

GreenStep Cities Best Practice # 23 **- final draft for comment through May 2010 –**

❖ **Local Air Quality:** Prevent generation of local air contaminants.

Optional for all cities

Category: Environmental Management

Summary

Through implementation of GreenStep City land use and transportation best practices, cities can shape physical development patterns and the actions of community members such that vehicle miles traveled are decreased, and thus air pollution from vehicles is decreased. Air pollution from other sources - businesses and local power plants – can be cut through implementation of actions in the GreenStep business assistance and renewable energy best practices.

In addition to these actions, cities can take additional measures to support the actions of community members that result in lower outdoor and indoor air pollution, improved public health and decreased health care costs. Several of these actions have cities conducting, or assisting others to conduct, education campaigns tied to making it easier/cheaper for citizens and businesses to adopt behaviors or equipment that prevent or reduce the generation of air pollutants.

Best Practice Actions

- Category A and B cities must complete at least one of the following actions if they choose to implement this best practice.
 - Category C cities must complete at least two actions if they choose to implement this action.
- (1) Conduct an education/financial assistance campaign around one of the following issues:
 - a. Indoor wood burning behavior, to ensure that wood burning is only done with seasoned wood and in a manner that doesn't negatively impact neighbors.
 - b. Indoor wood burning technology, to result in community members upgrading from inefficient/more polluting fireplaces and wood stoves to natural gas stoves and fireplaces or the most efficient certified wood stoves.
 - c. Smoker cars - older model/high polluting vehicles, to result in repairs spurred by repair vouchers.
 - (2) Regulate outdoor wood burning, using model ordinance language, performance standards and bans as appropriate, for at least one of the following:
 - a. Recreational burning.
 - b. Outdoor wood boilers.
 - (3) Conduct one or more education/behavior change campaigns on the topics below and document:
 - a. Decreased vehicle idling in specific locales or by specific fleets.
 - b. Increased sales by retail stores of low and no-VOC household products.
 - c. Replacement of gasoline-powered equipment with lower polluting equipment.
 - (4) Document the participation of at least 3 larger businesses/fleets in at least one of the following:
 - a. Clean Air Minnesota's Project GreenFleet.
 - b. U.S. EPA's SmartWay Transport program.
 - c. Installation of auxiliary power units that reduce truck and bus idling.
 - (5) Install at least two public charging stations for plug-in hybrid and full electric vehicles.

See related best practices *Renewable Energy* for community-scale biomass energy plants and *Efficient City Fleets*.

GreenStep Advisor

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Implementation Resources

(tied to the relevant action by number)

