City of Prineville

DEPARTMENT OF PLANNING & COMMUNITY DEVELOPMENT
CITY HALL
387 N.E. THIRD STREET
PRINEVILLE, OR 97754
(541) 447-5627

September 2, 2016

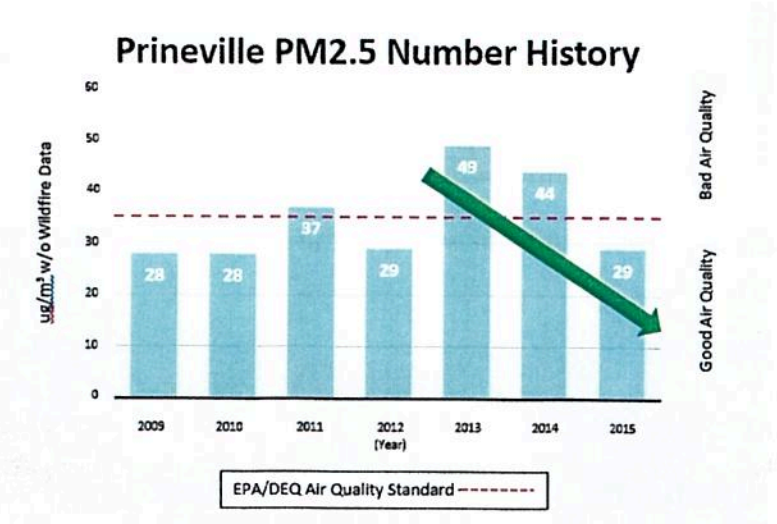
Laura Bunte
U.S. EPA
OAQPS, C304-01
4930 Old Page Road
Durham, NC 27703

Re: City of Prineville (Oregon) PM Advance update report.

Dear Laura,

Attached please find an updated PM Advance Plan from the City of Prineville. Updates are found **underlined and in red ink** throughout the document.

The Prineville/Crook County Air Quality (AQ) Committee has been successfully implementing projects from the Air Quality Plan since it has been adopted. The AQ Committee meetings which are regularly attended by DEQ staff, (who share their expertise on this subject), have created momentum community wide for implementation of the Plan and overall improvement of air quality over the last two years. The green arrow in the chart below shows the improvement in air quality (reduced PM2.5) that the City has seen in the past two years since working on the AQ Plan. This downward PM2.5 trend appears to continue in 2016 so far this year in Prineville and seems to reflect a return to historical low PM2.5 particulate counts.



One important point to mention, was that AQ Committee staff discovered an illegal burn barrel in close proximity to the monitor as the pictures show below.

Please note the large chunks of partially burned wood, in the burn barrel and on the ground.

This barrel has been removed.

Please also note, the AQ Committee believes that this illegal burn barrel may have affected the Air Quality Monitor $PM_{2.5}$ numbers during the years 2013 and 2014 in a negative manner.

In addition, the following is an executive summary of the AQ Committee accomplishments that flow from the AQ Plan.

- General education on burning properly, wood storage, seasoned wood, and types of wood to burn. The three-fold brochure shown on page 10 in the Plan, was distributed in 2014, 2015 and 2016 via the City Water and Sewer billing, the Fire Department website and social media.The City's Public Relations Firm has dispersed this information throughout the community via newspaper articles and social media.

- Created a weather forecasting system for "burn" and "no burn" days in conjunction with DEQ staff, NOAA, and others. Use of the internet, social media and phone system to inform residents of "burn" and "no burn" days;

- Built an electronic sign in the middle of town which communicates "burn" and "no burn" day information for fall 2016 air quality alerts.

- Developed a community air quality program message –

"CALL BEFORE YOU BURN – (541) 447-BURN (2876)

- Signed an MOU with Federal Agencies responsible for burning on Federal lands.

- Updated the Fire Department regulations.

- Coordinated a home weatherization program for Low Income and Seniors.

If you have any questions, please contact me.

Cordially,

Phil Stenbeck, CFM Planning Director
City of Prineville, Oregon

C: Rachel Sakata, DEQ Portland
Justin Spenillo, Air Planning Unit, EPA

PRINEVILLE AREA – FINE PARTICULATE MATTER ($PM_{2.5}$) DRAFT ACTION PLAN 2016

State of Oregon
Department of
Environmental
Quality

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Crook County
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Phone: (541) 447-6555
Fax: (541) 416-3891
http://co.crook.or.us

Environmental Services – Air Quality Planning
811 SW 6th Avenue
Portland, OR 97204
Phone: (503) 229-5659
(800) 452-4011
Fax: (503) 229-5675
Contact: Rachel Sakata
www.oregon.gov/DEQ

Eastern Region Office - Pendleton
800 SE Emigrant, #330
Pendleton, OR 97801
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Contact: Larry Calkins
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DEQ is a leader in restoring, maintaining and enhancing the quality of Oregon's air, land and water.

By: City of Prineville/Crook County Air Quality Committee,
Crook County Fire and Rescue and
The Oregon Department of Environmental Quality

June 2016

This report is prepared for the
City of Prineville and Crook County

Prineville City Council
Betty Roppe, Mayor
Jason Beebe, City Council
Jason Carr, City Council
Gail Merritt, City Council
Jeff Papke, City Council
Jack Seley, City Council
Steve Uffelman, City Council

Crook County Court
Mike McCabe, Judge
Ken Fahlgren, Commissioner
Seth Crawford, Commissioner

by:

The Prineville/Crook County Air Quality Committee

Gordon Aggers, Prineville
Darrell Antram, IT, City of Prineville
Mark Bailey, DEQ
Larry Calkins, DEQ
Ron Cholin, Planning Commissioner, Prineville
Seth Crawford, Crook County Commissioner
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Tim Deboodt, OSU Extension Office
Keith Eager, HR Manager Contact Industries
Steve Forrester, City Manager, Prineville
Kelly Hill, DEQ
Casey Kump, Assistant Fire Chief CCFR
Gail Merritt, City Council
Steve Miller, Prineville
Jack Seley, City Council
Larry Seymour, Sergeant, Prineville Police
Josh Smith, Senior Planner, Prineville
Matt Smith, Fire Chief CCFR
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Alternative formats (Braille, large type) of this document can be made available. Contact DEQ, Portland, at 503-229-5696, or toll-free in Oregon at 1-800-452-4011, ext. 5696.

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OVERVIEW

The Crook County and City of Prineville, the Crook County Commissioners and Prineville City Council collaborated with DEQ to develop an action plan to achieve pollution reductions. The reductions will help Prineville and nearby areas remain in attainment with the health based 2006 daily $PM_{2.5}$ NAAQS as well as maintain the annual standard identified in the 2012 $PM_{2.5}$ NAAQS revision. The action plan describes the proposed $PM_{2.5}$ reduction strategies, including what action will be taken, who will conduct the work, and when and how it will be done for the next three years up through the end of 2017. It is a mixture of emission reduction strategies consisting of non-regulatory and regulatory elements including incentives and education, interagency and intergovernmental cooperation, and local ordinances. If the community fails to meet the EPA standard, the EPA may decide to identify the Prineville area as nonattainment. A designation of nonattainment has the potential to cause significant direct and indirect impacts to the local economy. Companies may defer or eliminate plans to expand because of additional requirements to install emissions control equipment. Other companies may decline or be unable to locate in the community. As a result, jobs and dollars spent in the community may be lost and impact may be felt regarding the viability of other services such as retail goods and services, healthcare, and schools.

1.0 What Is $PM_{2.5}$?

Particulate matter (PM) is the general term used for a mixture of solid particles or liquid droplets found in the air. Fine particulate matter ($PM_{2.5}$) are very small airborne particles that are less than 2.5 microns in diameter, much smaller than the diameter of a human hair. Fine particulate matter in the atmosphere is composed of a complex mixture of particles: sulfate, nitrate, and ammonium; particle-bound water; elemental carbon; organic carbon representing a variety of organic compounds; and crustal material.

