YAKIMA REGIONAL CLEAN AIR AGENCY

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February 28, 2014

PM Advance, c/o Laura Bunte
U.S. Environmental Protection Agency
Office of Air Quality Planning and Standards, C304-01
Research Triangle Park, NC 27711

Dear Ms. Bunte:

The Yakima Regional Clean Air Agency (YRCAA) is proud to present the first edition of our PM Advance Path Forward. The document will be updated no less frequently than once per year. It may be viewed on our agency website at: http://www.yakimacleanair.org/pm_advance.html.

Next month we will begin to assemble the stakeholder group which will be instrumental in:

- Affirming and maintaining already implemented measures and programs;
- Selecting and implementing additional measures and programs;
- Affirming and maintaining already existing partnerships;
- Pursuing additional partnerships;
- Affirming and maintaining existing funding mechanisms; and
- Identifying and securing additional funding mechanisms to sustain measures and programs.

We look forward to partnering with EPA to better secure healthful air quality for Yakima County. We much appreciate the help provided by Lucy Edmonson, Larry Brockman and others in your office. Please make this letter and the Path Forward document available to others as you deem appropriate.

Best Regards,

Gary W. Pruitt
Executive Director

Yakima Regional Clean Air Agency

PM Advance Program Path Forward

February, 2014

Clean Air Is Everyone's Business

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Yakima Regional Clean Air Agency (YRCAA)
PM Advance Program Path Forward

1.0 Introduction

Particle pollution, especially fine particles, contains microscopic solids or liquid droplets that are so small that they can get deep into the lungs and cause serious health problems. Numerous scientific studies have linked particle pollution exposure to a variety of problems, including:

- Premature death in people with heart or lung disease,
- Nonfatal heart attacks,
- Irregular heartbeat,
- Aggravated asthma,
- Decreased lung function, and
- Increased respiratory symptoms, such as irritation of the airways, coughing or difficulty breathing.

People with heart or lung diseases, children and older adults are the most likely to be affected by particle pollution exposure. However, even healthy individuals may experience temporary symptoms from exposure to elevated levels of particle pollution.

The purpose of this paper is to describe YRCAA's Path Forward (plan) to pursue continuous reductions in ambient concentrations of fine particulate matter ($PM_{2.5}$) in order to better protect public health. YRCAA's PM Advance Program promotes local actions to reduce $PM_{2.5}$ and its precursors to help our area continue to attain the $PM_{2.5}$ health-based National Ambient Air Quality Standards (NAAQS). YRCAA will continue ongoing efforts and will take additional proactive steps to keep the air clean. Continuous improvements in air quality will:

- Help ensure continued health protection over the long term;
- Provide our area with a cushion against potential future violations of the $PM_{2.5}$ NAAQS;
- Better position our area to achieve air quality concentrations that enable it to avoid a nonattainment designation with respect to any future revised NAAQS;
- Allow for greater ability to choose from control measures and programs that make the most sense for our area and that are cost-effective; and
- Result in multi-pollutant benefits; for example, reductions of nitrogen oxides can lead to lower ambient $PM_{2.5}$ levels as well as lower ambient ozone levels.

The plan includes the following components:

- The Area's $PM_{2.5}$ Issues
- Stakeholder Participation
- Coordinated Control Strategy Development
- $PM_{2.5}$ Reduction Measures and Programs

This plan includes a mixture of voluntary and regulatory control measures and programs. The plan is built on the foundation established by the YRCAA $PM_{2.5}$ Emissions Reduction Program (Appendix A), wood stove replacement programs (Appendix C) and education/outreach programs. The plan is a dynamic plan, will be updated as more information becomes available, no less frequently than annually.

YRCAA Jurisdictional Area Description

This plan applies only to the YRCAA geographic area of jurisdiction, Yakima County, excluding lands within the exterior boundaries of the Yakama Nation Reservation. Yakima County is bordered by the Cascade Mountain Range on the west, Manashtash Ridge on the north, the City of Grandview on the east and Satus Ridge on the south. The county is geographically divided by Ahtanum Ridge/Rattlesnake Ridge into two regions: the Upper (northern) and Lower (southern) valleys. See the map on page 3.

Yakima is located in the more urbanized Upper Valley, and is the central city of the Yakima Metropolitan Statistical Area. The cities of Selah and Union Gap lie immediately to the north and south of Yakima. In addition, the unincorporated suburban areas of West Valley and Terrace Heights are considered a part of greater Yakima. With these cities included in the immediate area, population within 20 miles of the city is over 150,000.

Other cities are Moxee, Tieton, Cowiche, Wiley City, Tampico, Gleed, and Naches in the Upper Valley, and Outlook, Granger, Mabton, Sunnyside, and Grandview in the Lower Valley. The countywide population is in excess of 244,000. Of that total about 31,000 reside within the exterior boundaries of the Yakama Reservation in the cities of White Swan, Harrah, Toppenish, and Wapato and in the unincorporated area.

The topography of the region, coupled with weather patterns (inversions and stable air masses), is conducive to fine particulate build-up, primarily during late fall, winter and early spring. The area has a long history of dependence on, and preference for, wood-fueled residential and commercial heating devices. The majority of these devices are not EPA or Washington State certified devices. These older, high-polluting devices emit as much as 60 times the amount of particulate as do modern, certified devices.

The following demographic statistics are for the entire county of Yakima:

Age, Race and Education	Yakima Metro	Yakima County
Median age	32 years	32 years
65 years and over	13%	11%
White	55%	52%
Hispanic / Latino	38%	40%
Other	8%	7%
Bachelor’s degree or higher	21%	16%

Household Income	Yakima Metro	Yakima County
Less than $10,000	13%	10%
$10,001-$25,000	26%	22%
$25,001-$35,000	14%	13%
$35,001-$50,000	14%	16%
$50,001-$100,000	24%	30%
$100,001 and over	9%	9%

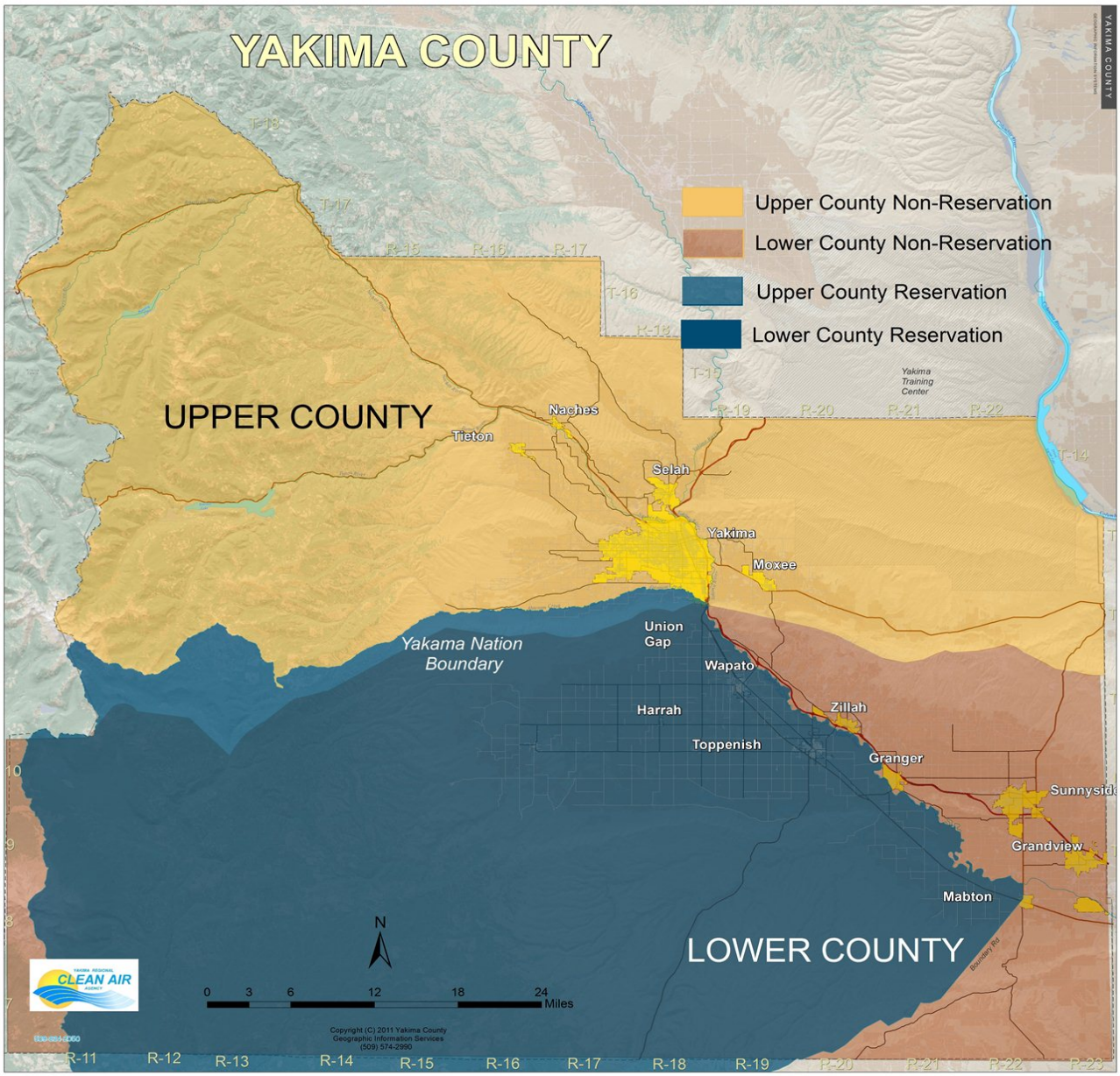

Figure 1 – Yakima County Map

2.0 The Area's $PM_{2.5}$ Issues

Before examining control measures, an important step is to identify the nature of the $PM_{2.5}$ problem in our area and the sources contributing to that problem. The severity, nature and sources of the problem are specific to our area. Therefore, the measures that are effective and cost-effective must also be specific to our area. Similarly, the geographic and demographic areas in which measures are effectively applied will vary depending on the extent to which pollution sources outside our area contribute to our problem.

2.1 The Nature of the Problem

The highest $PM_{2.5}$ concentrations generally occur during late fall and winter. One-year 98th percentile measured values have exceeded the NAAQS due to the high 24-hour average concentrations during those months for two of the last five years. The one-year 98th percentile values and the three-year design value averages are shown in Figures 2 and 3 on page 5.

Late fall and wintertime concentrations of $PM_{2.5}$ are strongly influenced by topographical and meteorological conditions or patterns which prevent atmospheric dispersion. This can be attributed to very low surface level air movement and upper level inversion conditions. Such conditions frequently persist for several days, allowing pollutant concentrations to increase rapidly. Also, persistent winter high pressure systems have created inversions and large stable air masses which have lasted for two to four weeks at a time, allowing even greater build-up of $PM_{2.5}$.

