefits		In 2006, the Minnesota Department of Agriculture estimated that the 60 million gallons of soy biodiesel capacity in the state at the time had an economic impact of $928 million. The state's biodiesel production capacity is now approximately 63 million gallons, using soy oil, corn oil, and waste grease as feedstocks. The estimated 67.5 million gallons of biodiesel Minnesota uses each year creates a market for our biodiesel production industry and largely displaces the importation of tens of millions of gallons of petroleum derived diesel.

8. Education	Approximately 300 total attendees at workshops held in ten locations throughout Minnesota.	In 2014, largely prior to the implementation of the B10 retail season, ten workshops were held in locations throughout Minnesota to educate diesel retailers, transporters and users about the B10 requirement and the law's implementation. The workshops were funded by the Minnesota Soybean Research and Promotion Council and featured staff from Weights & Measures, Minnesota Department of Agriculture, MEG Corp, and American Lung Association in Minnesota.
9. Co-Benefits/Other	Lifecycle greenhouse gas emission reductions (from biodiesel content above B5): 2-year: 492 million pounds 10-year: 3.5 billion pounds	See top cell in this column for assumptions. Total biodiesel (including B5) estimated lifecycle greenhouse gas emissions reductions: 2-year: 1.34 billion pounds 10-year: 9.66 billion pounds

*High priority metrics

Budget

Project Cost	$0	Attach full budget separately
Available Funding	$0	(List sources/partners)
In-Kind Resources		(List sources/partners)
Notes		

Approval

Approved by Partners	(Date)
Reviewed by CAM	(Date)

Clean Air Minnesota Project Summary:
July 2013 – June 2015

Project Title	Gas Can Exchange Pilot Project	
Recommendation	N/A	
Category	N/A	
Prepared By	(Name)	(Phone and email)
Date	(Last updated)	

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.)

Background

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

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?)

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.?)

Methodology

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

Target Audience

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

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?

Action Plan

Task/Step	Start/End Dates	Partner(s) Responsible	Description of Activity
1			
2			
3			
4			

Project Partners

Organization	Key Contact	Phone and Email
(Partner 1)		
(Partner 2)		
(Partner 3)		

Project Manager	(Partner agency that will manage project from initiation to close)
Role of Env. Initiative	(Describe role, if any – planning, managing, supporting, etc.)

Drivers

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

External Factors

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

Communications

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

Project Outcomes (Metrics): July 1, 2013 – June 30, 2015

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. List assumptions made for each emission calculation and where they came from, (reports, other groups using them, etc.) See Attachment C of EPA's Ozone Advance guidance: http://www.epa.gov/ozoneadvance/pdfs/2012404guidance.pdf (some links are no longer active). For questions, contact Brian Timerson, MPCA: 651-757-2785 or Brian.Timerson@state.mn.us.

Metric	Data	Notes
1. Reduced emissions: VOC*	**BOTH** 2-year (actual) and 10-year (projected) period	Metric 1 – Emissions: describe calculations or attach separately. List assumptions.
2. Reduced emissions: PM 2.5*	**BOTH** 2-year (actual) and 10-year (projected) period	Metric 1 – Emissions: describe calculations or attach separately. List assumptions.
3. Cost per pound of pollutant reduced*	**BOTH** 2-year (actual) and 10-year (projected) period	Metric 3 – Emissions: costs for each project partner, including operating costs and grants, excluding salaries. List assumptions.
4. Number and type of gas cans exchanged		Metric 1 – Emissions: describe or attach separately. List assumptions.
5. Volume of old gasoline collected		Metric 1 – Emissions: describe or attach separately. List assumptions.
6. Location: participant zip codes (city, county if available)		Metric 2 – Exposure: describe or attach separately. List assumptions. (Will be used to relate to health data from MDH.)
7. Percent of participants residing in RCAPs. Refer to RCAP map.		Metric 2 – Exposure: describe or attach separately. List assumptions.
8. Total project cost	**BOTH** 2-year (actual) and 10-year (projected)	Metric 3 – Economics: describe or attach separately; insert budget total from below.

	period	
9. Economic benefits (if applicable)		Metric 3 – Economics: describe or attach separately. List assumptions.
10. Education/outreach activities and participation		Metric 4 – Education: # educational pieces distributed, # people who received educational information, etc.; describe or attach separately. List assumptions.
11. Education/outreach activities and participation		Metric 4 – Education: # participant surveys distributed, # surveys completed, before-and-after survey findings (satisfaction, behavior change, etc.); describe or attach separately. List assumptions.
12. Co-Benefits/Other		Describe calculations or attach separately. List assumptions.

*High priority metrics

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)

3/19/15 GG

Clean Air Minnesota Project Summary:
July 2013 – June 2015

Project Title	Increased MN GreenCorps Energy Conservation Projects	
Recommendation	Recommendation #6 – Expand Minnesota GreenCorps and Help Local Governments Achieve Energy Conservation Goals in Public Facilities	
Category	(Minnesota Clean Air Dialogue category)	
Prepared By	Fran Crotty and Kevin McDonald	(651) 757-2561 kevin.j.mcdonald@state.mn.us
Date	2-25-2015	

Statement of Need

Public sector buildings present an important opportunity to improve energy efficiency and conservation. A key barrier is that local government personnel often lack the time to advance energy projects that involve benchmarking past energy usage, seeking bids from qualified energy service providers, arranging financing, awarding contracts, and monitoring project implementation. Minnesota GreenCorps Energy Conservation members can add capacity to local governments with limited staffing resources.