$PM_{2.5}$ can accumulate in the respiratory system and is associated with numerous health effects. These health effects are linked to premature death, especially related to heart disease, cardiovascular effects, such as heart attacks and strokes; reduced lung development and chronic respiratory diseases, such as asthma. Sensitive groups that are at greatest risk include the elderly, individuals with cardiopulmonary disease such as asthma, and children.

1.1 National Ambient Air Quality Standards For $PM_{2.5}$

In December 2012, the U.S. Environmental Protection Agency (EPA) strengthened the annual $PM_{2.5}$ (fine particulate) standard by lowering the level from 15 $\mu g/m^3$ to 12 ug/m^3 and retained the daily (24-hr) $PM_{2.5}$ standard of 35 $\mu g/m^3$. Areas in violation of the $PM_{2.5}$ standard (based on the most recent three years of federal reference monitoring data) are designated as a "nonattainment area" by the EPA.

1.2 Meteorological Conditions In Prineville

Prineville can experience strong nighttime inversions that break up with daytime solar heating. In the wintertime, arctic air masses frequently move over the Central Oregon area. Temperatures can remain below freezing for several weeks at a time. Winter nights are commonly clear and cool in Prineville and surrounding areas. Under these conditions, inversions and air stagnation can occur and reoccur for many days in a row over Prineville.

AIR QUALITY MONITORING HISTORY

The Prineville area has one fine particulate ($PM_{2.5}$) monitoring site located at Davidson Park. DEQ has monitored at this site since 2009 for $PM_{2.5}$. The Davidson Park location represents one of the higher $PM_{2.5}$ concentration areas and is representative of areas where people live, work, and play. After quality assurance, data from the site is transferred to databases at DEQ and EPA. Data from the monitor was used as the basis for the action plan and for determining compliance with the standard. Prior to monitoring for $PM_{2.5}$, DEQ monitored for PM_{10} between 1994 and 1997 at various other locations.

Figure 1: Winter over Crook County. Inversions often occur over Prineville during cold, clear winter nights

Prineville currently meets the revised annual $PM_{2.5}$ standard. However, in recent years the community has been challenged with periodic severe winter time daily concentrations. (Figure 2).

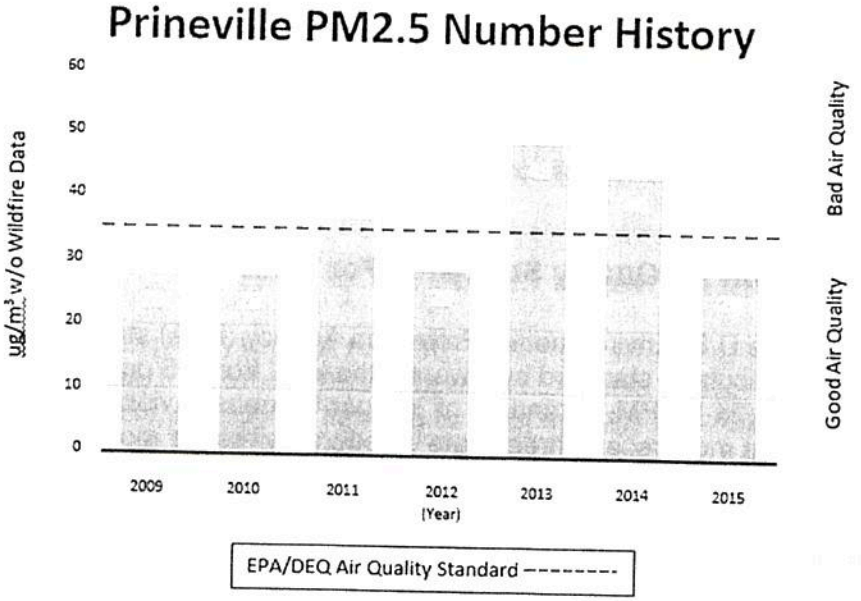

Figure 2: 98th percentile concentrations measured at Davidson Park monitor, Prineville, Oregon[1],[2]

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[2] For 2014, the 98th percentile concentration is 44 ug/m³, and for 2015 it is 29 µg/m³.

The 24 hour standard for $PM_{2.5}$ is met whenever the three year average of the annual 98th percentile of values at monitoring sites is less than or equal to 35 $\mu g/m^3$. While Prineville is currently violating the $PM_{2.5}$ standard, the area was not considered during the initial round of EPA nonattainment designations because there was no monitoring information available between 2006 and 2008. Figure 2 includes data through **2015**. This data shows that for years **2013 through 2015**, the 98th percentile concentration is 41 ug/m for that 3 year average. Figure 3 shows the three year average of the yearly 98th percentile days showing an upward trend. **As noted in figure 2, the 2015 concentration of 29 ug/m appears to show a downward trend from 2013 through 2015.**

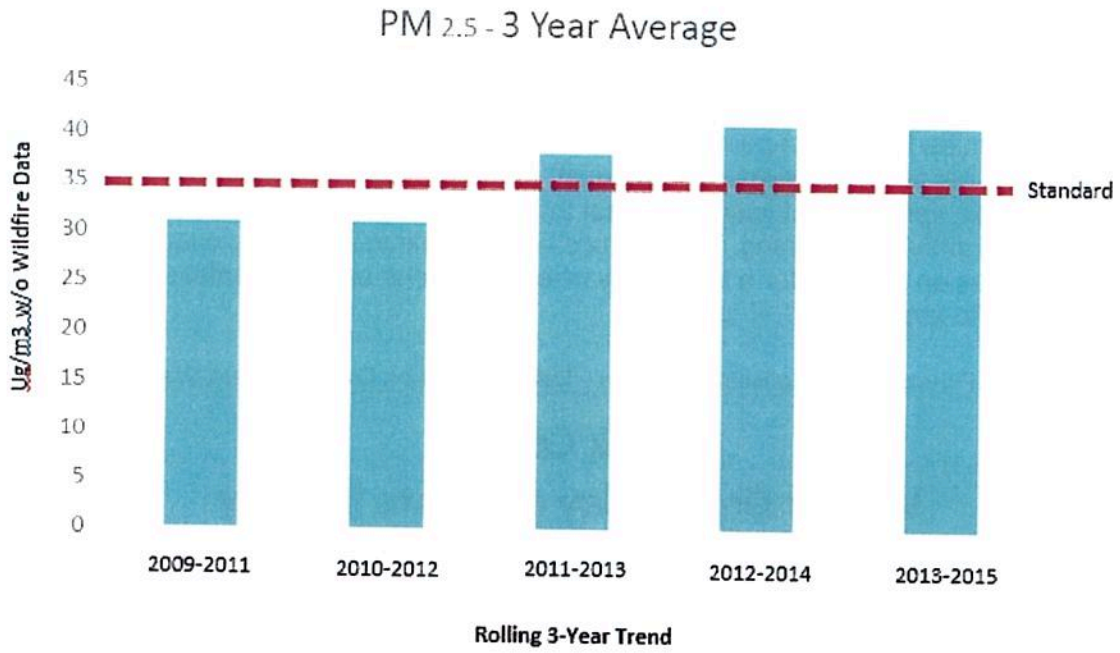


Figure 3 Three year average of the 98th percentile day

2.0 Sources Of $PM_{2.5}$ Emissions In Prineville

To identify all sources of $PM_{2.5}$ in the Prineville area, DEQ prepared a preliminary emission inventory. An emission inventory consists of emission estimates of all sources contributing to the air quality problem. It can also aid in the development of emission reduction strategies. A complete emission inventory is summarized in Figure 4 on the next page.