- (1a) A very important attribute of seasoned wood is that it contains less than 20% moisture.
- (1a and b) MPCA resources on residential wood burning and U.S EPA Burn Wise resources provide specific information detailing cleaner burning practices and public awareness toolkits that can be customized for Minnesota: <http://www.pca.state.mn.us/air/woodsmoke/index.html> and <http://www.epa.gov/burnwise>
- (1a and b and 2a and 2b) *EPA Strategies for Reducing Residential Wood Smoke* includes information on education and outreach tools, regulatory options and examples, wood stove and fireplace change-outs, funding options, hydronic heaters (includes outdoor wood boilers) and fireplace programs, and emissions and air quality improvements: <http://www.epa.gov/ttn/oarpg/t1/memoranda/strategies-doc-8-11-09.pdf>
- (1a and b) Information on medical hazards of exposure to wood smoke and other fine particulate pollution from the EPA - *How Smoke From Fires Can Affect Your Health*: <http://www.epa.gov/airnow/smoke/Smoke2003final.pdf> and *Particle Pollution and Your Health*: <http://www.epa.gov/airnow/particle/pm-color.pdf>
- (1b) The wood stove appliance standards from Washington State are recommended: http://www.ecy.wa.gov/programs/air/indoor_woodsmoke/wood_smoke_page.htm
- (1b) Current U.S. EPA-certified wood stoves and cleaner burning fireplaces are more polluting than those falling under Washington State standards, but these EPA standards will be upgraded in the next few years: <http://www.epa.gov/Compliance/resources/publications/monitoring/caa/woodstoves/certifiedwood.pdf> and <http://www.epa.gov/burnwise/fireplacelist.html>
- (1c) See the Valley Clean Air Now (CAN) Tune In & Tune Up 2007 Program from Arvin, California: <http://www.valley-can.org>
- (2) Elmira, New York (population 30,000) adopted an ordinance in 2004 restricting outdoor burning to propane, natural gas and charcoal fuels, and requires emissions drifting beyond a person's property line not to "unreasonably interfere with public safety and health." For details contact Attorney John Ryan at 607/737-5674.
- (2a) Model open burning ordinance developed by the League of Minnesota Cities: <http://www.lmc.org> search for: open burning
- (2b) A number of urbanized cities have placed a ban on use of these wood burners (Savage, Burnsville, Stillwater). Other cities have adopted performance standards – such as the U.S. EPA white tag performance standard (below), moratoriums, restrictions on warm season usage, and/or permitting, setback and stack height requirements. U.S. EPA maintains a list of the hydronic heaters (including outdoor wood boilers) with measured emission rates meeting the Phase II (white tag) emission limit of less than 0.32 lbs. of fine particles (PM 2.5 (particulate matter sized 2.5 microns or less) per million BTU output (i.e., useful heat): <http://www.epa.gov/burnwise/owhlist.html> The white tag attached to all qualified units is shown here: <http://www.epa.gov/burnwise/pdfs/poster.pdf>
- (3a) MPCA anti-idling resources, including model policies and educational materials: http://www.pca.state.mn.us/index.php?option=com_k2&view=item&id=2206&Itemid=
- (3b) Indoor air quality resources: <http://www.pca.state.mn.us/publications/mnenvironment/fall2008/indoorair.html> and <http://www.health.state.mn.us/divs/eh/air/index.htm>
- (3c) Lower-polluting equipment includes rechargeable electric or push lawn mowers, 4-stroke engines for professional lawn maintenance, and electric or 4-stroke gasoline boat motors.
- (3c) Lawn mower sharing campaign: http://www.nextstep.state.mn.us/res_detail.cfm?id=4264
- (4a) Project GreenFleet, a collaborative effort lead by Minnesota Environmental Initiative, with business, government agencies and non-profit organizations, to improve air quality and protect public health by reducing emissions from Minnesota's school buses and other diesel vehicles: <http://www.projectgreenfleet.org>
- (4b) U.S. EPA's SmartWay Transport program: <http://www.epa.gov/smartway/>
- (4c) MPCA financing for auxiliary power units: http://www.pca.state.mn.us/programs/sbomb_loan.html#evaluation

(5) For resources on public charging stations, contact Fran Crotty, Prevention and Assistance Division, MN Pollution Control Agency: 651/757-2297, fran.crotty@pca.state.mn.us

Benefits

- EPA-certified wood stoves are much cleaner than uncertified stoves and fireplaces. However, they still create roughly 150 times more harmful fine particles than a gas furnace.
- Outdoor wood boilers can emit 1,000 times more pollution than traditional indoor gas and oil furnaces and warrant attention if they emit more than EPA's Phase II fine particle emission standards and/or they aren't located far from the property line. Problematic situations are more likely in more densely populated areas.
- Residential wood smoke contains fine particles and toxic air pollutants (e.g., benzene and formaldehyde). Each year, smoke from wood stoves and fireplaces contributes over 420,000 tons of fine particles throughout the country. Nationally, residential wood combustion accounts for 44 percent of total stationary and mobile polycyclic organic matter (POM) emissions and 62 percent of the 7-polycyclic aromatic hydrocarbons (PAH), which are probable human carcinogens. There is also public concern about the use of older technology hydronic heaters (also known as outdoor wood boilers) and their growing use, particularly in the Northeast and Midwest. The health benefits associated with reducing fine particle emissions, including wood smoke, are significant. If all of the old wood stoves in the U.S. were changed out to cleaner burning hearth appliances, EPA estimates that at least \$35 billion in health benefits per year could be realized. Eliminating these emissions could help avoid thousands of premature deaths, non-fatal heart attacks, chronic bronchitis and asthma attacks for example. (Excerpt from EPA *Strategies for Reducing Residential Wood Smoke*: <http://www.epa.gov/ttn/oarpg/t1/memoranda/strategies-doc-8-11-09.pdf>)
- Vehicles with diesel engines represent only 10% of traffic on Minnesota roads, but contribute a significant amount of the air pollution generated by vehicles in the state, making improvements to them a high payoff investment.
- Air pollution levels in homes are often two to five times higher than outdoors, according to EPA studies. Many years of attention to indoor smoking has improved indoor air quality, but now widely available non-toxic paints, cleaners, furnishings, options to avoid fragrance chemicals, and other home products make further improvements possible.
- Benefits of four-stroke boat engines: <http://www.smalloutboards.com/4Stroke.htm>

Connection to State Policy

- While Minnesota cities have overall air pollution levels that typically fall under state/national standards, local air quality can be compromised by a variety of specific conditions, which cities can address by targeted actions.

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