Background

With its sixth service year beginning in September, 2015, MN GreenCorps increased the number of AmeriCorps members and projects from 27 to 40. This increase was made possible, in part, from new, nonpoint funding appropriated to MPCA by the Minnesota Legislature.

MN GreenCorps presents a unique opportunity to address serious environmental challenges and improve community resilience through a highly structured, partnership-based program. Projects are selected through an open, statewide competitive process. Geographic diversity and underserved communities are prioritized. Findings from our comprehensive evaluation support this model: "The MN GreenCorps structure which requires host site-designed and member-driven projects encourages member initiative and ensures specific environmental needs of Minnesota communities are met" (MN GreenCorps Program Evaluation, 2013). The projects are designed to be collaborative and sustainable after member involvement, as has been demonstrated by the 88% of supervisors who said that project activities have been completely or partially sustained since their member completed his/her service.

AmeriCorps members involved with MN GreenCorps serve 1,700 hours over a period of 11 months. Host sites include local units of government, nonprofit organizations, or educational institutions, including school districts. Member projects incorporate a variety of evidence-based best management practices. For purposes of this project summary, the focus is energy conservation. The projects are carefully designed to have positive environmental impacts, be sustainable long-term at the community level, and build the capacity of communities.

The program involves three types of activities in a comprehensive approach to tackling community-identified environmental stewardship projects. Members assess the local circumstances and gather data, engage community and organizational members, and implement locally appropriate solutions consistent with evidence-based environmental best practices. Hands-on, direct service activities facilitate job skill development, promote an ethic of service, and improve natural and urban environments, in accordance with the 21st Century Service Corps goals.

Objective

The objective for this project is for each of the five Minnesota GreenCorps Energy Conservation members to save their host site 100,000 KWh (100 MWh) per year (on average) over the effective useful life of the improvements implemented. Because a key barrier is lack of personnel MN GreenCorps Energy Conservation members add capacity to identify and implement energy conserving projects.

The pollutants reduced are NOx & SO2. Using emissions rates of the 2009 Regional Average Emission Rates for the Midwest Reliability Organization's service region, the following reduction targets were established: SO2: $6,500/ton, NOx: $13,000/ton, PM2.5: $261,000/ton, and aggregated: $4,300/ton.

The MPCA submitted a competitive re-compete proposal to the Corporation for National and Community Service (national AmeriCorps) whereby the member complement of 40 MN GreenCorps members, in total, would be sustained for another three year period.

Deliverables

Each MN GreenCorps Energy Conservation Member submits a final report documenting activities to bench past energy usage, seek bids from qualified energy service providers, arrange financing, awarded contracts, and monitor project implementation.

Methodology

A key method used for this project is selection of host sites. Host sites propose projects and are competitively selected. Strong projects include well designed mechanisms to establish baselines and measure results of implemented energy efficiency and energy conservation improvements. Members receive training and mentorship from seasoned environmental professionals, which gives them technical skills that can be applied to their service. MN GreenCorps ensures that host sites provide a supportive environment for members to implement projects. Reporting requirements throughout the service year provide members with quantifiable data.

Target Audience

Through this project, five host sites will be served by five MN GreenCorps Energy Conservation members. Host sites may be local units of government, nonprofit organizations, or educational institutions, including school districts. Projects are selected through an open, statewide competitive process. Statewide geographic diversity and underserved communities are prioritized.

Environmental Justice

Priority will be given to host sites in geographic areas that face the greatest number of climate hazards and contain the most vulnerable populations, using MDH's analysis of statewide climate vulnerability. For this current service year, all 40 members are serving in a county which either contains six to twelve different vulnerable population types or five to nine climate hazard types occurring above the median for Minnesota counties: 31 are serving in counties that meet the criterion for vulnerable population types, and 23 are serving in counties that meet both criteria (Minnesota Climate Vulnerability Assessment 2014, MDH).

Action Plan

Task/Step	Start/End Dates	Partner(s) Responsible	Description of Activity
1. Solicit Host Site Applications	March 2014/May 2014	MPCA	Request for Applications
2. Solicit Member Applications	March 2014/June 2014	MPCA	Request for Applications
3. Select Host Sites	May 2014	MPCA	Evaluation of Host Site applications
4. Select MN GreenCorps Members	July 2014	MPCA	Interview and select process
5. Assign MN GreenCorps Members with Host Sites	July 2014/August 2014	MPCA and MN GreenCorps Partner State Agencies	Placement process
6. Three day training and orientation	September 2014	MPCA and Host Site Supervisors	Training
7. MN GreenCorps Energy Conservation projects begin opportunities identified and implemented	September 2014	MN GreenCorps Members and Host Site Supervisors	B2 database management, energy conservation
8. Projects implemented and measured	December 2014/August 2015	MN GreenCorps Members and Host Site Supervisors	Implement energy conservation projects and measure outcomes and outputs
9. Final project reports summarizing activities and accomplishments	August 2015	MN GreenCorps Members and Host Site Supervisors	Draft, edit and finalize written report

Project Partners

Organization	**Key Contact**	**Phone and Email**
City of Maplewood	Shann Finwall	(651) 249-2304 shann.finwall@ci.maplewood.mn.us
Independent School District 197	Mark Fortman	(651) 403-4326 mark.fortman@isd197.org
The Minnesota Project	Fritz Ebinger	(612) 626-1028 Ebing007@umn.edu
Congregations Caring for Creation	Julia Nerbonne	(612) 810-1577 julia@mnipl.org
Great Plains Institute	Diana McKeown	(612) 278-7158 dmckeown@gpisd.net

Project Manager	MPCA, Laura Millberg
Role of Env. Initiative	None

Drivers

Potential to implement cost effective energy conservation projects within public sector buildings.