The analysis begins with an assessment of $PM_{2.5}$ emissions in the Prineville area. Emissions are estimated for a wide variety of sources and are summarized into five major categories. The five major categories include:

1) Permitted point sources (industrial/commercial facilities),

2) Mobile sources that include on-road mobile sources (e.g. car and truck exhaust, brake and tire wear, and re-entrained road dust), and non-road vehicles and equipment (e.g., construction equipment, recreational off road vehicles, lawn and garden equipment),

3) Waste disposal, that includes open burning, prescribed burning and agricultural burning,

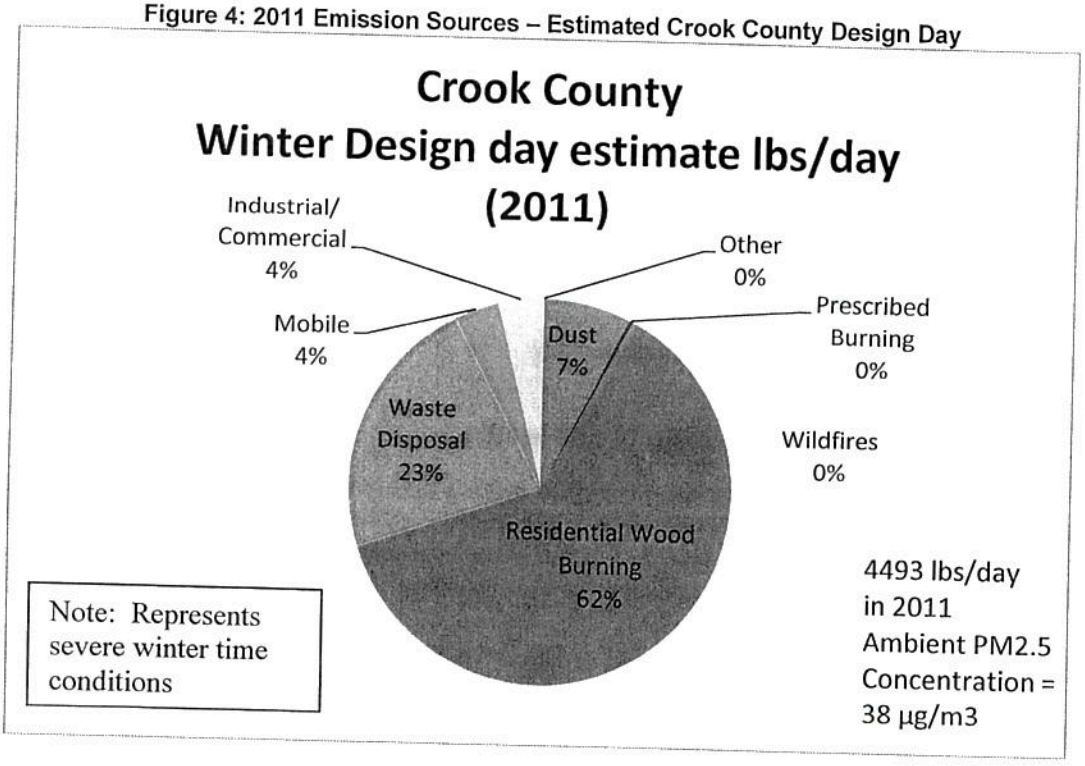
4) Residential wood heating, including woodstove, wood burning fireplace insert, fireplace, and pellet stove emissions, and

5) Miscellaneous sources (e.g., fugitive dust sources, and other sources).

$PM_{2.5}$ emissions are estimated using many sources of information, including industrial permits, population, housing, employment information, surveys, and estimates of motor vehicle travel in the area. DEQ is using 2011 to estimate emissions, because it is the most recent year for which DEQ completed the National Emission Inventory (NEI) for Crook County.

Sources of $PM_{2.5}$ in the Prineville area include area sources (e.g., residential wood burning), permitted industrial point sources, mobile sources including on-road mobile sources (e.g. car and truck exhaust, road dust) and non-road mobile sources (e.g., construction equipment) and waste disposal that includes open burning, prescribed burning and agricultural burning. The sources listed on the following pie chart represent the main emission sources for a winter day when emissions are the greatest (design day) in the Prineville area in 2011. (Figure 4)

Figure 4: 2011 Emission Sources – Estimated Crook County Design Day



For 2011, the design day emissions were emissions during the residential wood heating season that occurred on days when the highest monitored concentrations or design value (DV) concentrations were measured. For Prineville and Crook County, the typical season and design days occurred in winter (November through February) when historically the daily $PM_{2.5}$ standard is most frequently exceeded.

2.1 Residential Wood Combustion

Wood combustion is a common way to heat homes in Oregon. To estimate emissions from wood burning, DEQ used the National Emission Inventory (NEI) for Crook County and estimated severe daily winter emissions as derived from annual emissions estimates.

2.2 Waste Disposal

Emissions of $PM_{2.5}$ from waste disposal were estimated by the NEI for Crook County for daily winter day emissions. Waste disposal includes emissions from local open burning, prescribed burning, agricultural burning, landfills and other methods of waste disposal.

2.3 Mobile And Nonroad Sources

Emissions of $PM_{2.5}$ from on-road and nonroad sources were estimated by 2011 annual Crook County emissions estimates from the EPA 2011 NEI and estimating daily winter day emissions. On-road sources (exhaust, brake, tire, and re-entrained road dust) were averaged through the year and applied to a winter scenario. Emissions for nonroad vehicles and equipment, such as construction and light industrial equipment, were estimated based on estimated contribution during the winter months. Emissions from rail, aircraft, and recreational marine were estimated using EPA's NEI for Crook County and estimated based on winter activity levels.

2.4 Permitted Industrial Point Sources

DEQ maintains data on industrial point source emissions for all sources emitting 10 or more tons of criteria pollutants per year. Emissions information is compiled from each source's operating permit issued by DEQ. All permitted point sources within Crook County are included in the emissions inventory[3].

[3] The emission inventory also includes data on Crook County. Industrial sources are only within the Urban Growth Boundary.

ADVANCED AIR QUALITY ACTION PLAN (AAQAP)

In the 1990's, the DEQ and the City of Prineville worked together to construct a woodstove and open burning advisory program. It was a voluntary program to enhance the public awareness of potentially poor air quality days and to further educate the public on clean burning techniques for wood stove use. This initial advisory program has not been implemented for a number years.

Since that time, EPA has strengthened the fine particulate air quality standard, based on updated health effects information indicating high levels of $PM_{2.5}$ is a serious public health threat. The more stringent $PM_{2.5}$ air quality standard has triggered an interest by the community to revive the air quality program to meet the new standard. This Advanced Air Quality Action Plan (AAQAP) outlines a voluntary and regulatory program to reduce PM2.5 emissions with additional goals of enhancing future air quality, economic development opportunities for the community and improving the health of the community's citizens.

3.0 AAQAP Mission Statement And Goals

AAQAP - Mission Statement

"Reduce the $PM_{2.5}$ particulate in the Prineville/Crook County air shed to levels which comply with the 24 hour standard for $PM_{2.5}$ which is met whenever the three year average of the annual 98th percentile of values at monitoring sites is less than or equal to 35 $\mu g/m^3$."

AAQAP - Goals

The Goals of the AAQAP are:
Goal 1 - Reduction of $PM_{2.5}$ air particulate via Education,
Goal 2 - Reduction of $PM_{2.5}$ air particulate via Air Quality Forecasting,
Goal 3 - Reduction of $PM_{2.5}$ air particulate via Coordination on Prescribed Burns,
Goal 4 - Reduction of $PM_{2.5}$ air particulate via Coordination on Outdoor Burning,
Goal 5 - Reduction of $PM_{2.5}$ air particulate via Weatherization and Woodstove Tradeout Program,
Goal 6 - Reduction of $PM_{2.5}$ air particulate via Code Enforcement, and
Goal 7 - Reduction of $PM_{2.5}$ air particulate via Future Opportunities.