2.2 Ambient Air Sampling

YRCAA began sampling ambient $PM_{2.5}$ concentrations in January 1999 at Sundquist Hall, Yakima Valley Community College and ceased sampling in August 1999. This initial monitoring period experienced startup and operational problems and the data has not been used in any analysis done by either YRCAA or the Washington State Department of Ecology (Ecology).

Sampling resumed in May 2000 at Central Washington Comprehensive Mental (CMH), 402 S. 4th Ave., Yakima, using a filter based Federal Reference Method (FRM) monitor operating on a one in three sampling schedule. This location is considered to be representative of the Upper Yakima Valley. This monitor continued in operation through December 2004 when Ecology decided to suspend its operation. The 2001 - 2003 data from this sampler was used by Ecology to make the $PM_{2.5}$ attainment determination for the 1997 $PM_{2.5}$ NAAQS.

In the summer of 2003, Ecology installed a $PM_{2.5}$ nephelometer at CMH. The near real time values were used to determine curtailments of outdoor burning and wood stove use and to inform public health advisories. This sampler was removed in 2012.

In February 2006, EPA, Region 10 installed a $PM_{2.5}$ Tapered Element Oscillating Microbalance (TEOM) monitor on Toppenish High School. The TEOM was on some unknown date, replaced with a nephelometer. This monitor is considered to be representative of the Mid-Yakima Valley and is operated by EPA, Ecology and the Yakama Nation.

In January 2007, YRCAA restarted the $PM_{2.5}$ FRM monitor at CMH which is still sampling on a one in three basis. In September 2007 Ecology installed two Chemical Speciation Samplers at CMH. Sampling has continued on either a one-in-six year-round or one-in-three heating season basis since September 2007. Findings and conclusions, based on the data collected and modeled, will be critical to identifying all contributing sources and developing control strategies. Ecology has indicated they will prepare a report similar to the report furnished for the Pierce County-Tacoma nonattainment area.

In December 2012 Ecology installed a Federal Equivalency Method sampler at CMH. This sampler reports near real time on the Ecology network and is used to make wood stove curtailment decisions.

In January 2013 Ecology, prompted by initial analysis of speciation sampling data, conducted the Yakima Area Wintertime Nitrate Study to help identify source contribution of aerosol nitrates to wintertime $PM_{2.5}$ concentrations. Findings and conclusions, based on the data collected and modeled, will also be critical to identifying aerosol nitrate contributing sources and developing control strategies.

2.3 Air Quality Trends

The Yakima $PM_{2.5}$ Monitor annual 98th percentile value for the 24-hour NAAQS has been reduced from an estimated 44.3 µg/m^3 in 2004 to a measured 26.9 µg/m^3 in 2012. The charts in Figures 2 and 3 depict the trends for the annual 98th percentile and the three-year design values. The Yakima $PM_{2.5}$ Monitor annual 98th percentile value is the third highest 24-hour average measurement and the design value is the average of any three consecutive annual 98th percentile values.

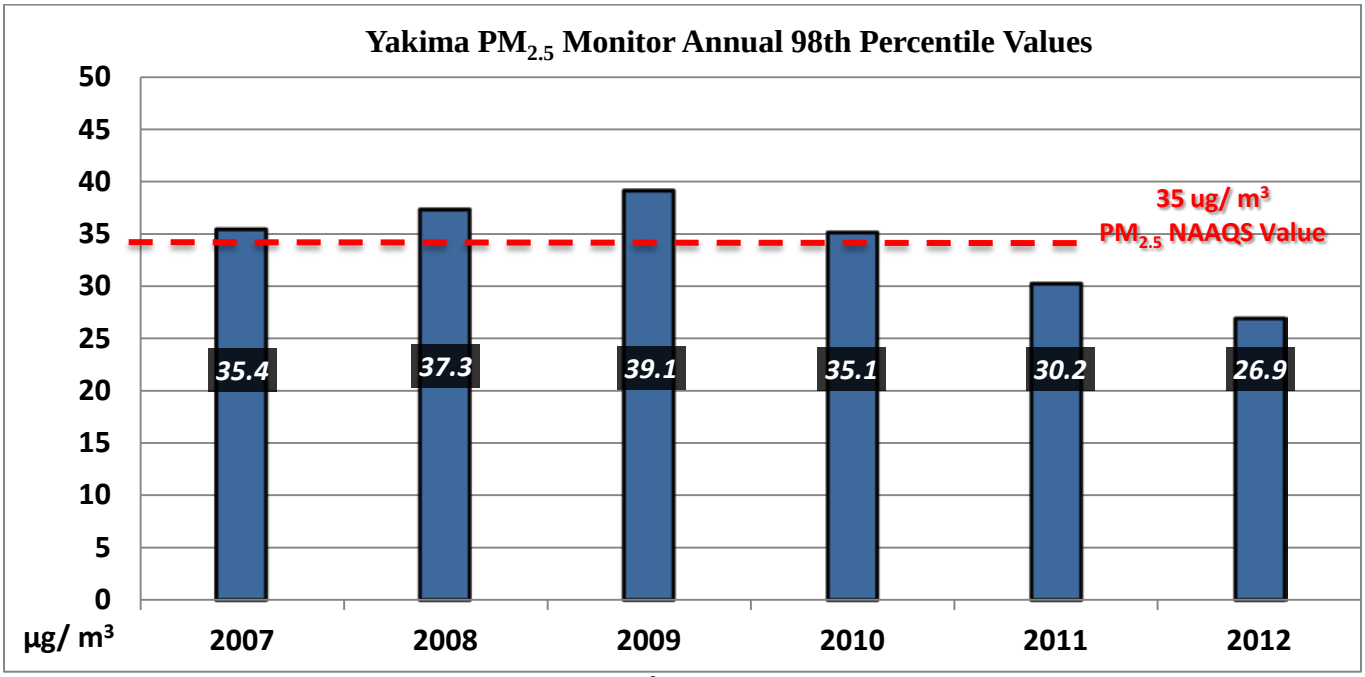

Figure 2 – Annual 98th Percentile Values Chart

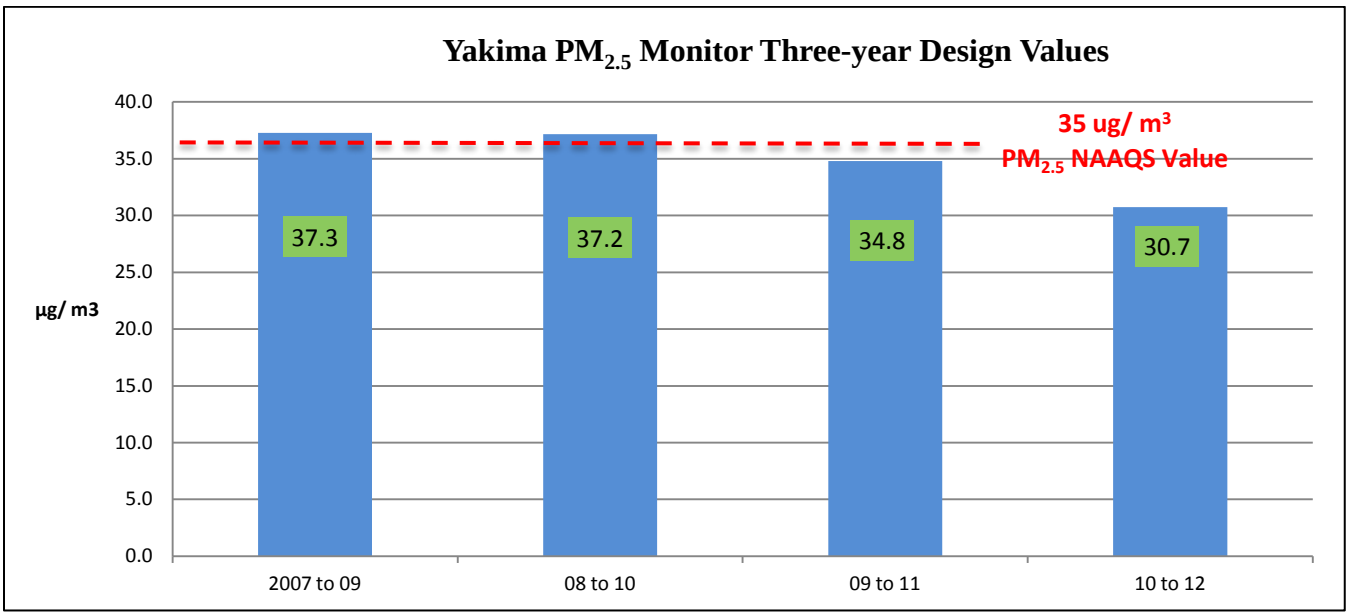

Figure 3 – Three-Year Design Values Chart

2.4 Sources Contributing to the Problem

Annual $PM_{2.5}$ Emissions

The chart in Figure 4 is based on data from the 2011 National Emission Inventory (NEI). The inventory estimates annual $PM_{2.5}$ emissions from a variety of sources. The chart shows that four emission sources (residential wood combustion, unpaved road dust, agricultural tilling, and paved road dust) account for 70% of annual $PM_{2.5}$ emissions.