External Factors

MN GreenCorps must apply annually (in some cases, every three years) for limited and competitively awarded national AmeriCorps resources.

Communications

Final report summarizing the accomplishments of the service year is prepared for the Corporation for National and Community Service (national AmeriCorps), Serve Minnesota (Minnesota's state commission), and MPCA management. This final report is available to CAM project partners, CAM Work Group and other interested parties.

Project Outcomes (Metrics): July 1, 2013 – June 30, 2015

MN GreenCorps Energy Conservation member projects began in September, 2015. The projects continue through August, 2015. Project outcomes will be reported in August, 2015 and are not available at this time. As projects are only now being implemented.

Metric	Data	Notes
1. Reduced emissions: VOC*	**to be reported in September, 2015** for 2-year (actual) and **900 MWh per year (on average)** for 10-year (projected) period	Metric 1 – Emissions
2. Reduced emissions: PM 2.5*	**to be reported in September, 2015** for 2-year (actual) and 10-year (projected) period	Metric 1 – Emissions
3. Cost per pound of pollutant reduced*	**BOTH** 2-year (actual) and 10-year (projected) period	Metric 3 – Economics: costs for each project partner, including operating costs and grants, excluding salaries.
4. Project results (# trees inventoried, kWh avoided, % increase in recycling, etc.)	**500,000 kWh (goal)**	Metric 1 – Emissions Each Minnesota GreenCorps Energy Conservation member will save a host site 100,000 KWh (100 MWh) per year over the effective useful life.
5. Percent of projects conducted in RCAPs. Refer to RCAP map. Or qualitative description of impact on vulnerable populations.	**0**	Metric 2 – Exposure: All 40 members are serving in a county which either contains six to twelve different vulnerable population types or five to nine climate hazard types occurring above the median for Minnesota counties: 31 are serving in counties that meet the criterion for vulnerable population types, and 23 are serving in counties that meet both criteria (Minnesota Climate Vulnerability Assessment 2014, MDH).
6. Total grant funding	**$100,000.00**	Metric 3 – Economics: The analysis assumes an *effective useful life* (EUL), the point at which half the installed measures have failed, of seven (7) years. The additional cost to the state per ton of emissions reduced for this draft proposal is estimated to be $8,635.24.

7. Number of projects and types of host organizations (city, county, non-profit, etc.), number of host applications	**5 projects: 1 city, 1 independent school district, and 3 nonprofit organizations. 8 applications**	Metric 3 – Economics: Projects are selected through an open, statewide competitive process. Statewide geographic diversity and underserved communities are prioritized.
8. Participating host organization location: city/county/zip	**Maplewood/Ramsey/55109** **Mendota Heights/Dakota/55120** **Minneapolis/Hennepin/55404** **Minneapolis/Hennepin/55407** **Saint Paul/Ramsey/55104**	Metric 2 – Exposure: All 40 members are serving in a county which either contains six to twelve different vulnerable population types or five to nine climate hazard types occurring above the median for Minnesota counties: 31 are serving in counties that meet the criterion for vulnerable population types, and 23 are serving in counties that meet both criteria (Minnesota Climate Vulnerability Assessment 2014, MDH).
9. Number of applicants, number of members	**113, 5**	Metric 3 – Economics
10. Total project cost	**$100,000** for 2-year (actual), and **$900,000** for 10-year (projected) period	Metric 3 – Economics
11. Economic benefits	**to be reported in September, 2015**	Metric 3 – Economics
12. Number of volunteers participating in related activities	**to be reported in September, 2015**	Metric 4 – Education
13. Education/outreach activities (# attendees, # contacts, # associations, etc.)	**to be reported in September, 2015**	Metric 4 – 1,050 youth and adult community members have been educated by 5 Minnesota GreenCorps Energy Conservation members as of March 31st, 2015.
14. Co-Benefits/Other	**• Reduces energy use and associated benefits** **• Saves host local governments money on staffing and ongoing energy savings** **• Provides experiential training and mentoring to a new generation of energy conservation and environmental professionals** **• Increases public sector employee knowledge of and engagement in energy conservation and efficiency** **• Keeps more Minnesota taxpayer dollars in the local economy** **• Helps expedite needed local government**	Minnesota GreenCorps members receive training and experience that helps them to further environmental careers. This cadre of professionals helps meet Minnesota's workforce needs and demands. Local government and non-profit host sites benefit significantly from the 1,700 service hours provided by members, as well as the ongoing annual energy savings and other cost reductions that result from projects implemented.

	infrastructure projects • **Trains and develops members for careers in environmental protection**	

*High priority metrics

Budget

Project Cost	$100,000.00	
Available Funding	$100,000.00	MPCA
In-Kind Resources	Significant In-kind	Host site and community members
Notes		

Approval

Approved by Partners	(Date)
Reviewed by CAM	(Date)

Updated 2/5/15 AS

Clean Air Minnesota Project Summary:
July 2013 – June 2015

Project Title	Community Engagement and Preparedness (CEP)	
Recommendation	Recommendation #5 – Air Quality Improvements and Urban Heat Island Mitigation Through Urban Forestry	
Category	(Minnesota Clean Air Dialogue category)	
Prepared By	Gary Johnson	612-625-3765; johns054@umn.edu
Date	April 27, 2015	

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.) The communities we worked with from 2013 to 2015 were those in Greater Minnesota, communities that do not have at their advantage other communities in close proximity that can share workloads, employees or urban forestry efforts. In essence, these communities are isolated to varying degrees. Communities in Greater Minnesota have also been disproportionately impacted by reduced local aid to governments in the past, and many have lost any urban natural resources programs that may have existed.