3.1 Prineville/Crook County Air Quality Strategies

After reviewing the information found in Section 1 and 2 of this plan, the Advanced Air Quality Planning Committee (AAQPC) discussed actions for the community that reduce $PM_{2.5}$ particulate, and at the same time, do not place a significant burden on any one sector of the community. The AAQPC suggest implementing the actions found in Sections 4 through 10 of this plan will result in significant reductions of $PM_{2.5}$ particulate, thus accomplishing the AAQAP "Mission Statement" through implementation of Goals 1 through 7 of the AAQAP. The actions found in Sections 4 through 10 of this plan include existing, new, and future planned strategies, and include time frame for implementation and estimated costs.

EMMISSION REDUCTION VIA EDUCATION

4.0 Continued Community Involvement And Strategy Evaluation

The AAQPC will continue to conduct public outreach by keeping community members informed of air quality conditions and educating the community regarding the implementation of any new strategies. In accordance with the AAQAP Mission Statement and Goals, the AAQPC will continue to study and revise this action plan to meet the National Ambient Air Quality Standard with an additional buffer between the standard and actual $PM_{2.5}$ emission levels. A critical part of implementing this plan is educating the citizens on options that provide reduced $PM_{2.5}$ emissions. Sections 4.1, 4.2, and 4.3 of this plan provide information about how the community is going to reduce $PM_{2.5}$ emissions via educational outreach which in turn will provide economic development opportunities and better air quality for citizens in Prineville and Crook County.

4.1 Education Outreach And Awareness

The City of Prineville and Crook County plan to conduct Public Education and Awareness regarding the importance of reducing $PM_{2.5}$ emissions from wood smoke. Education has had an impact on reducing wood smoke in the past, and the community intends to enhance current educational strategies. The educational efforts include:

1) General education on burning properly, wood storage, seasoned wood, and types of wood to burn;

2) Use of social media to inform residents of burn no burn days such as:
   a) The City's webpage;
   b) Coordinating with the local newspaper to put information on their webpage;
   c) Email to residents;
   d) Public education outreach to service groups;
   e) Effects of $PM_{2.5}$ and why residents should care;
   f) Utilizing a community mailer to educate public about these changes;
   g) Bumper stickers.

3) Free yard debris days at the County Landfill.

4.2 Education Brochures And Materials

The AAQPC has developed a brochure consistent with Section 4.1 (1). The three-fold brochure shown on the next page was distributed in **2014, 2015 and 2016** via the water bills mailed out in City Limits. The brochure has helped educate citizens in the community on burning properly, wood storage, seasoned wood, and types of wood to burn which is a very important air quality issue. The AAQPC is encouraging the City to do this annual outreach in October of each year and to further disperse this information via the City's webpage, the local newspaper, email to residents, education with service groups. **The City's Public Relations Firm has dispersed this information throughout the community via newspaper articles and social media.**

BURN RIGHT: SAVE MONEY AND PROTECT YOUR HEALTH

Brought to you by the City of Prineville, Crook County Air Quality Committee

Ways to improve our air quality:

[illegible] *It is against the law.*

[illegible]

If you have another form of heating your home [illegible] the City of Prineville (541 447 5627). Use your alternative heating source when air quality is poor.

What not to burn!

Burning the following materials is illegal any time, anywhere in Oregon:

- Garbage/food waste
- Rubber products
- Tires
- Plastic
- Dead animals
- Waste oil & petroleum treated or related materials
- Asphalt or industrial waste
- Automobile parts including frames
- Asbestos containing materials
- Any material creating dense smoke/noxious odors

Questions about prohibited materials?

Call the DEQ at 541-633-2016

Created by the City of Prineville/ Crook County Air Quality Committee

Questions about this brochure?

Please contact Phil Stenbeck or Josh Smith with the City of Prineville Planning Department at (541) 447-5627.

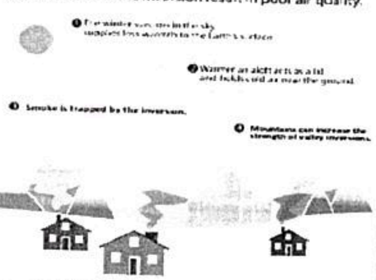
Our Concern

The City of Prineville has been contacted by the Oregon Department of Environmental Quality (DEQ) about the City's air quality. Prineville generally has good air quality, **however** on some very cold winter days, the City can experience an inversion layer. The inversion layer traps smoke which in turn can affect health. Usually, those most affected are the young, the elderly, and those with preexisting health conditions.

To alleviate the concern, the City of Prineville and Crook County are asking for your help in reducing the amount of smoke in the air. The tips on the following pages will guide you in helping the community achieve this goal.

What is an inversion?

Calm winds and the inversion result in poor air quality.



SMOKE CAN AFFECT YOUR HEALTH

HEART IMPACTS

Can cause heart attack, irregular heartbeat, heart failure, stroke, and early death.

LUNG IMPACTS

Can trigger asthma attacks, aggravate other lung diseases, and damage children's lungs.

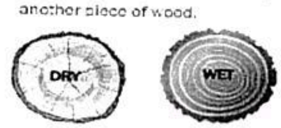
WHO IS AT GREATER RISK

[illegible]

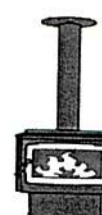
FOUR EASY STEPS TO REDUCE WOOD SMOKE

1. **Save money** by burning dry seasoned wood! Make sure it has been **split, stacked, covered, and stored for at least 6 months.**

2. You can tell the wood is dry because properly **dried wood is lighter and has cracks in the grain on the end.** It also sounds hollow when knocked against another piece of wood.



3. Use a **cleaner** burning gas or wood stove. Don't forget to **get your chimney cleaned.**



4. Provide sufficient air to the fire to **avoid excessive smoke.**

Need help replacing a woodstove? Contact Phil or Josh at (541)-447-5627 for more information!

4.3 Free Yard Debris Days

The City of Prineville and Crook County plan to increase and strategically time the opportunities for free use of the Crook County Landfill. The City of Prineville and Crook County believe increasing the number of days and strategically timing the free landfill days can play an important role in reducing $PM_{2.5}$ emissions during the fall/winter months when significant plant and tree material becomes available for outdoor burning and/or composting. Currently, the Crook County landfill has a Free Yard Debris Day in April each year. The AAQPC believes that timing the free yard debris days in the fall of each year (October and November) will give landowners the opportunity and incentive to remove debris from their yards and deposit it in the landfill early in the winter season reducing the need for outdoor burning of yard which reduces the $PM_{2.5}$ emissions from wood smoke.

1) The AAQPC suggests the City and County fund one more Free Yard Debris Day and changes the days to November.

2) The AAQPC believes $PM_{2.5}$ reductions can be achieved by allowing Free Yard Debris Day's at the Crook County landfill annually on the 2nd and 4th Saturday's of November.

Proposed Free Yard Debris Day changes to be implemented by August 31, 2016.

4.4 Community Notification Sign

The City of Prineville and Crook County have discussed placing a Community Notification sign somewhere in the community. At this time, funding has been identified for the sign by the Crook County Fairgrounds and a discussion about location is underway. The sign will serve the County's outreach needs, law enforcement needs and the County Fairgrounds has also offered to make it available as a communication tool for the City and County air quality program. The County Fairgrounds will place the sign to fit their needs, and then the Air Quality Committee will participate in the use of the sign as an outreach tool to citizens.

Timeline: The City and the County plan on having the sign in place and activated by August 1, 2016.

EMMISSION REDUCTION VIA AIR QUALITY FORECASTING

5.0 Air Quality Forecasting

Back in the mid-1990's, the City of Prineville had an existing air quality program requesting residents to curtail their residential wood combustion on high pollution or high health risk days. This program was in effect because the area was approaching the PM_{10} standard, however the Prineville area quickly came into compliance and emissions became low enough that the program was not needed. Now that Prineville is struggling to meet the $PM_{2.5}$ standard, both the City and the County have decided to revive the air quality forecasting program in an effort to reduce $PM_{2.5}$ emission particulate levels.