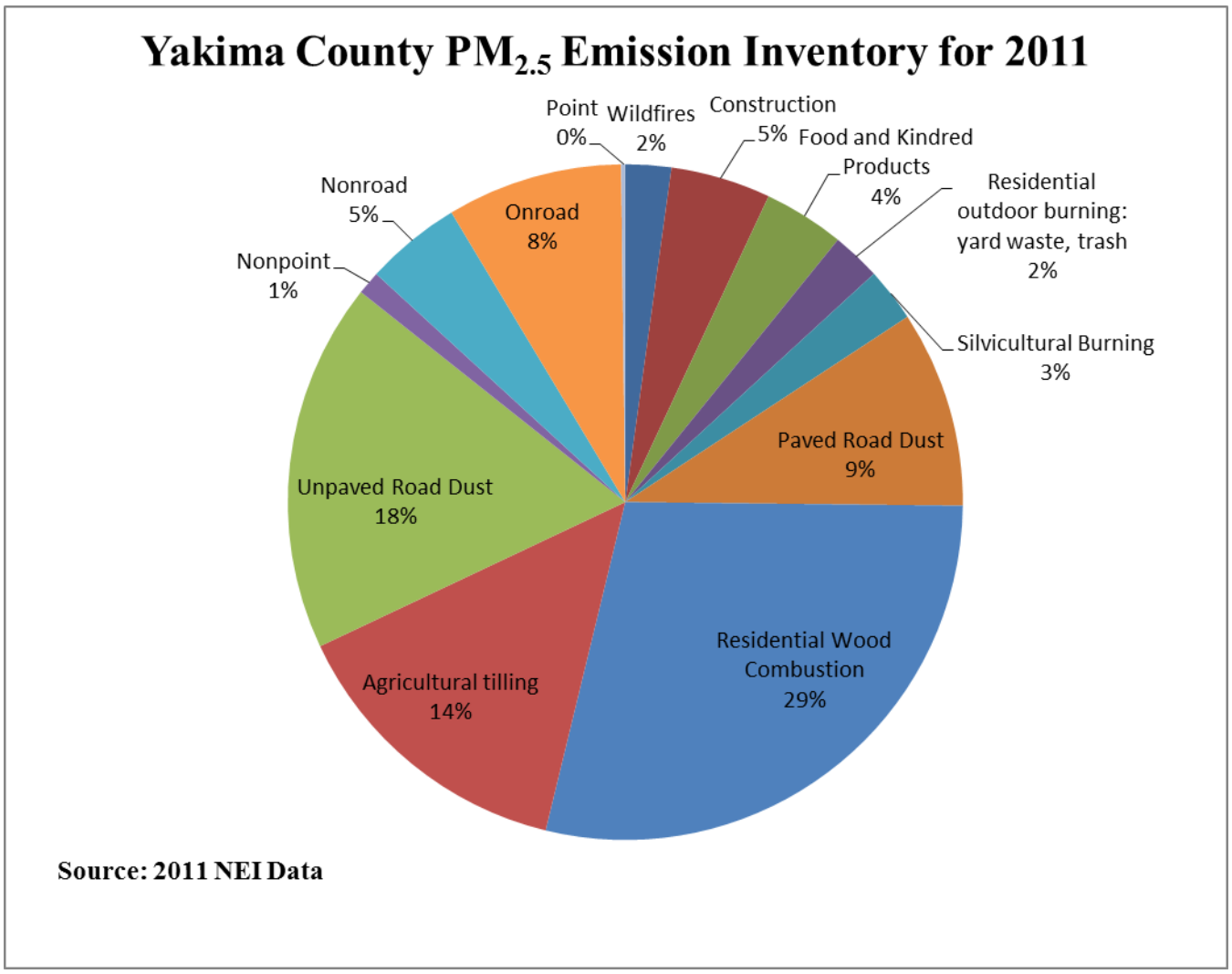

Figure 4 – Annual $PM_{2.5}$ Emissions Inventory Chart

Winter Season $PM_{2.5}$ Emissions

The chart in Figure 5 is based on data from the 2011 Washington Comprehensive Emission Inventory. The inventory estimates $PM_{2.5}$ emissions from a variety of sources. The chart shows that residential wood combustion accounts for 41% of winter season $PM_{2.5}$ emissions.

This inventory data, past emission inventory data and visual observations over the past several decades have proven residential wood combustion (primarily woodstoves) to be the most significant source of $PM_{2.5}$ emissions. Thus, this plan focuses efforts, measures and control programs on reducing emissions from woodstoves and other residential wood combustion.

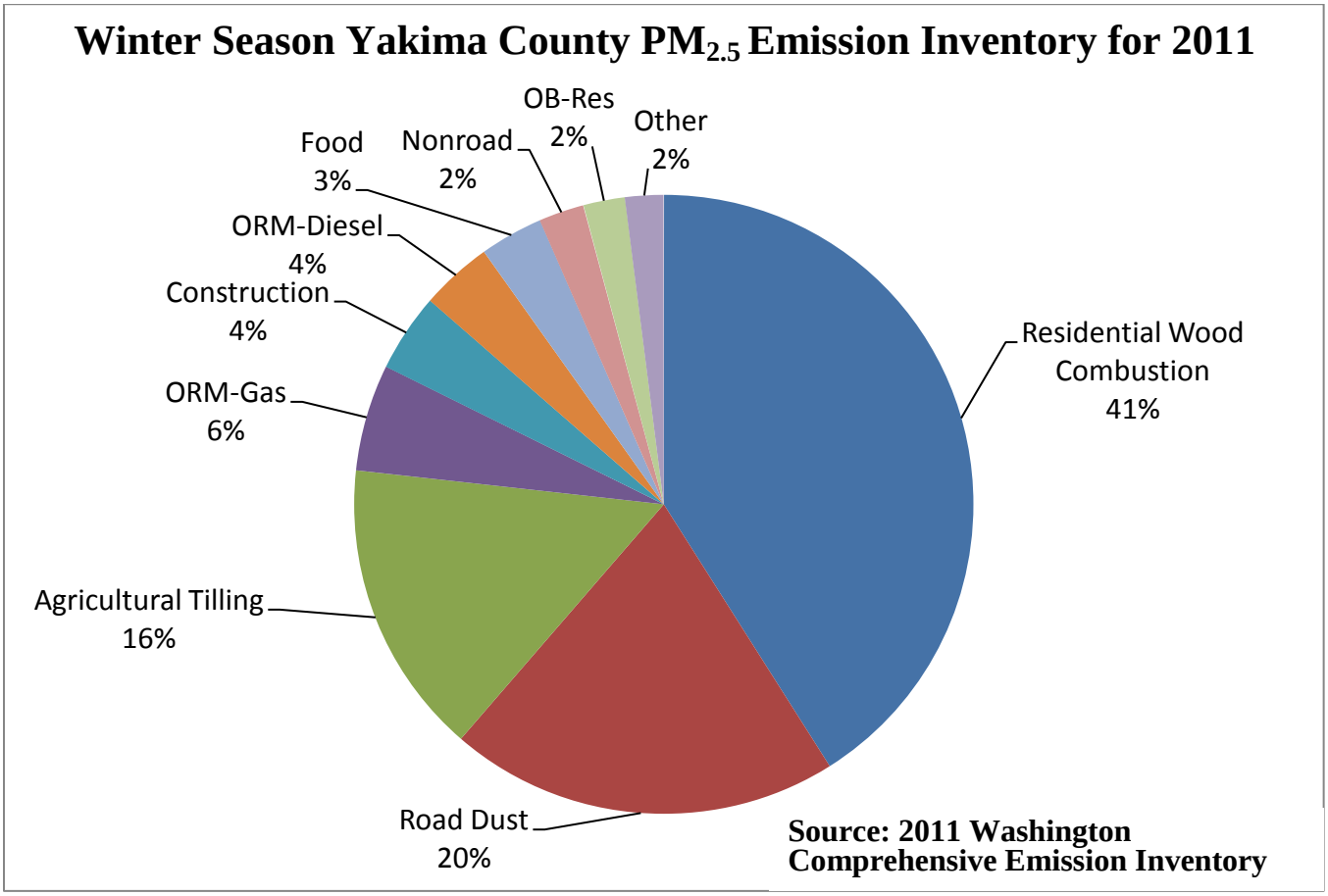

Figure 5 – Winter Season $PM_{2.5}$ Emissions Inventory Chart

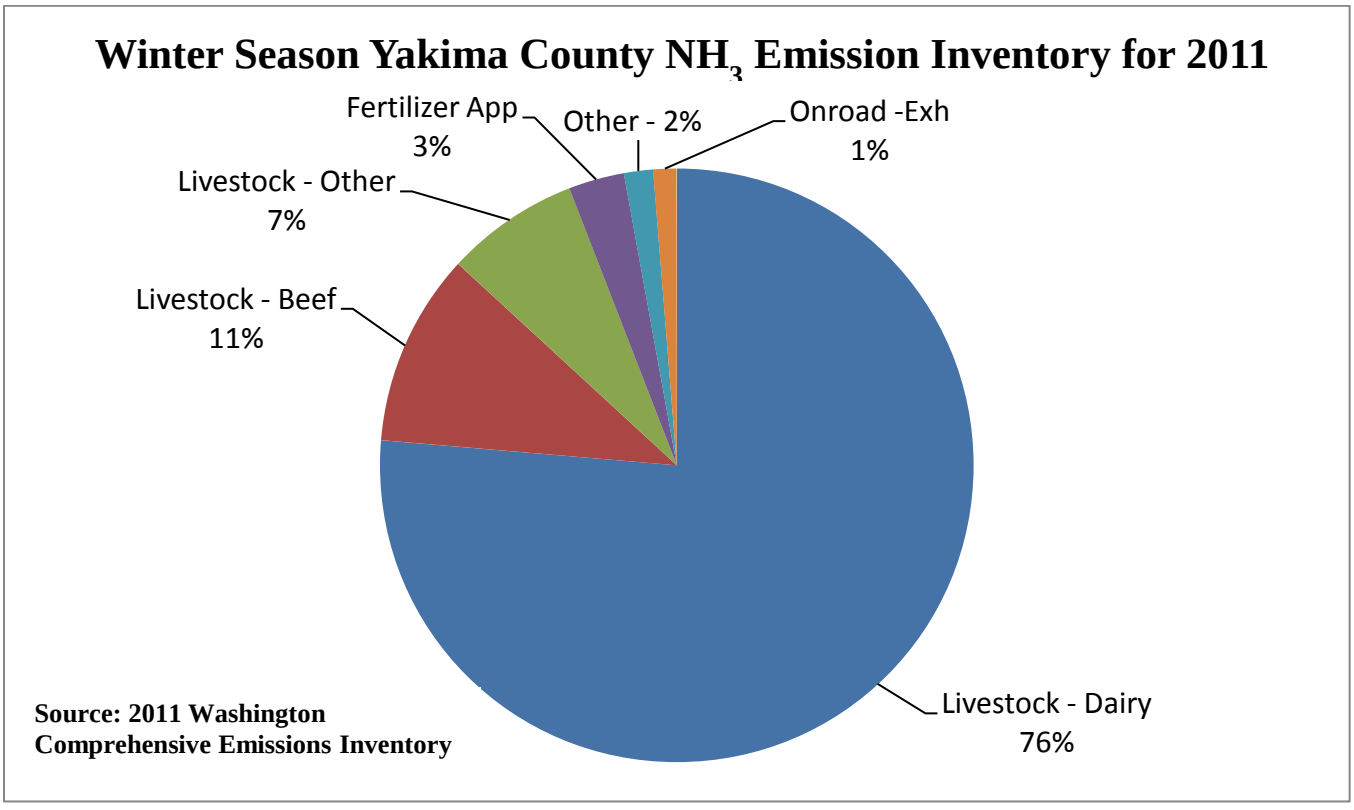

Figure 6 – Winter Season NH_3 Emissions Inventory Chart

Secondary Winter Season $PM_{2.5}$ Emissions

Ammonia (NH_3) in the presence of sufficient oxides of nitrogen (NO_x) provide for in-atmosphere (secondary) formation of aerosol nitrates in the $PM_{2.5}$ size range. Therefore, sources emitting NH_3 and NO_x are also significant. Initial data from chemical speciation sampling at the Yakima monitor site and a Yakima wintertime nitrate study conducted by Ecology have confirmed the significance. Full analysis of these data is needed to better understand the sources of both NH_3 and NO_x.