As per rapid assessments of community tree populations conducted by the Department of Natural Resources in 2010, many of these communities had disproportionately high native ash (Fraxinus species) populations, which left them at risk for losing substantial tree populations. Added to the loss of individual trees, green ash (Fraxinus pennsylvanica) trees have been determined to represent the most ubiquitous, large canopied tree in Minnesota's urban forests. Therefore, a percentage loss of individual ash trees is characteristically significantly lower than the actual loss of tree canopy.

Tree canopy is directly linked to more efficient stormwater runoff management, and in terms of its relevancy to clean air, a reduction in the use of energy consumed to heat homes.

Background

(Describe the history of this project, if applicable. If ongoing, explain origin and milestones to date.) This project began in 2009 through two grants: one Rapid Response grant from the University of Minnesota Extension. Along with this funding to determine the vulnerability of communities in greater Minnesota to emerald ash borer, the US Forest Service continued our work with an additional grant period that lasted through 2013. Both grants were focused on 1) determining the vulnerability of various communities to invasive pests, particularly emerald ash borer; 2) engaging the residents of selected communities in the inventorying or surveying of their respective community forests; 3) developing local connections that would be resources for propagating the best information and management practices and disseminating that information to their communities; 4) promote local management practices, plant diversity, establishment or enhancement of local volunteer tree boards.

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?) Community awareness and engagement were the primary objectives. Beyond that, other objectives were related to the results of the tree inventories or surveys. In the case of communities with reduced tree populations or tree populations most vulnerable to losses due to invasive pests/diseases or predisposed to catastrophic storm damage. For those communities recognizing deficiencies, community gravel bed nurseries were subsidized. Technical support was provided to ensure successful use of said gravel beds. The overall goal was to enable communities to recognize their vulnerability and take steps to amend the current status of their community forest (private and public) through the technical assistance provided by the University of Minnesota, Department of Forest Resources and the efforts of their community volunteers.

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.?) A community tree report, a standardized 11 page assessment of

each community's urban forest based on the inventory or survey conducted. Each community would install a "community gravel bed," which serves as an affordable option for cash-strapped communities to begin reforestation and diversification of the urban forests. An engaged groups of volunteers who would be more supportive of urban forestry efforts and could provide more accurate urban forestry information to their communities.

Methodology

(What methods will be used to design/implement/manage the project? Note technologies, if any.) Attached is a typical community tree report that addresses the inventory/survey process. Volunteers were trained by University CEP personnel in tree inventory procedures and appropriate conduct in their communities as they collected data. Data collected was assessed by the University CEP lab. Community gravel beds were constructed and stocked under the direction of University CEP personnel (see attachment).

Target Audience

(Who is the intended audience? Sectors/markets/population segments/geographic areas? Indicate approximate number of <facilities/other> expected to participate, if applicable.) Communities were selected from the six major ecoregions of greater Minnesota (Northern tallgrass prairie, Hardwood Hills, Northeast, Southeast, Southwest, Northcentral). Communities were selected to equally represent the following population ranges: <1,000; 1-5,000; 5-10,000; 10-15,000; 15-20,000: >20,000, primarily to represent different types of community governinances.

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? Yes, by not restricting users or inhabitants.

Action Plan

Task/Step	Start/End Dates	Partner(s) Responsible	Description of Activity
1	July 1, 2013-December 31, 2014.	University of Minnesota Department of Forest Resources; DNR; US Forest Service; Sherburne County Soil and Water Conservation District.	Described above. Worked with the following communities: Bemidji, Ely, Mankato, Elk River, Big Lake, Becker, Zimmerman, Princeton.
2	January 1, 2014-December 2014	City of Saint Paul City of Minneapolis	Both projects involved trialing different species for suitability as boulevard trees and using different soil amendments to establish said trees.
3			
4			

Project Partners

Organization	**Key Contact**	**Phone and Email**
University of Minnesota Department of Forest Resources	Gary Johnson	612-625-3765; johns054@umn.edu
MN/DNR	Ken Holman	ken.holman@state.mn.us
US Forest Service	Steve Katovich	skatovich@fs.fed.us

Project Manager	Gary Johnson, University of Minnesota Department of Forest Resources
Role of Env. Initiative	(Describe role, if any – planning, managing, supporting, etc.)

Drivers

(What are the key drivers that compel action? Describe incentive structures for engagement.) Emerald Ash Borer and community vulnerability. Limited funding.

External Factors

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

Communications

(How will project partners share information? Report to the Work Group? Share results with public?) Reports sent to and presented to each community, copies and reports sent to Forest Service and MNDNR.

Project Outcomes (Metrics): July 1, 2013 – June 30, 2015

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. List assumptions made for each emission calculation and where they came from, (reports, other groups using them, etc.) See Attachment C of EPA's Ozone Advance guidance: http://www.epa.gov/ozoneadvance/pdfs/2012404guidance.pdf (some links are no longer active). For questions, contact Brian Timerson, MPCA: 651-757-2785 or Brian.Timerson@state.mn.us.