5.1 Air Quality Forecasting For Burn/No Burn days

The purpose of this section is to outline how the community of Prineville and Crook County will determine "Burn" or "No Burn" days. The AAQPC has looked into several tools for forecasting appropriate weather, or inappropriate weather, for the purpose of outdoor burning. Much thought was given to best practices in forecasting that would help the community maintain an adequate means to clear debris and other material from personal property while decreasing the number of days the community is out of compliance with national air quality standards. This was done through research obtained from the National Oceanic and Atmospheric Association (NOAA) in Pendleton, Oregon, and investigating how similar communities and fire districts have utilized similar information for the same purpose. It is the goal of this Action Plan to utilize forward looking information as best as possible, while limiting the use of information that is a retroactive look in time.

Process

- The primary tool to be used for burn forecasting will be the Daily Dispersion Outlook and the Graphical Ventilation Forecast provide by NOAA Pendleton at: http://www.wrh.noaa.gov/pdt/forecast/fwxSmokeManagement.php?wfo=pdt The Ventilation Index forecast is provided by NOAA Pendleton on a daily basis. This will provide the community with real time air flow information, while also providing a two day forecast for predicting burn/no burn weather conditions. The information provided by this tool combines the mixing height of local air with the amount of transverse winds. Days with a higher Ventilation Index are more appropriate for burning than days with a lower index. The information also highlights that burning after early morning inversions have lifted is more appropriate.

- Secondly, the Action Plan will utilize nephelometry data and a DEQ spreadsheet to determine weather forecasts for a particular day. This data can be found at: http://www.deq.state.or.us/aqi/wsadvisory/ This data, along with the Daily Dispersion Outlook and Ventilation Index provided by NOAA will be the primary deciding point on what is consider a "Burn" or "No Burn" day.

- The Air Quality Index (AQI) provided by the Oregon Department of Environmental Quality will be the last tool utilized in this plan. The AQI is provided at:

http://www.deq.state.or.us/aqi/index.aspx It is the opinion of the AAQPC however, that utilizing this retrospective tool solely for the determination of burn/no burn days is inadequate as it does not represent current or future conditions. This tool will be used internally to help evaluate the impact of the burn/no burn days on air quality.

The advisory will be provided to the public every day throughout the year.

Goals of the Weather Forecasting System are to:

1) Create a system to notify the individuals, businesses, and agencies of Crook County when the forecasted weather may negatively impact the air quality for the City of Prineville and Crook County, or where open burning would create an inappropriate life safety risk due to high winds or low humidity.

2) Utilize this information to notify public when forecasts show it is appropriate to burn.

3) Work with dispatch to utilize @CrookCounty911 twitter feed to announce these "no burn" weather days to the public.

4) Include this information on Agency websites and Facebook pages.

5) Continue to annually look at opportunities for improvement.

The Crook County Fire and Rescue Department has worked closely with DEQ staff to create and implement a Weather Forecasting Program in Prineville/Crook County. The current program requires all persons in the City or the County to call the "Call Before You Burn" phone number and check to see if it is a "Burn" or "No Burn" day.

5.2 Air Quality Forecasting And Woodstove Use

A staff person(s) will be identified who is responsible for providing the advisory and follow-up notifications for burn and no-burn days. With respect to woodstove burning on no burn days, this would be a voluntary compliance program and not limit in any way an individual's ability to operate a wood stove or fireplace.

5.3 Air Quality Forecasting And City And County Outdoor Burning Regulations

The Crook County Fire and Rescue Department will add a requirement to outdoor burn permits requiring the permitee check the outdoor burn and no-burn day advisory prior to outdoor burning in the City and the County. The permittee that violates the no burn advisory will be faced with compliance/enforcement by staff from the City Police Department for violations in City Limits and by County Sheriff's Department staff for violations in the County. Enforcement will be consistent with City Code when in City Limits and consistent with County Code when in the County. Enforcement on outdoor burning activities will occur year round.

Timeline: Develop and have in place by August 1, 2015. **This has been completed.**

EMMISSION REDUCTION VIA PRESCRIBED BURNING COORDINATION

6.0 Federal And Private Lands Coordination

The City and County will identify a staff person who is responsible for providing the daily Air Quality advisory and follow-up notifications for burn and no-burn days. This advisory will also be coordinated with ODF fire weather individuals who also forecast weather for our area and specifically look at inversion layer and stagnant air criteria.

6.1 Prescribed Burning Government Coordination

The air quality forecast will be used in a coordinated outreach to government agencies such as the Oregon Department of Forestry Smoke Management Program, U.S. Forest Service and BLM, ranchers and private forests for prescribed burning projects within Crook County and in the area of Prineville during poor air quality days or specifically on days when smoke may move towards Prineville.

The City of Prineville, Crook County, Crook County Fire and Rescue District and the Oregon Department of Environmental Quality (DEQ) have completed a Memorandum of Understanding (MOU) with Federal and State agency responsible for burning on State and Federal Lands.

EMMISSION REDUCTION VIA OUTDOOR BURNING REGULATIONS

Outdoor burning activities in Prineville and Crook County have a long history of helping the community manage solid waste in the form of yard debris such as leaves and branches from bushes and trees. Clearly there is a benefit from outdoor burning, such as reduced debris going to the landfill. Outdoor burning activities can have a negative effect on the community's air quality. With this potential negative impact in mind, the City and the County passed outdoor burning regulations in the 1990's. At this time the AAQPC believes a review and modification of the existing codes could significantly reduce $PM_{2.5}$ particulate emissions resulting in the community complying with the $PM_{2.5}$ air quality standard established by the EPA.

7.0 City And County Outdoor Burning Regulations

The AAQPC has reviewed the City and County codes which are listed in Section 7.1 (City Code) and in Section 7.3 (County Code) and suggest the changes found in Section 7.2 for the City Code and the suggested changes found in Section 7.4 for the County Code. For the proposed changes to the codes to be implemented, public hearings and approval by the City Council and the County Court for their respective jurisdictions would be required.

7.1 City Outdoor Burning Code

City of Prineville Code
Chapter 93.57
BURN BARRELS AND OPEN PILES.
(A) Burn permits. Annual permits to burn are required before using burn barrels or open burn piles. Burn permits shall be effective January 1 through December 31 of the same year. The annual fee for each permit shall be $25, which fee may be modified by a City of Prineville Resolution. The permit must be shown to a city or Crook County Fire and Rescue (Fire Department) representative upon request. The permit will be issued to the applicant for burning items in a burn barrel or in an open pile at a specific address and such permit is not transferrable to any other address.
(B) Requirements. Persons burning in a burn barrel or in an open pile must meet all the following requirements:
(1) There must be a valid burn permit issued for the address at which the burn barrel or open pile is located;
(2) There must be a person 14 years of age or over physically present at the burn barrel or burn pile at all times burning is done;
(3) Burning shall be only between 7:00 a.m. and 12:00 noon, Wednesdays through Saturdays, excluding holidays set out under Oregon law. All burn barrels and burn piles must be completely extinguished by noon on allowable burning days. Completely extinguished means that there shall not be any smoke coming from the burn barrel or burn pile and the burn barrel or burn pile shall contain no smoldering material or hot ashes or embers;
(4) There shall be no burning upon restriction by the Fire Department due to fire/safety conditions.
(C) Persons burning in a burn barrel must meet all the following requirements in addition to the requirement under division (B) above:

(1) The burn barrel must be covered with a maximum one-quarter inch screen in good condition.
(2) There shall be no holes in the burn barrel except for air holes not less than one-quarter inch in diameter. There shall be no holes in the burn barrel caused by rust rot.
(3) Only dry paper shall be burned in the burn barrel.
(4) The burn barrel shall be at least 25 feet away from any combustibles, structures, or property lines.
(D) Persons burning in an open pile must meet the following requirements in addition to those requirements in division (B) above:
(1) Open burn piles must only contain dry leaves, dry wood, or paper.
(2) Burn piles may not exceed six feet in diameter and three feet in height.
(3) Burning in an open burn pile shall be only in the months of October through June.
(4) The burn pile shall be located at least 25 feet from any combustibles, structures, or property boundary lines and in addition a ten-foot fuel break exposing mineral soil must be maintained around the burn pile.
(5) Burning shall be conducted in a manner and under conditions that prevent any burning material, sparks, or embers going onto any combustible material.
(E) This section shall not apply to any fire in which the Fire Department has agreed to participate.
(F) Penalties. The maximum penalty for a person responsible for each violation of this section shall be $500. Upon first conviction the fine shall be not less than $50. Upon a second conviction the fine shall be not less than $100, and on the third and subsequent convictions the fine shall be $500 and there shall be no further burn permits issued for burning at the address of the third conviction or issued to any person who has been convicted of violating this section three or more times.
(Ord. 1022, passed 9-12-95; Am. Ord. 1108, passed 12-9-03; Am. Ord. 1139, passed 11-14-06)
Cross reference: Uniform Fire Code, see Ch. 95

7.2 Proposed Changes To City Outdoor Burning Regulations

The following are proposed changes to the City Outdoor Burning Regulations:

A) Modify City Burn Regulations to identify that outdoor open burning is closed when a "no burn" day is forecasted.

B) Require permit holders to subscribe to a media outlet to be notified that burning is closed or check the Crook County Fire and Rescue or City website before burning.

C) Modify City Codes to require individuals wishing to burn to check the appropriate media outlet prior to burning.

D) Modify City codes to explicitly state that outdoor burning is prohibited on "no burn" air quality days, as announced by CCFR or other media authorized by the City or the County, and allow for regulation by local law enforcement.

E) Modify Outdoor burning times to be consistent with OAR 340-264-0070, Monday through Sundays, excluding holidays set out under Oregon law. Completely extinguished means that there shall not be any smoke coming from the burn barrel or burn pile and the burn barrel or burn pile shall contain no smoldering material or hot ashes or embers;

F) Proposed Code changes to be adopted by August 1, 2015. **Completed in 2015.**

7.3 County Outdoor Burning Code

Crook County Code
Chapter 8.12
PUBLIC BURNING

Sections:

8.12.010 Permit – Required.
8.12.020 Permit – Issuance.
8.12.030 Permit – Renewal.
8.12.040 Authority.
8.12.050 Violation – Penalties.

8.12.010 Permit – Required.

No person outside the boundaries of zone 2 shall cause or permit to be initiated or maintain on his property any open burning of commercial waste, demolition materials, domestic waste, industrial waste, land clearing debris or field burning without written permission from the county court of Crook County. (Ord. 35 § 1, 1987)

8.12.020 Permit – Issuance.

The county court shall authorize the issuance of a permit in accordance with DEQ regulations through the office of the Prineville fire department. (Ord. 35 § 2, 1987)

8.12.030 Permit – Renewal.

It shall be necessary for those obtaining a burning permit to contact the Prineville fire department on a yearly basis to obtain the written permit. It shall also be required that on each occasion of actual burning, the permit holder shall be required to contact the Prineville fire department with the location and burn time of the proposed burn. (Ord. 35 § 3, 1987)

8.12.040 Authority.

The Prineville fire department is the designated authority for issuance of the permits and for determining if violations have occurred. However, overall authority still rests with the county court for enforcement of any violations of the terms of this chapter. (Ord. 35 § 4, 1987)

8.12.050 Violation – Penalties.

Penalties for failure to obtain a permit or make the required call notifying the Prineville fire department of the burn location and time shall be punishable as a Class B misdemeanor. This is in addition to any civil remedies which are available at the time of the burn. (Ord. 35 § 5, 1987)

7.4 Proposed Changes to County Outdoor Burning Regulations

The following are proposed changes to the Crook County Outdoor Burning Regulations:

A) Change "zone 2" to "the Crook County Fire and Rescue District".
B) Modify County Codes which change Prineville Fire Department to Crook County Fire and Rescue.
C) Modify the County Outdoor Burning Penalties to be consistent with the City Code. The maximum penalty for a person responsible for each violation of this section shall be $500. Upon first conviction the fine shall be not less than $50. Upon a second conviction the fine shall be not less than $100, and on the third and subsequent convictions the fine shall be $500 and there shall be no further burn permits issued for burning at the address of the third conviction or issued to any person who has been convicted of violating this section three or more times.
D) Proposed Code to be adopted by August 31, 2015. **Completed in 2015.**

EMMISSION REDUCTION VIA WEATHERIZATION AND WOOD STOVE TRADE OUT PROGRAM

8.0 Weatherization And Wood Stove Trade Out Program

During the AAQPC meetings, the need for a weatherization and wood stove trade out program for $PM_{2.5}$ emission reduction was identified. The weatherization and tradeout program that flowed from this discussion has two parts.

Part 1 of the program would aim at weatherization to reduce the amount of heat needed to keep homes warm during the winter months. This would reduce the amount of heat needed and decrease $PM_{2.5}$ emissions generated from wood stove use to meet this heating need. The AAQPC found it very important to find grant funding for this proposed activity so as to not make it a burden on the home owner.

Part 2 of the program would focus on providing certified wood stove, gas, electric or pellet inserts for open hearth fireplaces that are being used to heat homes, replace old inefficient wood stoves and also provide the same level of incentive for those persons interested in changing to gas or electric sources of heat. The AAQPC found it very important to find grant funding for this proposed activity so as to not make it a burden on the home owner.

8.1 Part 1 - Home Weatherization

The AAQPC identified home weatherization action as a critical activity in terms of helping to reduce $PM_{2.5}$ particulate emissions. This action includes a combination of tax incentives and grant opportunities that bring housing units up to the current building code standard and home sale requirements. The actions are listed below:

1) Increase weatherization and energy efficiency to minimize the time wood is burned. **(Implemented in 2015 via Housing Works NonProfit.)**

2) Provide tax/grant incentives for installation of insulation that improves home heating efficiency.

3) Engage a partner agency to help implement this activity and be supportive of outreach from their agency into the community. **(Completed 2015)**

8.2 Part 2 – Wood Stove Trade Out Program

The air quality for the City of Prineville is monitored by the Oregon Department of Environmental Quality and reported to the Environmental Protection Agency. The air quality monitoring location is at Davidson Field, an area that represents one of the worse air quality areas in Prineville where the public lives and recreates.

The wood stove trade out program includes a wide range of activities that reduce $PM_{2.5}$ particulate emissions. The range of activities would focus $PM_{2.5}$ emissions reduction in target areas. It is understood that grant opportunities will likely specify explicit implementation criteria. However when possible, the highest priority would be given to Area 1 , with Area 2 being the second priority area, Area 3 the third priority area and Area 4 being the rest of the residential areas in City Limits. Please see Map 1 and Map 2 on page 22 for details.

The AAQPC believes that $PM_{2.5}$ emission reduction via installation of wood stove, gas, electric or pellet inserts in fireplace's being used to heat homes in Area 1 is Priority 1 and will significantly reduce $PM_{2.5}$ emissions. A fireplace located within Area 1 holds the maximum potential to elevate measured $PM_{2.5}$ concentrations especially when an air inversion is present in Prineville. Changing uncertified wood stoves for certified stoves, pellet stoves or non-wood burning appliances can significantly reduce measured $PM_{2.5}$ particulate in the Prineville area. An AAQAPC member inventoried (via a windshield survey) a one block vicinity within Area 1 and found that there were 25 fireplaces for homes and buildings, 12 homes using woodstoves, 7 homes using gas and 2 homes using electric for heat. When considering potential reductions to measured concentrations and quantity of $PM_{2.5}$ emissions, the AAQPC finds addressing wood burning appliances in Area 1 is the highest priority for reduction of $PM_{2.5}$ emissions. The AAQPC believes that combining this situation with additional low income criteria would serve the City of Prineville and Crook County well as criteria for any grant funding opportunities for residential heating upgrades.