The charts in Figures 6 and 7 are based on data from the 2011 Washington Comprehensive Emission Inventory. The inventory estimates NH_3 and NO_x emissions from a variety of sources. The charts show that livestock accounts for 94% of NH_3 emissions and on road vehicles account for 80% of NO_x emissions.

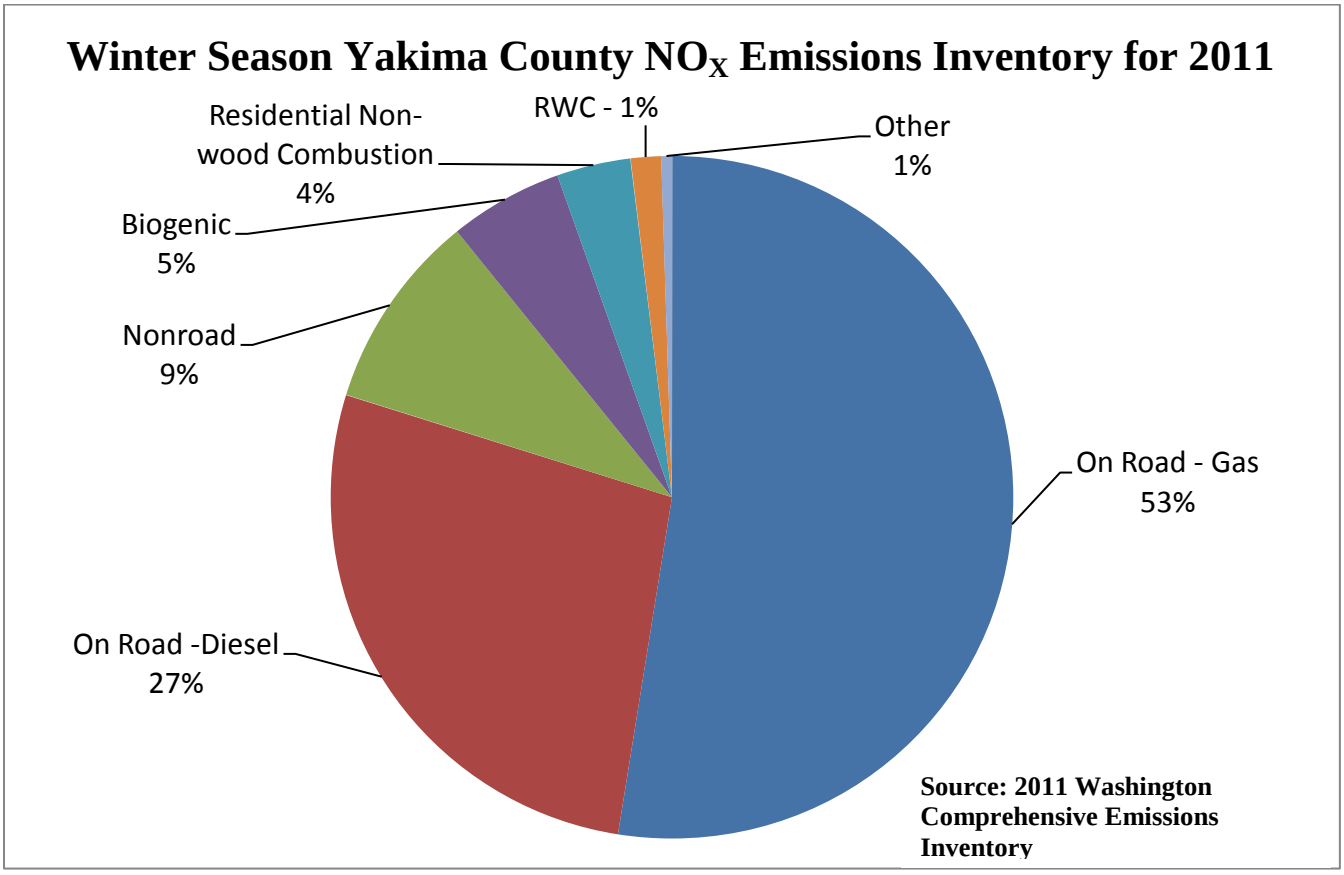

Figure 7 – Winter Season NO_X Emissions Inventory Chart

Emissions Transported from Other Jurisdictions

Emissions transported from other jurisdictions may also be significant. Such sources include the aforementioned area sources located within the Yakama Nation Reservation boundaries. Not much is known about the quantity of such emissions but repeated observations of transported smoke confirm the relevance. More information about these emissions and other jurisdictions is needed to determine significance.

3.0 Stakeholder Participation

A list of 30 potential persons, representing a cross section of interests has been assembled to participate in a "Clean Air Task Force." Interests potentially represented include: Major Sources; General Public; Construction; Citizen Environmental Groups; Municipalities; Academia; Economic Development;

Hearth Products; Gas and Electric Utilities; Forestry; Transportation; Adjoining Air Jurisdictions; Tourism; Fire Protection; Commerce; Public Health; Solid Waste; Realtors; and more.
The group is expected to guide and participate in the control strategy development and selection of additional reduction measures or programs for recommendation to the YRCAA Board of Directors. Confirmation of the persons selected to participate is scheduled to occur in the spring of 2014.

4.0 Coordinated Control Strategy Development

YRCAA will coordinate with EPA, Ecology and the Clean Air Task Force in developing an effective control strategy which includes at least the following components:

4.1 Affirming and maintaining already implemented measures and programs;
4.2 Selecting and implementing additional measures and programs (see subsection 5.6);
4.3 Affirming and maintaining already existing partnerships;
4.4 Pursuing additional partnerships;
4.5 Affirming and maintaining existing funding mechanisms; and
4.6 Identifying and securing additional funding mechanisms to sustain measures and programs.

5.0 $PM_{2.5}$ Reduction Measures and Programs

Reduction measures and programs which are already being implemented or will be considered are listed and described below. All are dependent on sustainable adequate funding mechanisms. Those measures and programs currently being implemented are indicated in **bold type**.

5.1 Regulatory Programs

Regulatory programs are those which have established statutory authority, are codified by rule, resolution or order, and which are enforceable by law. Following are programs which are either being implemented or will be considered for implementation, some of which would require state or local rulemaking.

5.1.1 **Indoor and Outdoor Burning Curtailment Program**

YRCAA has implemented a curtailment (burn ban) program effectively since the early 90's. Chapter 70.94 Revised Code of Washington (RCW), Section 473, provides the statutory authority and provisions for declaring two stages of burn bans based on forecasted and measured $PM_{2.5}$ concentrations. Compliance assurance activity has confirmed a high degree of compliance with burn bans. Stage 1 applies only to uncertified devices and outdoor burning and exempts devices used as the sole source of heat. Stage 2 applies to all devices which are not a sole source of heat.

5.1.2 **Agricultural Burning Allocation Program**

YRCAA implements the provisions of WAC 17-430-040 in making daily or specific fire burn calls (during times of anticipated burning) and use metering when necessary to minimize the potential for adverse air quality impacts. See Appendix D, YRCAA Smoke Allocation Plan for Agricultural Burning.

5.1.3 **Opacity and Visible Emission Limits**

For most sources, YRCAA implements and enforces the general standards for maximum emissions found in Washington Administrative Code (WAC) 173-400-040(2) which limits visible emissions to 20% opacity for no more than three consecutive minutes in any one-hour period.

For solid fuel burning devices, YRCAA implements and enforces the standards for

maximum emissions found in Washington Administrative Code (WAC) 173-433-110(1) which limits visible emissions from solid fuel burning devices (SFBD) to 20% opacity for no more than six consecutive minutes in any one-hour period. The test method used to determine compliance with either provision is 40 CFR 60 Appendix A, reference method 9.

5.1.4 **Wood Moisture Content**

WAC 173-433 and YRCAA Regulation 1 prohibit the burning of any substance in a wood stove, other than properly seasoned wood *(sufficiently dried so as to contain 20% or less moisture by weight)* and paper used to start the fire, which normally emits dense smoke or obnoxious odors. Thus, it is a violation of either rule to burn wood with moisture content greater than 20% if it normally emits dense smoke or obnoxious odors. This prohibition is extremely difficult to enforce.

5.1.5 Removal of Old Wood Stove Upon Resale of a Home

YRCAA has no regulatory provision for requiring SFBDs to be removed at the time of a home sale. However real estate disclosure regulations in Washington require disclosure of an uncertified wood stove at time of sale. YRCAA does not implement or enforce this requirement.

5.1.6 **Require EPA Certification**

YRCAA enforces the provisions of WAC 173-433 which states: “no person shall advertise to sell, offer to sell, sell, bargain, exchange, or give away a solid fuel burning device in Washington unless it has been certified and labeled in accordance with procedures and criteria specified in 40 CFR 60 Subpart AAA - Standards of Performance for Residential Wood Heaters." Additionally, YRCAA enforces its Regulation 1, Subsection 3.04.C.4 which prohibits the installation of solid fuel burning devices which are not EPA certified.

5.1.7 Ban the Use of Non-EPA-Certified Wood Stoves

This measure will not be considered unless the area is designated as not in attainment with a PM NAAQS. See RCW 70.94.477.

5.1.8 **Restrictions on Wood-Burning Devices in New Construction**

WAC 51-50-1204 prohibits wood stoves as the primary heat source in new or substantially remodeled buildings and requires all SFBDs installed in new or existing buildings to be EPA certified. YRCAA does not enforce this WAC. YRCAA enforces its Regulation 1, Subsection 3.04.C.4 which prohibits the installation of solid fuel burning devices which are not EPA certified.

5.1.9 Hydronic Heater Rules

YRCAA is not aware of any hydronic heaters located within its jurisdiction and as such would probably not consider promulgation of rules specific to hydronic heaters. However, YRCAA considers such heaters to be within the definition of SFBDs and subject to existing rules.

5.1.10 **Requirements for Wood-burning Fireplaces**

Fireplaces are considered SFBDs and are subject to the same state and local rules applicable to all SFBDs.

5.1.11 **State and Local Wood-Heating Emission Standards**

The Washington standards are: (a) Two and one-half grams per hour for catalytic woodstoves; and (b) Four and one-half grams per hour for all other solid fuel burning devices.

5.1.12 New Source Performance Standards for New Residential Wood Heating Appliances

EPA is in the process of developing revisions to the residential wood heater new source performance standards under Section 111 of the Clean Air Act. In addition to tightening the emission limits on currently regulated wood heaters to reflect improvements in best demonstrated technology, EPA anticipates new regulations for other residential devices that use solid biomass as fuel. For example, EPA anticipates new regulations for outdoor and indoor hydronic heaters and forced air furnaces. The existing standards are: (a) 4.1 grams per hour for catalytic woodstoves; and (b) 7.5 grams per hour for non-catalytic woodstoves.