Metric	Data	Notes
1. Reduced emissions: VOC*	**BOTH** 2-year (actual) and 10-year (projected) period	Metric 1 – Emissions: describe calculations or attach separately. List assumptions.
2. Reduced emissions: PM 2.5*	**BOTH** 2-year (actual) and 10-year (projected) period	Metric 1 – Emissions: describe calculations or attach separately. List assumptions.
3. Cost per pound of pollutant reduced*	**BOTH** 2-year (actual) and 10-year (projected) period	Metric 3 – Emissions: costs for each project partner, including operating costs and grants, excluding salaries. List assumptions.
4. Tree inventory and/or tree cover (number, type, and size)	**Data was confined to community surveys that were weighted by numbers of trees estimated from presamples and stratified by land use: downtown, rectilinear residential, curvilinear residential. Surveys included public and residential properties. We did nothing that documented cover type, canopy cover.**	Metric 1 Emissions: describe or attach separately. List assumptions.
5. Change in tree canopy (number, type, and size)	**n/a**	Metric 1 Emissions: describe or attach separately. List assumptions.
6. Location: city/county/zip	**See action plan, description of activity for communities.**	Metric 2 – Exposure: describe or attach separately. List assumptions. (Will be used to relate to health data from MDH.)

7. Proximity to high-VOC/PM areas	**n/a**	Metric 2 – Exposure: describe or attach separately. List assumptions.
8. Percent of trees planted in RCAPs. Refer to RCAP map.	**n/a**	Metric 2 – Exposure: describe or attach separately. List assumptions.
9. $ Value of co-benefits (e.g., storm water, public health, property valuation, energy conservations, carbon storage/ sequestration)	**n/a**	Metric 3 – Economics: describe or attach separately. List assumptions.
10. Total project cost	**BOTH** 2-year (actual) and 10-year (projected) period For the two years, all projects, total costs involved were approximately $130,000 which included subsidies for community gravel beds and plant materials in the Saint Paul, Minneapolis studies.	Metric 3 – Economics: describe or attach separately; insert budget total from below.
11. Economic benefits	**No calculations were made based on the data we collected.**	Metric 3 – Economics: describe or attach separately. List assumptions.
12. Education/outreach activities and participation	**For the community surveys, the dollar equivalent of volunteer involvement was approximately $224,000. This includes the time the volunteers spent in training and subsequently conducting the inventories.**	Metric 4 – Education: # attendees, # contacts, # associations, etc.; describe or attach separately. List assumptions.
13. Co-Benefits/Other		Describe calculations or attach separately. List assumptions. Qualitative description.

*High priority metrics

Budget

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

Approval

Approved by Partners	(Date)
Reviewed by CAM	(Date)

Updated 2/5/15 AS

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 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 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)

Clean Air Minnesota Project Summary:
July 2013 – June 2015

Project Title	Wood Smoke	
Recommendation	Recommendation #24 – Wood Smoke Reduction Education and Outreach	
Category	Wood Smoke Outreach	
Prepared By	Rocky Sisk	651.757.2173 rocky.sisk@state.mn.us
Date	4.28.15	

Statement of Need

According to the MPCA's *Air Quality in Minnesota: 2015 Report to the Legislature*, the majority of the air pollutants of most concern today come from smaller, widespread sources that are not regulated through source permitting like power plants and factories. These nonpoint sources include residential wood burning. The report also indicates that 35% of fine particles and 35% of polycyclic aromatic hydrocarbons (PAHs) are a result of residential wood burning (wood stoves, boilers, and campfires). The MPCA estimates that the overall economic cost of health effects associated with exposure to current levels of air pollution in Minnesota may exceed $30 billion per year.

Strategic outreach and education about wood burning will be needed to address this source of air pollution in Minnesota.

Background

Smoke from burning wood contains particles and toxic chemicals that can be hazardous to human health. Emissions from wood burning continue to increase in Minnesota as more people have backyard fire pits or use wood for home heating. Sources of wood smoke include outdoor wood boilers, wood stoves, backyard recreational fires, wildfires, and prescribed burning.
Although there are resources online, hands on messaging such as state fair displays and participation at local community events is needed to promote best management practices. Furthermore, there was no brief handout or written material available to residents of Minnesota that promoted good practices when planning a backyard/recreational fire. Minnesota Department of Health had produced "book marks" in the past to get health messages out to the public. It was decided to produce a bookmark on backyard fire tips to be distributed at the Minnesota State Fair as part of outreach around the issue of wood smoke.
These are just a few examples of the types of activities, products and messages that are needed to reduce residential wood smoke.

Objective

Create an educational campaign to motivate behavior change to reduce emissions from wood smoke. The campaign focused on the negative health impacts of wood smoke and encourages usage of better wood management, dry wood and /or alternative fuels such as natural gas. This campaign encompasses a variety of projects, including wood stove use education projects, media development and delivery such as bookmarks, handouts, flyers, television and radio ads, social media connections as well as ongoing public outreach at events like MN State Fair.

Deliverables

The goal of this project is to modify personal behavior, and develop an ongoing campaign to educate the public on best management practices for wood burning in a variety of settings. This project will eventually encompass media messages, handouts such as bookmarks, flyers and factsheets, as well as some hands on instruction at events like MN State Fair.