According to a local woodstove company, a safe cost estimated for a new efficient fireplace insert, including removal of an old fireplace insert and requiring piping and other building code work is approximately $4,500 dollars.

25 fireplace inserts in Area 1	***= $112,500.00***
12 woodstove trade outs for more efficient models in Area 1	***= $ 54,000.00***
The grand total for all trade outs in Area 1	***= $166,500.00***

The AAQPC believes that $PM_{2.5}$ emission reduction via installation of woodstove inserts in fireplaces being used to heat homes in Area 2 is Priority 2 and will significantly reduce $PM_{2.5}$ emissions. A fireplace in Area 2 holds the potential to add additional particulate to the community's air, which could potentially waft into and significantly affect the amount of $PM_{2.5}$ particulate in Area 1, especially when an air inversion is present in Prineville.

The AAQAP plan inventoried (via a windshield survey) Area 2 and found that there were approximately 40 fireplaces for heating homes and approximately 60 homes using woodstoves. When considering potential reductions to measured concentrations and quantity of $PM_{2.5}$ emissions, the AAQPC finds addressing wood burning appliances in Area 2 is the second highest priority for reduction of $PM_{2.5}$ particulate emissions. The AAQPC believes that combining this situation with additional low income criteria would serve the City of Prineville and Crook County well as criteria for any grant funding opportunities for residential heating upgrades which will ultimately reduce $PM_{2.5}$ emissions.

40 fireplace inserts in Area 2	***= $180,000.00***
60 woodstove trade outs for more efficient models in Area 2	***= $270,000.00***
The grand total for all trade outs in Area 2	***= $450,000.00***
The grand total for Area 1 and 2	***= $616,500.00***

The AAQPC believes that $PM_{2.5}$ emission reduction via installation of woodstove, gas and pellet inserts in fireplaces being used to heat homes in Area 3 is Priority 3 and in Area 4 is Priority 4, both of which will significantly reduce $PM_{2.5}$ emissions. Changing uncertified woodstoves to certified woodstoves, pellet or to a non-wood burning device will also significantly reduce $PM_{2.5}$ emissions in these areas. A fireplace in Area 3 and 4 hold the potential to add additional particulate to the community's air which could potentially affect

the amount of $PM_{2.5}$ particulate in Area 1, especially when an air inversion is present in Prineville.

An inventory of Areas 3 and 4 was not conducted. The AAQPC believes a reasonable estimate of the fireplaces and woodstoves in Area 3 and Area 4 can be established by using a percentage calculation from homes in Area 1 and Area 2 to estimate fireplace and woodstove use in Area 3 and less accurately estimate fireplace and woodstove use in Area 4, but still within reason.

The estimate for Area 3 fireplaces is 131 for heating homes and approximately 142 homes using woodstoves. When considering potential reductions to measured concentrations and quantity of $PM_{2.5}$ emissions, the AAQPC finds inserts in fireplaces and uncertified stoves in Area 3 are the third highest priority for reduction of $PM_{2.5}$ emissions. The AAQPC believes that combining this situation with additional low income criteria would serve the City of Prineville and Crook County well as criteria for any grant funding opportunities for residential heating upgrades which will ultimately reduce $PM_{2.5}$ emissions.

131 fireplace inserts in Area 3	***= $ 589,000.00***
142 woodstove trade outs for more efficient models in Area 3	***= $ 639,000.00***
The grand total for all trade outs in Area 3	***= $1,228,000.00***

The AAQPC believes using the same estimates used in Area 3 for Area 4 fireplaces would allow a sufficient effort in Area 4 for reduction of $PM_{2.5}$ emissions to achieve the AAQAP Mission Statement. This mean the Area 4 estimate for fireplaces is 131 for heating homes and approximately 142 homes using woodstoves. The AAQPC believes that combining this situation with additional low income criteria would serve the City of Prineville and Crook County well as criteria for any grant funding opportunities for residential heating upgrades which will ultimately reduce $PM_{2.5}$ emissions.

131 fireplace inserts in Area 4	***= $ 589,000.00***
142 woodstove trade outs for more efficient models in Area 4	***= $ 639,000.00***
The grand total for all trade outs in Area 4	***= $1,228,000.00***
The grand total for Area 1, 2, 3 and 4	**= $3,072,500.00**

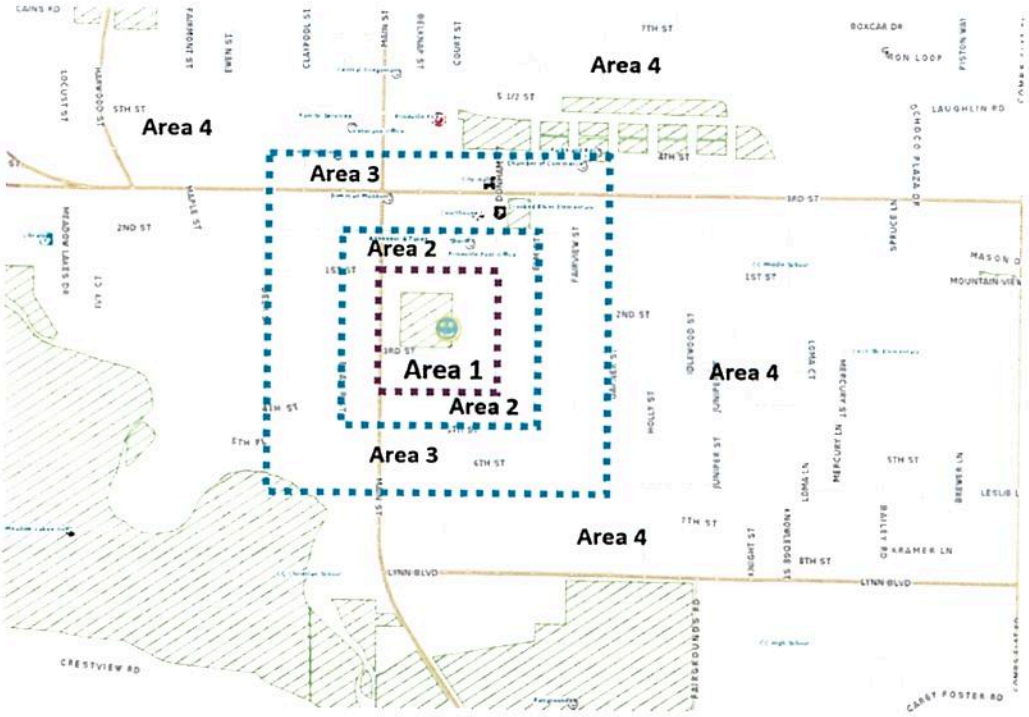
Much of the success with the woodstove trade out program depends on future funding. Currently the community is actively involved in working with the Oregon Regional Solutions Team to identify additional sources of funding and resources. If successful, the community is prepared to establish a woodstove change out program with an entity such as Neighborhood Impact who experience weatherization and trade out programs.