5.2 Voluntary Programs

Voluntary programs are those for which there are no statutory or regulatory provisions which require or prohibit specific actions. Some programs are codified in Board-approved policy and have demonstrated significant effectiveness in preventing emissions.

5.2.1 **Wood Stove Change-Out Programs**

When funding is available, YRCAA operates a comprehensive wood stove (SFBD) change-out program which effects the removal and destruction of uncertified SFBDs. Since 1993, YRCAA programs have removed and destroyed approximately 1269 uncertified SFBDs. The program for the FY2014/15 biennium is expected to effect the removal and destruction of approximately 225 uncertified SFBDs. The program has three components: one which provides cash for replacement of uncertified SFBDs for low-income, high-use households; one which provides cash rebates for replacement of uncertified SFBDs for non-low-income, high-use households; and which pays a bounty for destruction of uncertified SFBDs with no replacement. The work plan for the current program is attached as Appendix C.

5.2.2 **Construction Dust Control Policy**

This policy was adopted in 1997 to provide for consistent, effective control of fugitive dust emissions from construction sites sufficient to ensure compliance with laws and regulations; to achieve dust control by describing industry management practices for construction sites which will be implemented through the use of flexible, dust control plans; to clarify what is meant by "reasonable precautions" to prevent emissions of fugitive dust as required by law and regulation; and to inform owners and operators of construction sites of the laws and regulations, effective control measures and how they can demonstrate they are taking "reasonable precautions" to prevent fugitive dust from becoming airborne.

5.2.3 **Beef Cattle Feedlot Policy**

This policy was adopted in 1997 to provide guidance for effective control of fugitive dust emissions at Confined Beef Cattle Feeding Operations. Compliance with these guidelines does not necessarily constitute compliance with the regulations. Components of the purpose are:

- To achieve sufficient control of fugitive dust emissions and fallout from Confined Beef Cattle Feeding Operations to ensure compliance with state laws and regulations.
- To achieve dust control by describing a menu of best management practices (BMPs) for Confined Beef Cattle Feeding Operations which will be implemented through the use of flexible, site-specific fugitive dust control plans.

- To clarify what constitutes "reasonable precautions to prevent" emissions of fugitive dust as required by YRCAA Restated Regulation I, Section 5.06.

- To educate owners and operators on effective management of fugitive dust control measures and provide a means by which Confined Beef Cattle Feeding Operations can demonstrate that they are taking reasonable precautions to protect the air quality in Yakima County.

5.2.4 **Agricultural Burning Policy**

This policy was adopted in 2000 to provide for consistent, effective prevention of emissions from agricultural burning sufficient to ensure compliance with laws and regulations; to achieve emission control by utilizing good burning practices for agricultural burning; to identify reasonable alternatives that prevent emissions; and to inform growers of the laws and regulations, effective control measures and how they can demonstrate they are taking steps to minimize emissions from agricultural burning. The Policy requires:

- Permits for ag burning (except as exempted in section 4.03);
- Growers to utilize good burning practices and BMPs; and
- Growers to use reasonable alternatives to burning where available.

5.2.5 **Air Quality Management Policy for Dairy Operations**

This policy was adopted in 2013 to provide guidance and establish requirements for effective prevention and control of air emissions from dairy operations. Objectives to achieve the purpose are:

- To achieve sufficient prevention of emissions from dairy operations to assure compliance with applicable laws and regulations;

- To achieve prevention of emissions by describing a menu of system and pollutant-specific best management practices (BMPs) for dairy operations that will be implemented through the use of flexible, site-specific Air Quality Management Plans;

- To clarify what constitutes "reasonable precautions to prevent" emissions as required by WAC 173-400-040(4); and

- To inform owners and operators about effective measures for the prevention of air emissions and provide a means by which dairy operations can demonstrate that they are taking reasonable precautions to protect the air quality in Yakima County.

5.3 Education and Outreach

YRCAA utilizes a broad range of tools to educate and inform the public regarding the area's air quality issues and will consider other tools as they become available and appropriate. Because the

area's problem is due primarily to wood smoke from home heating, YRCAA's PM Advance education and outreach efforts are focused on wood smoke education.

YRCAA concurs with, and embodies in its education and outreach efforts, the following as copied from EPA's Burn Wise website:
"Wood smoke education is an important component for reducing particle pollution in your community. Engaging the public and giving them the tools to make the right decisions about what they burn and how they burn is the first step in an overall wood smoke plan. With proper burning techniques and well-seasoned wood, emissions (even in older appliances) can be significantly reduced. While many new appliances will pollute less than older appliances, it is important to emphasize that how a user operates their new appliance is equally important in maximizing energy efficiency and reducing emissions. Even more efficient and cleaner-burning appliances can cause pollution if operated improperly."

Following are some of the educational tools utilized by YRCAA:

5.3.1 **YRCAA Tools**

The Agency utilizes a variety of tools to educate and inform the public and the regulated Community regarding issues related to wood smoke and other sources of fine particle pollution to include:

a. Printed materials;
b. Audio-visual media;
c. Television and radio spots;
d. Agency website;
e. Personal appearance at health fairs and state fair;
f. Incorporation into compliance assurance efforts;
g. Agency automated LED display board; and
h. Televised Board meetings and Community Air Quality Forum meetings on local public access station.

5.3.2 **Ecology and Other Washington Local Air Agencies**

The Agency website provides links to other Washington air agencies which contain information regarding wood smoke and other sources of fine particle pollution. The website is currently under renovation to provide for even broader access to information.

5.3.3 **EPA**

EPA maintains a Burn Wise website at http//www.epa.gov/burnwisekit.html Burn Wise is an educational campaign that encourages people to burn only dry, seasoned wood or wood pellets and includes messages about cost savings, improved safety and health benefits. Because being more energy efficient means burning less wood, reducing smoke and polluting less.

5.3.4 Additional Resources Available

Additional resources will be sought and utilized as appropriate and available.

5.4 Funding Mechanisms

Education and compliance assurance are funded primarily by EPA and Ecology Core Program Grants which revenues have not kept pace with costs for the past decade. However, the Agency has supplemented funding with revenues from its Enterprise Program and from per capita

assessments to municipalities. Other funding is desperately needed and is being sought.

5.4.1 **Discounts/Vouchers**

As part of the Wood Stove Change Out program, vouchers are utilized to record program participation, through pre-arrangement with program partners, to account for cash rebates, toward the purchase of residential heating devices and destruction of uncertified woodstoves

5.4.2 Federal Programs to Support Replacements

Should federal funds become available, applicable grant funds will be used to fully fund or provide sufficient incentives in the application of new, cleaner technologies in place of existing systems, such as wood stove replacements, diesel engine retrofits, smudge pot replacements, and the like. The agency will continue to support and encourage federal funding for uncertified wood stove replacement incentives and any other measures which would reduce $PM_{2.5}$ emissions.

5.4.3 Supplemental Environmental Projects

Agency penalty revenue is generally not substantial and is dedicated to education and outreach. We will continue to encourage EPA to seek opportunities for dedicating EPA penalties from enforcement actions within our jurisdiction to Supplemental Environmental Projects which remove old uncertified wood stoves from use.

5.4.4 Corporate Sponsorship

The Agency is in the process of developing guidance to pursue corporate sponsorship for work specific to reducing wintertime $PM_{2.5}$ concentrations.

5.5 Partnerships

The Agency believes that strong community-based partnerships are vital to continuous improvement of air quality. Partners are defined for this plan as contributing in-kind services or cash for work which results in air quality improvement. Following are some of the partnerships developed and maintained by the Agency:

5.5.1 **Woodstove Replacement Program Partners**

Partners include hearth products retailers, installation contractors, community service organizations, land owners associations, recyclers, gas and propane utilities and radio and television air media. The following partners contribute both cash and in-kind services to the successful leveraging of grant funds to replace uncertified woods stoves:

a. Hearth, Patio & Barbecue Association (HPBA)
b. Coastal Farm & Ranch
c. Fosseen's Home & Hearth
d. Inland Awning
e. Inland Contracting
f. FarWest Heating & Air Conditioning
g. Platte Heating & Air Conditioning
h. Opportunities Industrialization Center of Yakima (OIC)
i. City of Yakima Neighborhood Development Serv. (ONDS)
j. Northwest Community Action Center (NCAC)
k. Yakima Valley Landlords Association
l. Pacific Steel Recycling
m. Poor Boy's Auto Wrecking

n. Cascade Natural Gas Corp
o. Northern Energy/V-1
p. Yakima Co-op
q. Amerigas
r. RE Powel Distributing
s. Selah Supply
t. All American Propane
u. Yakima County Community Services
v. Radio KDNA Broadcasting
w. KCTS-YPAC TV (Public Access)
x. KCYU- KFFX Fox TV

5.5.2 **Municipalities**

Each city, town and the county of Yakima are contributing partners by payment of annual per capita assessments toward the costs of improving air quality in our area.

5.5.3 Other Potential Partners

The Agency will continue to seek and utilize community-based agencies, associations and organizations to further its mission of improving air quality to include:

a. American Lung Association (ALA);
b. Chimney Safety Institute of America (CSIA);
c. The Alliance for Green Heat;
d. State Department of Energy

5.6 Other Tools

YRCAA will continue to seek and utilize tools deemed to be appropriate to reducing $PM_{2.5}$ emissions by the stakeholder group. Other tools which may be considered in determining sources of $PM_{2.5}$ and finding measures to reduce emissions therefrom include:

5.6.1 County-level Emission Inventory for Residential Wood Combustion;

5.6.2 Wood Stove and Fireplace Change-out/Retrofit Emissions Calculator;

5.6.3 Residential Wood Combustion Surveys;

5.6.4 Residential/Mobile Wood Smoke Monitoring;

5.6.5 Spatial Modeling; and

5.6.6 Additional measures and programs.

Appendix A - FY 2014 $PM_{2.5}$ Emission Reduction Project Plan

1.0 Background and Purpose

The primary purpose of this Project is to reduce wood smoke emissions and thus, protect public health. Due to the likelihood of a not attaining the 24-hour $PM_{2.5}$ ambient air quality standard, and in the interest of public health, this project is intended to address and resolve smoke emissions which may cause exceedances of the standard.

2.0 Focus

The focus of the work to be accomplished by this project will be combustion sources, primarily wood stoves and outdoor burning, the primary contributors of $PM_{2.5}$ during the winter months in central Yakima County. Work will be accomplished in all three Divisions of YRCAA.

3.0 Compliance Division Work

This plan details the work to be accomplished in order to assure compliance with rules for solid fuel burning devices. High use wood stoves in the urban growth areas of Selah, Yakima and Union Gap, during periods of particulate build-up, will be targeted for compliance evaluations. Responding to complaints of outdoor burning during those periods will also be a high priority.