Methodology

The CAM wood smoke team developed a variety of projects to accomplish our goals. For example, the MN Department of Health developed a bookmark entitled "Backyard Fire Tips" and distributed thousands of those bookmarks at a variety of public events. The Minnesota Pollution Control Agency, in partnership with groups like the Hearth, Patio and Barbecue Association; Holland and Hearth; the American Lung Association of MN and the Minnesota Department of Health, developed two different wood smoke displays for the MN State Fair. These displays were intended to educate the public on the benefits of using proper practices for residential wood burning, as well as convincing the public to participate on our ongoing outreach programs regarding wood burning and voluntary reductions on air alert days.

The messages created for this initiative were developed using existing information available from EPA "BurnWise" website, as well as research using focus groups and modifying existing messages supplied by the wood burning industry, EPA, Minnesota Department of Health, American Lung Association and the MPCA's" Air Quality in Minnesota Report to the Legislature". By using and modifying existing messages, the CAM group was able to leverage the limited resources available, and create a variety of uniquely MN messages and strategies to educate the public about the environmental consequences surrounding residential wood burning. Ultimately, many of those messages will be distributed throughout the state by the American Lung Association of MN. ALAMN is in the process of creating a variety of messages and advertising paraphernalia to deliver at upcoming town hall meetings, civic gatherings, state and county fairs, as well as television, radio, billboard and social media campaigns.

Target Audience

All of the strategies available for this initiative are applicable statewide. While the primary target of many aspects of this project are the Twin Cities metropolitan area (simply due to the population densities in the Twin Cities and the associated health risk of wood smoke exposure), other aspects of our education outreach are likely more applicable to rural, greater Minnesota wood burners such as those Minnesotans with Hydronic Heaters.

Environmental Justice

This could be an environmental justice issue because if houses are located closer to one-another with less land available, neighbors would be more likely to be exposed to the smoke from backyard fires.

Action Plan

Task/Step	Start/End Dates	Partner(s) Responsible	Description of Activity
1	June - Aug 2014	MDH, CAM	Develop and distribute educational bookmark entitled "Backyard Fire Tips"
2	Aug-Sept 2013	MPCA, HPBA, CAM	State Fair Wood Smoke Exhibit
3	Aug-Sept 2014	MPCA, HPBA, CAM	State Fair Wood Smoke Exhibit
4	Jan -June 2015	MPCA, ALAMN	Wood Smoke Education Campaign

Project Partners

Organization	**Key Contact**	**Phone and Email**
MDH	Kathleen Norlien	651.201.4613 kathleen.norlien@state.mn.us
CAM	Gena Gerard	ggerard@environmental-initiative.org
MPCA	Rocky Sisk	651.757.2173 rocky.sisk@state.mn.us
ALA MN	Jon Hunter	
U of MN School of Public Health	Pete Raynor	
Hennepin County Environ. Svcs	Angie Timmons	
Mille Lacs Band of Ojibwe Indians	Charlie Lippert	

Holland Hearth and Home	Joe Holland
Hearth, Patio and Barbecue Assn.	Karen Osborne

Project Manager	MPCA (although the project is a joint effort from all listed partners)

Role of Env. Initiative	Support, Communications and Input

Drivers

Need for public education campaign regarding residential wood smoke and it's associated health impacts

External Factors

None

Communications

CAM wood smoke team participants will share information as needed.

Project Outcomes (Metrics): July 1, 2013 – June 30, 2015

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. List assumptions made for each emission calculation and where they came from, (reports, other groups using them, etc.) See Attachment C of EPA's Ozone Advance guidance: http://www.epa.gov/ozoneadvance/pdfs/2012404guidance.pdf (some links are no longer active). For questions, contact Brian Timerson, MPCA: 651-757-2785 or Brian.Timerson@state.mn.us.

Metric	Data	Notes
1. Reduced emissions: VOC*	99,528 pounds per year 199,056 pounds 2 year 995,280 pounds 10 yrs.	Calculation sheet attached
2. Reduced emissions: PM 2.5*	92,664 pounds per year 185,328 pounds 2 year 926,640 pounds 10 yrs.	Calculation sheet attached
3. Cost per pound of pollutant reduced*	**$0.24 / Pound**	$90,512 / (99,528+92,664) = 0.24
4. Percent of efforts conducted in RCAPs. Refer to RCAP map. Or qualitative description of impact on vulnerable populations.	While not specifically designed for EJ impact, this initiative may have an disproportionately large effect on this population due to housing density and resulting wood smoke exposure.	Metric 2 – Exposure: describe or attach separately. List assumptions.
5. Funding for additional studies and research	**N/A**	Metric 3 – Economics: describe or attach separately. List assumptions.
8. Total project cost	**$90,512**	Metric 3 – Economics: describe or attach separately; insert budget total from below.
9. Economic benefits	N/A, although burning dry wood can result in a 33% reduction in wood requirement, therefore a 33% reduction in cost	Metric 3 – Economics: describe or attach separately. List assumptions.
10. Education and outreach	2 state fairs, resulting in	Metric 4 – Education: describe or attach

activities, including "Dry wood" campaign: # events, articles, workshops, etc.	nearly of 500,000 visitors learning about wood burning BMP's	separately. List assumptions.
11. Website hits	**N/A**	Metric 4 – Education: describe or attach separately. List assumptions.
12. Newsletter articles	**N/A**	Metric 4 – Education: describe or attach separately. List assumptions.
13. Before and after attitude survey in targeted area	**N/A**	Metric 4 – Education: describe or attach separately. List assumptions.
14. U of M projects for students	**N/A**	Metric 4 – Education: describe or attach separately. List assumptions.
15. Co-Benefits/Other	**N/A**	Describe calculations or attach separately. List assumptions.