8.3 Target Area – Townhall meetings

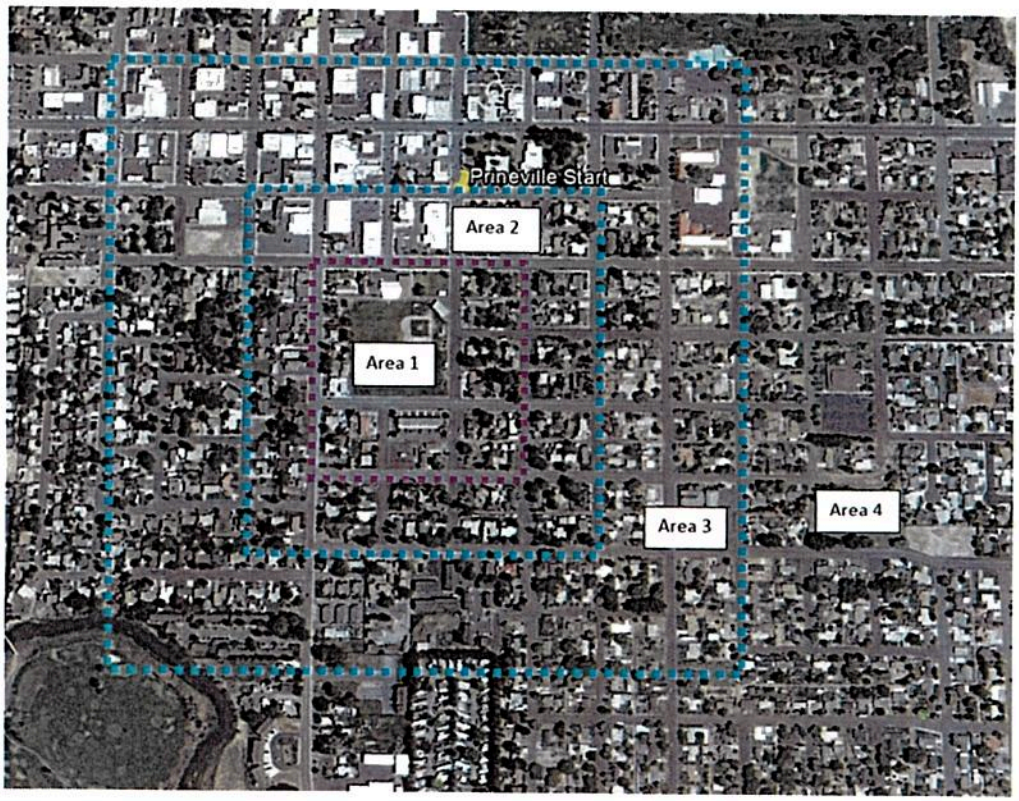
A community trade out program would actively seek out participation from residents in Area 1 and in Area 2 on the map below, via a community Townhall meeting. Residents in these two areas would be invited to attend a meeting in the Prineville City Council Chambers. The Townhall meeting would be used to communicate the important points of the trade out program as well as communicate the importance of controlling $PM_{2.5}$ emission. The smiley face on the map shows where the monitoring equipment is located. The following map shows priority areas where the AAQAPC finds the PM2.5 particulate reduction to be the most noteworthy. However, the AAQAPC also finds that this map

should not be used to restrict the actions of any agency or opportunities for funding activities that reduce $PM_{2.5}$ particulate anywhere in Prineville or Crook County.

Map 1 - AAQAP Trade out Program Area Map



Map 2 - AAQAP Trade out Program Area Map with Aerial Map



8.4 Incentives

The community trade out program will be funded by grant dollars. The program is intended to incentivize cooperation through providing funding to do the work. The anticipated cost is $4,500 per home.

1) Focusing on lower income residents for future woodstove change outs. (Approximately 25.2% of the population in Prineville is comprised of this population.)

2) Total replacement of woodstoves with other heating sources besides wood.

3) Future change outs would involve replacing an uncertified stove with either a natural gas, electric (i.e. ductless heat pumps), or other non-wood heating system if possible.

4) Continuing to conduct woodstove change outs to replace uncertified stoves with a certified stove, pellet stove, or heat pump within the greater Prineville area.

8.5 Fireplace Insert Incentive

The community trade out program will be fund by grant dollars. The program is intended to incentive cooperation through providing funding to do the work. The anticipated fireplace insert incentive cost is $4,500 per home.

8.6 Wood Stove Trade Out Incentive

The community trade out program will be fund by grant dollars. The program is intended to incentive cooperation through providing funding to do the work. The anticipated woodstove trade out incentive cost is $4,500 per home.

8.7 Wood Stove Or Fireplace Trade Out To Gas Or Electric Incentive

The community trade out program will be fund by grant dollars. The program is intended to incentive cooperation through providing funding to do the work. The anticipated woodstove or fireplace trade out to gas incentive cost is $4,500.00 or up to $6,000.00 for another source of non-wood heating device in a home.

The AAQPC supports this incentive being used for electric radiant box heaters.

8.8 Woodstove Policy On Efficiency For Building Department

The AAQPC believes the City/County Building Department should be given a policy on woodstove trade outs that establishes that only the most efficient woodstoves be installed in new homes in the City.

EMISSION REDUCTION VIA CODE ENFORCEMENT

9.0 City And County Code Enforcement

City of Prineville Code
Chapter 93.57
BURN BARRELS AND OPEN PILES.
(F) Penalties. The maximum penalty for a person responsible for each violation of this section shall be $500. Upon first conviction the fine shall be not less than $50. Upon a second conviction the fine shall be not less than $100, and on the third and subsequent convictions the fine shall be $500 and there shall be no further burn permits issued for burning at the address of the third conviction or issued to any person who has been convicted of violating this section three or more times.

The AAQPC suggests changing the County Code to be consistent with the City Code found above.

Crook County Code
Chapter 8.12
PUBLIC BURNING
8.12.050 Violation – Penalties.
Penalties for failure to obtain a permit or make the required call notifying the Prineville fire department of the burn location and time shall be punishable as a Class B misdemeanor. This is in addition to any civil remedies which are available at the time of the burn. (Ord. 35 § 5, 1987)

9.1 Proactive Enforcement Guidelines

Pro-active code enforcement:

- Site review prior to selling burn barrel permits. **(Implemented in 2015)**
- Call before you burn as part of burn permit requirements. **(Implemented in 2015)**

Enforcement: November, December, January and February on no burn days.

Seek funding from DEQ for code enforcement during burn season this year.

EMMISSION REDUCTION VIA FUTURE OPPORTUNITIES

10.0 Future Opportunities Considered But Not Addressed At This Time

The AAQAP shall be reviewed and updated in areas where improvement can be achieved annually by August 31. If the AAQAP is not reaching the PM2.5 Mission and Goal found in Section 3, the Committee will look for and consider implementing additional measures such as those found in Section 10.1 and 10.2

10.1 DEQ Sustainment Area Rules

DEQ recently finalize and adopted Sustainment Area rules pertaining to communities at risk of not meeting National Ambient Air Quality Standards (NAAQS), but not formally designated as nonattainment by EPA. Local governments must request and receive approval from the Environmental Quality Commission (EQC – DEQ's governing Commission) to utilize the tools available in this new state designation. For an area such as Prineville, it is very difficult for a new large industrial facility to become established and for existing industrial sources to expand because the area already exceeds the $PM_{2.5}$ standard. The rules are designed to provide incentives for new or modified industrial sources to reduce emissions in the same airshed by purchasing emission offsets from sources that are considered to be significantly contributing to the air quality problems in the area, such as woodstoves. It will still be difficult for large companies to become permitted because DEQ must continue to implement federal regulations for these companies. DEQ's classification of a sustainment area provides flexibility for Prineville while ensuring the area is protective of air quality. Prineville can request the "Sustainment Area" designation, but it must be approved by the Oregon Environmental Quality Commission.

10.2 Emission Reduction Via Coordination With Industry

The air quality forecast will be used in a coordinated outreach to Industry who are involved with burning activities or other $PM_{2.5}$ particulate creation mechanisms within Crook County. The focus would be on coordinating theses activities to avoid poor air quality days or specifically on days when smoke or $PM_{2.5}$ emission particulate may move towards or be trapped in an inversion layer in Prineville.