Compliance work will involve assuring compliance with regulations pertaining to smoke emissions during Stage I and Stage II burn bans and the periods typically preceding, and leading to, those burn bans. Compliance with regulations pertaining to wood smoke should result in significant emission reductions. Also, persons found in violation will be encouraged, and provided incentives, to remove uncertified wood stoves and replace them with cleaner burning appliances.

During burn bans all routine inspections and other discretionary work will be postponed, and all Compliance Division staff will report to the Compliance Division Supervisor for wood smoke patrol and/or complaint response. Other vital work may be accomplished in the course of conducting wood smoke complaint response and patrol, only if needed. If initial compliance efforts are not successful in curtailing wood smoke emissions, and monitor values continue to rise, compliance division staff will work on a flex schedule implementing evening and weekend patrols to assure compliance. Stage II only.

3.1 Observation and Contact

3.1.1 During Visual Observations of emissions, Field Agents will ensure that the emission is not water vapor prior to conducting all Method 9 Opacity Evaluations. Field agents will not conduct Method 9 evaluations during periods of darkness.

Field Agents will attempt to make contact with each residence where an emission is observed, and will provide to all contacts a copy of the notice below and the appropriate educational materials.

All customers contacted in the course of compliance assurance, and who are utilizing a solid fuel burning device, will receive the following notice:

N O T I C E

IF YOU BELIEVE YOUR SOLID FUEL BURNING DEVICE (WOODSTOVE, FIREPLACE, PELLET STOVE, COAL FIRED HEATER) IS YOUR ONLY SOURCE OF ADEQUATE HEAT, YOU MUST LET US KNOW. RESPOND IN WRITING TO OUR OFFICE WITHIN TEN (10) DAYS OF RECEIPT OF THIS NOTICE, COMPLETE WITH YOUR NAME, ADDRESS AND TELEPHONE NUMBER. IN ORDER TO BE CONSIDERED FOR EXEMPTION FROM THE BURN BANS, YOU MUST COMPLETE AN APPLICATION FOR EXEMPTION AND BE APPROVED AS EXEMPT. MEANWHILE, YOU MAY CONTINUE TO OPERATE YOUR SOLID FUEL BURNING DEVICE, BUT YOU MUST OPERATE IT SO THAT THE SMOKE FROM YOUR CHIMNEY DOES NOT EXCEED 20% OPACITY.

All persons found in violation of a regulation pertaining to wood smoke will be notified in writing of any violation observed. Notices should be issued to both the owner and the resident of a rental. Persons identified as in violation of a wood stove curtailment will be afforded an opportunity to request exemption from the prohibition of use. A tracking file will be developed to track EPA certified stoves and sole-source woodstove users identified through compliance assurance actions. The exemption may only be granted if the facts justify the exemption based on whether the device causing the violation is either EPA certified (for Stage I) or is the only source of adequate heat for the dwelling (for Stage I or II).

3.2 Compliance Assurance

Any person found to be in violation of any regulation pertaining to wood smoke or outdoor burning will be subject to the following:

3.2.1 Violations

Upon observing and documenting any violation, all persons will be issued a written notice advising of the violation, and given educational materials described in Section 4.1. Persons whose wood stove is certified and/or the only adequate source of heat for the dwelling will be afforded an opportunity to complete an application for appropriate exemption and will be afforded an opportunity to replace an uncertified stove.

a. During Burn Bans
   i. For chimneys <20% opacity, issue a Notice of Violation for burning during a burn ban.
   ii. For chimneys >20% opacity, issue a Notice of Violation for burning during a burn ban and exceeding 20% opacity.
   iii. For outdoor burning, issue a Notice of Violation for burning during a burn ban and any other violation observed.

b. During No Burn Bans
   i. For chimneys >20% opacity issue a Warning Notice for exceeding 20% opacity.
   ii. For outdoor burning issue a Warning Notice for the appropriate violation observed, such as burning in an Urban Growth Area (UGA).

3.2.2 Enforcement

a. First Violation

i. Stage I Violations
No penalties will be issued for a first-time violation of burning during a Stage I burn ban provided that the violator either qualifies for an exemption or completes an Assurance of Discontinuance (AOD).

ii. Stage II Violations
Penalties will be issued for a first-time violation of burning during a Stage II burn ban unless the violator qualifies for an exemption.

iii. Opacity Violations
Penalties will be issued for a first-time violation of the opacity standard, regardless of exemption status.

iv. Outdoor Burning Violations
Penalties will be issued for a first-time violation if emissions from the fire(s) are sufficient in quantity such that they significantly contribute to poor air quality. Otherwise, no penalties will be issued, provided that the violator completes an AOD.

b. Subsequent Violations
Penalties will be assessed for any subsequent violation for which no exemption exists.

c. Penalty Calculations
Penalties will be calculated using the appropriate Civil Penalty Worksheet (See Exhibits I and II - Woodstove and Outdoor Burning Civil Penalty Worksheets). All or any part of a penalty may be mitigated, depending on the realities of each case. Penalties may only be mitigated for the following reasons:

i. An AOD is signed and submitted and all corrective action orders are fully complied with; or
ii. For a wood stove violation, if the device causing the violations is removed and destroyed.

If a violator fails to comply with i. or ii. above, a stipulated penalty will be imposed, as contained on the worksheet.

4.0 Education and Outreach

All persons using a solid fuel burning device, contacted in the course of compliance assurance efforts, will be afforded the opportunity to learn how to best minimize emissions from the device. Also, those who have uncertified wood stoves will be advised that replacing the device with a cleaner burning, more efficient heating device would be the best way to minimize emissions and will be encouraged to participate in one of YRCAA's Wood Stove Replacement Programs. Efforts to inform the general public will also be maximized via internet postings and other air and print media.

4.1 Educational Materials

Printed materials will be updated and distributed. Air and Print media will be utilized to educate and inform the public about emissions from wood stoves and outdoor burning. The following, in addition to other materials which will be developed for this project, will be made available to all contacts and any other customer requesting informational materials:

4.1.1 Wood Smoke and Your Health Brochures (English and Spanish)
4.1.2 Fuel Preparation Brochures
4.1.3 Wood Burning Handbook
4.1.4 Audio-Visual Material

4.2 Replacement Incentives

Persons found to be in violation of wood stove regulations due to the use of an uncertified device will be afforded an opportunity to remove, destroy and replace the device, in lieu of paying all or part of a civil penalty. Persons found to be exempt from curtailment, due to the fact that an uncertified device is the only source of adequate heat for a dwelling, will be afforded an opportunity to remove, destroy and replace the device. Depending on household income, and until such funding no longer remains, up to 100% of the cost for high-use households, located within all designated Urban Growth Areas of Yakima County (*excluding all areas located within the exterior boundaries of the Yakama Indian Reservation*), will be covered by YRCAA.

5.0 Permitting and Planning

Additional work will be conducted to work very closely with Agricultural Burning permit holders to minimize the amount of burning during the late fall to early spring. The daily burn allocation will be predicted one day and weekends in advance to allow only the necessary burning and when mixing layers conditions permit it. Residential burning will not be allowed from October 15th through March 15th. Other outdoor burning will not be allowed during this period unless it is absolutely needed. Each permit will be evaluated based on its merit, overall air emissions, condition and location.

6.0 Budget, Accounting and Reporting

6.1 Budget
6.1.1 Total revenue to fund this project is $52,346.
6.1.2 The table below details expected expenditures for the project.

Description of Work	Expenditure Code / Unit	Unit Cost	Qty.	Cost
Produce and air media informational announcements.	Services / Ea	$1,000	5	$ 5,000
Oversee and conduct work to assure compliance with all rules applicable to sources of $PM_{2.5}$ emissions, primarily wood stoves, and outdoor and agricultural burning.	Salaries / FTE	$63,129	.7	$44,190
Work with local agricultural burning permit holders to find ways to reduce late fall and winter emissions from ag burning.	Salaries / FTE	$63,129	.05	$ 3,156
			Total Costs	**$52,346**

6.2 Accounting
Time worked within the purpose of this project will be recorded on each employee's timesheet. A separate spreadsheet will be developed and utilized for calculating costs per hour for each

employee hour and for total hour costs. Supplies and services will also be accounted for on the same spreadsheet.

6.3 Reporting

The Project Manager will prepare monthly, quarterly and final project reports to include:

6.3.2 A Brief Narrative;
6.3.3 Number of Observations;
6.3.4 Number of Contacts;
6.3.5 Number of Violations;
6.3.6 Number of Assurances of Discontinuance;
6.3.7 Number of Exemptions;
6.3.8 Number of Notices of Penalty;
6.3.9 Number of violators referred to Wood Stove Change-out Program;
6.3.10 Number of Person Hours;
6.3.11 Cost of Person Hours;
6.3.12 Supplies and Services Purchased; and
6.3.13 Cost of Supplies and Services.

The reports will be presented to the Board of Directors at the monthly Board Meetings.

Appendix B – $PM_{2.5}$ Control Efficiency and Cost Effectiveness of Certain Solid Fuel Burning Devices (SFBDs) Control Measures

Appliance	Measure	Control Efficiency*	Cost Per Ton of $PM_{2.5}$ Reduced (2012 $/ton except where noted)	Description/Notes/Caveats
Fireplaces	Use EPA Phase 2 Qualified Units	70%	$9,500**	If new fireplace construction is allowed, approve only EPA Phase 2 qualified models. Under the EPA Wood-burning Fireplace Program, cleaner wood-burning fireplaces are qualified when their $PM_{2.5}$ emissions are at or below the Phase 2 $PM_{2.5}$ emission level. For a list of Phase 2 qualified cleaner burning fireplaces, got to: http//www.epa.gov/burnwise/fireplacelist.html
Fireplaces	Use Gas Logs in Existing Wood-burning Units	100%	$11,000	Air districts in California have provided incentives to retrofit thousands of open fireplaces with gas log sets. In addition, the option exists to install vented gas stove inserts. Unlike gas logs, a gas stove insert can be an efficient and clean way to heat a room. The cost per ton of $PM_{2.5}$ reductions will likely be greater since gas stoves cost more than gas log sets.
Fireplaces	Install Retrofit Devices into Existing Wood-burning Units	70%	$9,500	Provide incentives to encourage use of fireplace retrofit devices. Under the EPA Wood-burning Fireplace Program, retrofit devices are qualified when their $PM_{2.5}$ emissions are at or below the Phase 2 $PM_{2.5}$ emission level. For a list of Phase 2 qualified retrofits, got to: http//www.epa.gov/burnwise/fireplacelist.html
Hydronic Heaters	Install Cleaner Wood-burning Units vs Old Technology	90%	$740	If hydronic heaters are allowed, approve only EPA Phase 2 qualified models. A partnership agreement is in place between EPA and wood-burning hydronic heater manufacturers. Under the agreement, cleaner burning hydronic heaters are qualified at of below the Phase 2 particulate emission level. For a list of Phase 2 qualified hydronic heaters, got to: http//www.epa.gov/burnwise/owhhlist.html
Hydronic Heaters	Install Retrofit Devices in Existing Units	60%	$980	Provide incentives to encourage use of hydronic heater retrofit devices. Retrofits may significantly reduce and even eliminate visible smoke emissions. This measure should be accompanied by education and outreach such as “burn only dry, seasoned wood.”
Wood Stoves	Replace Uncertified Unit with State of Washington Certified Wood Unit	70%	$9,900 (2010$)	Implement a program and provide incentives to replace old, uncertified wood stoves with EPA-certified or cleaner wood stoves. The program should provide education on proper wood preparation and storage and proper wood stove use and maintenance. For more info, see: http//www.epa.gov/burnwise/how-to-guide.html
Wood Stoves	Replace Uncertified Unit with Gas Unit	99%	$7,200 (2010$)	Implement an incentive program to replace old, uncertified wood stoves with new gas stoves or gas logs. Incentives to switch to a pellet stove are another good option. For more info, see: http//www.epa.gov/burnwise/how-to-guide.html
All ***SFBD	Curtailment Program	85%	$8,700 (2010$)	Implement two-stage curtailment program based on real-time or forecasted ambient $PM_{2.5}$ concentrations. Public awareness and compliance assurance are critical to effectiveness.
All SFBD	Burn Dry Seasoned Wood	n/a	n/a	Implement a program to allow only the sale and use of dry, seasoned wood (20% or less moisture content).