*High priority metrics

Budget

Project Cost	$ 90,512	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)

ATTACHMENT:

Attachment for Wood Smoke Education and Outreach Summary:

Purpose: The overall purpose of this initiative was to educate wood burners to use clean, dry wood and to not burn on air alert days. We also encourage wood burners to use the newest technology appliance when available. This message was conveyed in a variety of ways, including written material, hands on displays, bookmarks, discussions, as well as development of messages for future distribution in media, billboards, trinkets (handouts) from ALAMN.

Assumptions Used:

"Use 1/3 less wood if you use dry wood": https://dec.alaska.gov/air/anpms/pm/ws-txt.htm

"10% behavior modified due to educational outreach": this comes from extrapolating information from a variety of sources:

http://climatechangecommunication.org/sites/default/files/reports/NudgesforConservation_GMU_061013.pdf
http://www.purdue.edu/discoverypark/climate/assets/pdfs/Patchen%20OP0601.pdf

Quantifications:

Annual Wood Smoke in MN: (from MPCA's Outcomes Unit)

PM2.5: 30,012 tons (2011) – MPCA Outcomes (Outcomes Spreadsheet)
VOC's: 32,146 tons (2011)- MPCA Outcomes (Outcomes Spreadsheet)
Households that burn wood in MN: 53% households in MN burn wood (RWS Survey August 2013)
Households in state: 2,101,295 (RWS Survey August 2013)
#Households that burn wood in state: 1,113,686
PM2.5 pollution per wood burning household: 54 lbs
VOC pollution per wood burning household: 58 lbs
MN Population: 5,422,000 (Google, 2013 numbers)
Residents per household: 2.6

Budget: (MPCA BIRD info)

State Fair Displays:	FY2014- $5,854
	FY2015- $4,905
Focus Groups:	FY2015- $19,000
American Lung Assn:	FY2015- $60,000
MDH (bookmarks):	FY2015- $762
Total:	$90,512
Total per year (ave):	$45,256

State Fair Attendance: 510,000 total – (263,000 in 2014; 247,000 in 2013 - Karen Van Norman, MPCA)
For calculation purposes, this averages to 255,000 visitors per year

Pollution Reductions: This calculation is tricky. We know how many people were exposed to messages at state fair and how many bookmarks were produced and distributed, but how many will be exposed to advertising in the next few years? How do we calculate the cost of those reductions if the money for those expenses came from our current budget but the messages won't be seen or heard until later in the next biennium? Furthermore, how many people that are exposed to a message were even wood burners? How many of those wood burners might make a change in their behavior based on our messaging? Since there is no way to answer some of these questions quantitatively, we will just have to make some assumptions and get a relative number, so that if we get better data in the future from something like a survey or from another entity like the EPA, we can change our numbers.
Here is our attempt at emissions reductions:

Reductions: First, we know that 255,000 people (average) came through state fair display each year. These people would have had access to some of the handouts, bookmarks, factsheets, etc., as well as viewed the visual displays. Since there are 2.6 residents per household in MN, we can calculate approx. 98,000 households viewed the displays. If 53% of MN households burn wood, and we have 98,000 households viewing the state fair display, we would have approximately 52,000 wood burning households viewing the display. If we were able to modify 10% of those wood burners, that would be approximately 5,200 wood burning households trying to improve their burning habits. If these 5,200 households reduced their emissions by 33% (simply using dry wood), their numbers would be:

PM2.5: 5200*54lbs*33%= 92,664 pound reduction statewide or 17.87 pounds per wood burning household.
VOC: 5200*58lbs*33%= 99,528 pound reduction statewide or 19.14 pounds per wood burning household.

Clean Air Minnesota Project Summary:
July 2013 – June 2015

Project Title	Bookmark: Backyard Fire Tips	
Recommendation	Recommendation #24 – Wood Smoke Reduction Education and Outreach	
Category	Wood Smoke Outreach	
Prepared By	Kathleen Norlien	651-201-4613 kathleen.norlien@state.mn.us
Date	March 20, 2015	

Statement of Need

According to the MPCA's *Air Quality in Minnesota: 2015 Report to the Legislature*, the majority of the air pollutants of most concern today come from smaller, widespread sources that are not regulated through source permitting like power plants and factories. These nonpoint sources include residential wood burning. The report also indicates that 35% of fine particles and 35% of polycyclic aromatic hydrocarbons (PAHs) are a result of residential wood burning (wood stoves, boilers, and campfires). The MPCA estimates that the overall economic cost of health effects associated with exposure to current levels of air pollution in Minnesota may exceed $30 billion per year.

Strategic outreach and education about wood burning will be needed to address this source of air pollution in Minnesota.

Background

Although there are resources online, there was no brief handout or written material available to residents of Minnesota that promoted good practices when planning a backyard/recreational fire. Minnesota Department of Health had produced "book marks" in the past to get health messages out to the public. It was decided that this would be an achievable goal—to produce a bookmark on backyard fire tips to be distributed at the Minnesota State Fair as part of outreach around the issue of wood smoke.

Objective

The objective of the bookmark was to increase knowledge and awareness that wood smoke can be harmful to human health, especially for people with heart or lung disease such as asthma. In addition to the health message, we wanted to provide suggestions that people can easily incorporate into their activities to burn better and more efficiently (i.e. using only dry seasoned firewood, keeping the fire small and not letting the fire smolder etc).