Appliance	Measure	Control Efficiency*	Cost Per Ton of $PM_{2.5}$ Reduced (2012 $/ton except where noted)	Description/Notes/Caveats
All SFBD	No Visible Emissions	n/a	n/a	Promulgate, implement and enforce a rule which prohibits visible wood smoke. This option is typically easier to enforce that an opacity standard.
All SFBD	Limit Opacity	n/a	n/a	Implement and enforce the statewide opacity standard of 20% maximum.
All SFBD	Education Campaign	n/a	n/a	Focus the campaign on best fuel preparation/storage and burning practices, such as those found at the EPA Burn Wise website: http//www.epa.gov/burnwise/burnwisekit.html

Adapted from EPA Publication No. EPA-456/B-13-001

*Control efficiency applies to an individual solid fuel burning device, except for the curtailment program where it applies to the entire local area. Inferences about adequate environmental protection should not be made from these efficiencies.

**Indicates incremental costs of installing a Phase 2 qualified solid fuel burning device instead of a non-Phase 2 device.

***Solid fuel burning device (SFBD) means any device that burns wood, coal, or other nongaseous fuel and used for aesthetic or space-heating purposes in a private residence or commercial establishment which has a heat input of less than one million BTU per hour. Hydronic heaters, fireplaces, wood stoves and pellet stoves fit this definition.

Other pollutants controlled by all measures may include carbon dioxide, volatile organic compounds, carbon monoxide, methane, toxics, and black carbon. To review the input and assumptions into these calculations, go to the bottom of page here: http//www.epa.gov/burnwise/resources.html , under Air Quality Tools and click on the control efficiency and Cost Effectiveness of Certain Residential Wood Combustion Measures. (June 2013) (Microsoft Excel).

Appendix C - Yakima Regional Clean Air Agency 2013-2015 Wood Smoke Reduction Work Plan

Introduction

This work plan is designed to effectively guide the work funded by a grant from the Department of Ecology in the amount of $600,000 for the 2013-15 biennium.

Background

Yakima County has a continuing tradition of wood stove use for home heating during the fall and winter months each year in an air shed seasonally confined by its surrounding topography. Wood as a fuel continues to remain a widely-available and inexpensive natural resource of long-standing use to its communities. Additionally, Yakima County winter meteorological and topographic conditions typically trap and hold air pollution for extended periods of continuous accumulation each year. The 2012 Wood Smoke Reduction Grant program demonstrated to the Yakima Regional Clean Air Agency (YRCAA) a continuing need for such programs, in that overflow from that program has already provided a "waiting list" of some 40 (19 already-qualified and 21 other) low-income applicant households in need, with 9 households also registering interest in the next Rebate program.

Yakima County has one of the highest poverty rates in the state at 20.4%-25.6% (2011 state average = 12.2% to 15.8%). Additional funding provisions are drastically needed in order to continue to make progress in mitigating the $PM_{2.5}$ assault to the Yakima County air shed. Local cold weather conditions and solid-fuel home heating activity from a concert of communities simultaneously accumulate and contribute $PM_{2.5}$ to a common air shed, as documented by the Yakima and the Toppenish air sampling data.

Estimated Local Match

Based on a combination of contributions and "in-kind" services, the local match is expected to be no less than $120,000 (20%).

Purpose

Facing a very real PM2.5 non-attainment designation, YRCAA proposes to use this grant in a three-prong approach to remove 225 uncertified woodstoves/inserts: First, by assisting 120 Yakima County low-income, high wood-fuel use residents who depend on wood stove and fireplace insert devices as a primary source of heat, each allowed up to a $4000-$4500 cap per device, total cost installed; a subpart of this is a 50% cost-sharing program to rental property owners who rent to lower-income households; a second subpart includes an option to repair an existing gas or electric furnace, dependent upon removal of an in-use solid fuel burning device. Secondly, the removal, recycling and replacement of 60 uncertified wood stoves with a Wood Stove Rebate Coupon program, returning $500 or $1000 to households whose combined income precludes qualification for the low-income, comprehensive programs. Finally, a Wood Stove Bounty program will incorporate one, possibly two, bounty events to collect, remove from service and recycle 45 "bounty" wood stoves surrendered without being replaced.

Target

Primary – Low Income Households: 1) Households which consume the equivalent of 2 cords of wood or more per year (Primary Source of Heat), with a median combined annual household income equal to or less than 80% of the 2013 Federal Median Income Guideline (FMIG) for Yakima County, or 2) Landlords of low-income rental properties; Secondary – Households of similar wood consumption with a combined annual household income equal to or greater than 80% of the 2013 FMIG; Tertiary – Any SFBD taken out of service without replacement.

Focus Area
Primary: The Upper Yakima County cities of Yakima, Moxee, Selah and Union Gap, to include their respective Urban Growth Areas; and Secondary: Lower Yakima County cities of Sunnyside, Granger, Mabton, Grandview and Zillah, and their respective Urban Growth Areas, placing special emphasis on addressing the most densely-populated residential portions of these communities, and excluding properties within the exterior boundaries of the Yakama Indian Reservation.

Measured $PM_{2.5}$ Values and Trends
With the recent availability to YRCAA of funding for meaningful Wood Smoke Reduction programs, Yakima County 24-hour $PM_{2.5}$ Design Values appear to be trending downward:

2008 → 37.3µg/m^3 2009 → 39.1µg/m^3 2010 → 35.1µg/m^3 2011 → 30.2µg/m^3 2012 → 26.9µg/m^3.

Emissions Reduction Estimate
Based on proportionately representative calculations from previous Wood Stove Change Out/Wood Stove Rebate programs, assuming that 225 uncertified wood stoves are removed from service and destroyed, being replaced with gas-fueled, electric, or more efficient solid-fuel-burning devices (SFBD), and, further, that the life-span of the average wood stove is (conservatively) 15 years and is used 24-hours a day during the 5-month Yakima County heating season, the $PM_{2.5}$ emissions reduction from this program would, again, conservatively, equal 3.34 tons $PM_{2.5}$ per stove denied the air-shed over the life-span of the heating device, or a program total savings to the Yakima air-shed of 751.5 tons $PM_{2.5}$ if all 225 replaced stoves were SFBDs.

Method
1. Program options:
    a. Low-Income Option: If, during initial screening, household appears to meet "low-income" category, candidate household is referred to Qualification Agency for verification, utilizing program partners: Opportunities Industrialization Center (OIC) of Washington and Northwest Community Action Center (NCAC) to identify, qualify and verify eligibility of residences for woodstove replacement. Some eligible households can be drawn from these agencies' own fuels assistance programs. Allowable re-imbursement is up to $4500 per replacement device.
        i. Rental Property Owners: If renters of low-income property qualify as per item 1a above, property owner is contacted and offered a 50% re-imbursement on change out, up to a $2250 maximum. Property owner must comply with grant requirements as per item 2, below. Only the $2250 amount is covered by grant funding; the remaining 50% and any balance is property owner's responsibility and is arranged with vendor and installer. Reimbursement is issued following completion of installation, when all paperwork has been received by YRCAA.
        ii. Repair to existing clean heating technology: On a case-by-case, WA State Department of Ecology (Ecology) approved basis, cost effective repairs may be effected to existing qualified devices in place of SFBD replacements up to $600 per unit from program funds. Existence and surrender for recycling of an SFBD is required.

b. Rebate (voucher) Option: If household does not meet "low-income" classification, household can be referred directly to vendor/installer for Rebate (voucher) program. Program recipients must still comply with grant requirements as per item 2, below. Only rebate amounts are covered by grant funding; balance is homeowner's responsibility and is arranged with vendor and installer. Rebate reimbursement is issued following completion of installation, when all paperwork has been received by YRCAA. Rebate (voucher) amounts are $500 per wood or pellet device, $1000 per gas (LP or natural) or $1250 per electric device.

c. Bounty (voucher) Option: Owners of SFBDs who do not wish replacement units may surrender their SFBD for recycling and receive a $250 "bounty" voucher in return with a maximum allowable of 2 devices per household address. Bounty SFBDs must be prepared by cleaning out debris and fire-brick lining removed. Removal and transport of unit is owner's responsibility. Completion of a Certificate of Destruction is required.