This would primarily target reductions in PM and fine particulate matter.

It would be difficult to estimate measurable changes in pollutants emitted from fires but this bookmark is a beginning to making people aware that their backyard recreational fires can contribute to unwanted health effects. There is a strong opposition to restrictions on use of private land as indicated by the "After angry protests, North St. Paul rescinds backyard-fire permit, fee" at:
http://www.twincities.com/localnews/ci_27364888/north-st-paul-rescinds-backyard-fire-permit-fee
This piece was developed to make people aware of the hazards and provide suggestions to lessen the effects from backyard fires.

Deliverables

Bookmark, "Backyard Fire Tips"

Methodology

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

Target Audience

This bookmark was originally distributed at the 2014 Minnesota State Fair at both the Minnesota Department of Health's booth in the education building, as well as at the Minnesota Pollution Control Agency exhibit in the Eco Experience located in the Progress Center building at the State Fair.

This is a piece for the general public.

Environmental Justice

This could be an environmental justice issue because if houses are located closer to one-another with less land available, neighbors would be more likely to be exposed to the smoke from backyard fires.

Action Plan

Task/Step	Start/End Dates	Partner(s) Responsible	Description of Activity
1	June-July 2014	MDH Asthma Program Staff	Design a draft book mark and investigate the cost of producing a simple bookmark Draft language and mock-up
2	July 2014	Wood smoke team	Team members reviewed book mark and provided comments/suggestions to be made
3	July-Aug. 2014	MDH internal review	Internal review and subsequent printing
4	Early Aug 2014	Distribution	Distribute bookmarks to MPCA and MDH fair organizers

Project Partners

Organization	**Key Contact**	**Phone and Email**
MDH Asthma Program	Kathleen Norlien	651-201-4613 kathleen.norlien@state.mn.us
CAM Wood Smoke Team	Gena Gerard	ggerard@environmental-initiative.org
MPCA	Mike Nelson	651-757-2020 michael.nelson@state.mn.us

Project Manager

Minnesota Department of Health

Role of Env. Initiative

Support and input

Drivers

Need for piece to assist with public awareness of the issue of wood smoke from backyard fires.

External Factors

None

Communications

Report back to CAM Wood Smoke Team—the number of book marks distributed at the 2014 MN State Fair

Project Outcomes (Metrics): July 1, 2013 – June 30, 2015

1,000 book marks distributed at the Minnesota State Fair.

3,000 additional book marks have been printed and 806 have been distributed since fall of 2014 after the State Fair.

Book marks have been distributed to 70 Girl Scouts during a health merit badge event at ALA

Additional book marks have been distributed at public health conferences and venues.

Although we had several requests to use the book mark last summer, it was not ready for many of the neighborhood "night out" events which are often held during the summer months. We will have book marks available upon request for these types of events for the summer of 2015.

Metric	Data	Notes
1. Reduced emissions: VOC*	**BOTH** 2-year (actual) and 10-year (projected) period	Metric 1 – Emissions: describe calculations or attach separately. List assumptions.
2. Reduced emissions: PM 2.5*	**BOTH** 2-year (actual) and 10-year (projected) period	Metric 1 – Emissions: describe calculations or attach separately. List assumptions.
3. Cost per pound of pollutant reduced*	**BOTH** 2-year (actual) and 10-year (projected) period	Metric 3 – Emissions: costs for each project partner, including operating costs and grants, excluding salaries. List assumptions.
4. Percent of efforts conducted in RCAPs. Refer to RCAP map. Or qualitative description of impact on vulnerable populations.		Metric 2 – Exposure: describe or attach separately. List assumptions.
5. Funding for additional studies and research		Metric 3 – Economics: describe or attach separately. List assumptions.
8. Total project cost	**BOTH** 2-year (actual) and 10-year (projected) period	Metric 3 – Economics: describe or attach separately; insert budget total from below.
9. Economic benefits		Metric 3 – Economics: describe or attach separately. List assumptions.
10. Education and outreach activities, including "Dry wood" campaign: # events, articles, workshops, etc.	**1,000 book marks distributed at the Minnesota State Fair.** **3,000 additional book marks have been printed and 806 have been distributed since fall of 2014 after the State Fair.** **Book marks have been distributed to 70 Girl Scouts during a health merit badge event at ALA** **Additional book marks have been distributed at public health conferences and venues.**	Metric 4 – Education: describe or attach separately. List assumptions.

	Although we had several requests to use the book mark last summer, it was not ready for many of the neighborhood "night out" events which are often held during the summer months. We will have book marks available upon request for these types of events for the summer of 2015.	
11. Website hits		Metric 4 – Education: describe or attach separately. List assumptions.
12. Newsletter articles		Metric 4 – Education: describe or attach separately. List assumptions.
13. Before and after attitude survey in targeted area		Metric 4 – Education: describe or attach separately. List assumptions.
14. U of M projects for students		Metric 4 – Education: describe or attach separately. List assumptions.
15. Co-Benefits/Other		Describe calculations or attach separately. List assumptions.

*High priority metrics

Budget

	$200.62	First 1,000 printed for MN State Fair
Project Cost	$762.37	Total for two printings (4,000 bookmarks)
Available Funding	$	MDH
In-Kind Resources		MDH
Notes		

Approval

Approved by Partners	(Date)
Reviewed by CAM	(Date)

Updated 2/5/15 AS, 3/3/15 GG