2. Program recipients must comply with grant requirements, i.e.: pre-existing presence of in-use uncertified (pre-1995)wood stove, insert, or wood or coal furnace, excepting "Bounty" program; professional installation; obtaining required permits; rendering inoperative and recycling of old SFBD; meeting applicable code requirements; photographs.
3. Contracts for professionally-licensed and/or certified program partnering contractors, when applicable (items 1a and 1b), completed and in place prior to installation/retrofit of replacement heating device and required venting.
4. Primary emphasis will be placed on Electricity, Natural Gas and Liquid Propane as replacement heat source fuels; Pellet and Wood follow, in that order, subject to agreement with the property owner.
5. Contracts with local retail program partners completed and in place prior to purchase of replacement heating devices, which include:
   a. Natural Gas, Propane or Oil Stove or Insert
   b. Natural Gas, Oil or Propane Furnace
   c. Electric Furnace or Heat Pump, to include ductless heat pump systems.
   d. Pellet Stove or Insert
   e. Certified Wood Stove or Insert
6. Ensure that all replacement wood and pellet devices not only satisfy certification provisions as specified in WAC 173-433-100 (Appendix B) and RCW 70.94.457, but meet grant emission specifications of 4.5 grams/hr for wood stoves or 2.5 grams/hr for pellet stoves ***and are listed*** on the Ecology approved Wood Stove/Insert or Pellet Stove/Insert list.
7. YRCAA legal counsel has determined and drafted appropriate documentation regarding signed landlord-tenant agreements to prevent removal of any devices installed under this program and provide for no change in low-income rental property status for a period of 3 years following installation.
8. Dedicate 15% of grant funding to program administration.
9. Dedicate 5% of grant funding to program promotion. Previous wood stove programs have shown significant improvement with periodic media promotion to the public. Promotion also includes bi-lingual outreach and educational literature as well as audio- visual material and events, such as state or community fair presence or new/old stove technology demonstrations.
10. Utilize matching funds:
    a. Up to $600 instant rebate (toward installation) on Natural Gas service line installations from Cascade Natural Gas Corporation.
    b. Instant program discount on purchase of heating device from retail dealers and YRCAA.
    c. $75-$100 instant rebate from participating local propane dealers on installation or first liquid propane fill
    d. Free propane tank installation plus first year rent free on tank.

e. $1000 from the Northwest Hearth, Patio and Barbecue Association (NWHPBA) for each local NWHPBA member, subject to NWHPBA board approval.
f. Electric, natural gas, propane, pellet and Presto-log fuel assistance through Energy Assistance Programs, where possible.
g. YRCAA will dedicate one permanent employee for up to 15 hours per week to oversee grant program.
h. YRCAA will utilize existing operating funds from the Woodstove Education and Enforcement account to the extent possible.
i. YRCAA will obtain and provide Educational Materials for each change-out:
i. Either "Burn It Smart" DVD/VHS or "How to Operate Your Wood Stove More Efficiently" (Bilingual) DVD with each certified woodstove/insert, accompanied by the current edition of the YRCAA "Woodburning Handbook" (Bi- lingual).
ii. Pellet Stove fuel Safety and Efficiency Literature
iii. Propane and Natural Gas Safety and Thermal Efficiency Literature
iv. Electric thermostat efficiency Literature
v. Wood moisture meters and Clean Wood Burning literature to wood-burning device recipients.
j. Local metal recyclers to refund retail metal rebates to WSCO program;
k. YRCAA will procure a Certificate of Destruction and 1 photograph (Before removal) for each uncertified device in the Low Income and Rebate programs.

11 Where possible, combine woodstove change-outs with existing and separately-funded Weatherization Programs to maximize efficiency and minimize fuel use.
12. Provide Ecology with a monthly Wood Stove Change-Out Program Progress Report.
13. Conduct and submit results to Ecology, a post-program telephone survey utilizing the form(s) provided by Ecology, and representing at least 10% of change-out program participants.
14. The Grants Program Manager will maintain good and regular communication with Ecology grant program staff and will personally review all data, and prepare and submit at least monthly to Ecology all such required forms and reports, as stipulated in the Wood Stove Change-Out Program guidelines.
15. The essence of this program proposal, already having been established through previous years' experience and networking, this program is not anticipated to exceed 20 months, from start to finish.

Appendix D - YRCAA Smoke Allocation Plan for Agricultural Burning

Purpose: Provide direction for YRCAA staff decisions which will limit and create equitable allocations of smoke emissions from agricultural burning and minimize potential for public health risk and nuisance.

Procedure: The purpose of this plan is accomplished by allocating a quantity in tons of material that can be burned each day to each grower who plans to burn. The allocation must be received by the grower prior to burning. The quantity is determined by the level of allocation for the given day.

Scope: This plan addresses smoke from all agricultural burning in Yakima County, Washington that is subject to the Washington Clean Air Act, RCW 70.94; Chapter 173-430 Washington Administrative Code, Agricultural Burning; and YRCAA Regulation 1, Section 3.03, Outdoor and Agricultural Burning. The plan also considers the smoke emissions from four types of agricultural burns that are exempted by RCW 70.94 from the permitting and fee requirements. The plan also considers the smoke from prescribed fires (silvicultural burning) on forested land which are regulated by the Washington Department of Natural Resources.

Allocation Areas: Smoke allocation decisions may be made for the entire County or separately for the Upper and Lower Valley portions of Yakima County.

Decision Criteria for Selecting the Appropriate Smoke Allocation Level: All criteria shall be satisfied for a level to be selected. If any criterion for that level is not met, the next level of smoke allocation is considered.

Management Direction: The plan describes the most common parameters and decision criteria for smoke allocation, including good professional judgment. The plan will be used as a working tool and it can be amended or changed as needed by future decisions of the YRCAA Air Pollution Control Officer.

Waivers: A grower may be granted a waiver from an allocation level for cause. A grower must show cause and describe practices which will reduce smoke emissions to a level of non-significance. A waiver may only be granted for a specific burn, planned day, and conditions.

Decision Timing: Smoke allocation decisions shall be made according to the following schedule:

I. **Burns planned for weekdays.** Between 3:00 and 4:00 PM of the previous workday based on complete information and fees paid by 3:00 PM the previous workday.
II. **Burns planned for weekends.** Between 3:00 and 4:00 PM on the Friday prior to the weekend, based on complete information and fees paid by noon on the Friday prior to the weekend.
III. **Burns planned for holidays.** Between 3:00 and 4:00 PM on the workday prior to the holiday based on complete information and fees paid by noon of that day.

Plan Details
The following describes five levels of allocation, each with the criteria for determining the appropriate level, the criteria for allocating the quantity of material, and the duration of the decided level.

1. Level One Allocation

This level requires no allocation. Air quality and weather forecasts are good. Growers may burn an unlimited quantity.

1.1. Decision Criteria

1.1.1. No burn ban in place or expected in the next 72 hours.
1.1.2. 24 hour $PM_{2.5}$ value ≤ 7 $\mu g/m^3$.
1.1.3. 1-hour $PM_{2.5}$ values during the preceding 4 hours are declining or level.
1.1.4. No mid-level inversion in place or predicted for the next 72 hours.
1.1.5. Surface level inversions are not expected to last beyond mid-day.
1.1.6. MM5 Model Ventilation Index indicates a marginal or good ventilation class for at least the mid-day hours in the decision area.

1.2. Burn Allocation Criteria

1.2.1. Maximum quantity per burn – No limit.
1.2.2. Burn separation – None.
1.2.3. Total maximum number of permitted burns – No limit.

1.3. Decision Duration. Under appropriate emission levels and meteorological conditions, this level may continue for multiple days or weeks.

2. Level Two Smoke Allocation

This level requires a limited allocation. Air quality and weather forecasts are generally good but may worsen. Growers may burn a limited quantity.

2.1. Decision Criteria

2.1.1. No burn ban in place or expected in the next 48 hours.
2.1.2. 24-hour $PM_{2.5}$ value between 8 and 12 $\mu g/m^3$.
2.1.3. 1-hour $PM_{2.5}$ values during the preceding 8 hours are declining or level.
2.1.4. No mid-level inversion in place or predicted for the next 72 hours.
2.1.5. Surface level inversions are not expected to last beyond mid-day.
2.1.6. MM5 Model Ventilation Index indicates a marginal or good ventilation class for at least the majority of the daylight hours in the decision area.

2.2. Burn Allocation Criteria

2.2.1 Up to 200 tons per burn.
2.2.2 Burn separation – Limited, based on conditions.
2.2.3 Total maximum number of permitted burns – Based on separation and number of burns.

2.3 Decision Duration. Burn approvals and smoke allocations will be made for a specific calendar day. Burns expected to last more than 24 hours will require separate allocations for each additional day.

3. Level Three Smoke Allocation

This level requires a more limited (less quantity) allocation due to increasing $PM_{2.5}$ monitor values.

3.1. Decision Criteria

3.1.1. No burn ban in place or expected in the next 24 hours.
3.1.2. 24-hour $PM_{2.5}$ value between 13 and 16 $\mu g/m^3$.

3.1.3. 1-hour $PM_{2.5}$ values during the preceding 12 hours are declining or stable.
3.1.4. No mid-level inversion in place or predicted for the next 48 hours.
3.1.5. Surface level inversions are not expected to last beyond mid-day.
3.1.6. MM5 Model Ventilation Index indicates a good ventilation class for at least the majority of the daylight hours in the decision area.

3.2. Burn Allocation Criteria

3.2.1 Up to 100 tons per burn.
3.2.2 Burn separation - Limited, based on total number of burns.
3.2.3 Total maximum number of permitted burns – Based on separation and number of burns.

3.3. Decision Duration.

Burn approvals and smoke allocations will be made for a specific calendar day. Burns expected to last more than 24 hours will require a separate allocation for the second or longer 24-hour period.

4. Level Four Smoke Allocation.

This level requires a very limited allocation due to worsening air quality and predicted weather.

4.1. Decision Criteria

4.1.1. First or second stage burn ban is expected in the next 24 hours.
4.1.2. 24-hour $PM_{2.5}$ value between 17 and 20 µg/m3.
4.1.3. 1-hour $PM_{2.5}$ values during the preceding 4 hours are rising or stable.
4.1.4. Mid-level inversion in place or predicted.
4.1.5. Surface level inversions, if present, lasts most of the day.
4.1.6. MM5 Model Ventilation Index indicates a marginal or good ventilation class for six hours per day or less in the decision area.

4.2. Burn Allocation Criteria

4.2.1 Up to 50 tons per burn.
4.2.2 Burn separation - Limited, based on total number of burns.
4.2.3 Total maximum number of permitted burns – Based on separation and total number of burns.

4.3. Decision Duration.

Burn approvals and smoke allocations will be made for a specific calendar day. Burns expected to last more than 24 hours will require a separate allocation for the second or longer 24-hour period.

5. First or Second Stage Burn Ban.

No bun approvals or smoke allocations will be granted.

5.1 Decision Criteria

5.1.1 First or second stage burn ban is expected in the next 24 hours.
5.1.2 24-hour $PM_{2.5}$ value ≥ 21 µg/m^3.
5.1.3 1-hour $PM_{2.5}$ values during the preceding 4 hours are rising or stable.
5.1.4 Atmospheric conditions exist which can prevent emission levels from subsiding for 48 hours or longer.
5.1.5 Mid-level inversion in place or predicted.

5.1.6 Surface level inversions, if present, last most of the day.

5.2 Burn Allocation Criteria

5.2.1 All outdoor and agricultural burning is prohibited.

5.2.2 Orchard removal burns must be terminated within eight hours after the burn ban is called.

5.2.3 All other agricultural burns must be terminated within three hours after the burn ban is called.

5.5 Decision Duration.

This decision will not change until the burn ban has been removed.