

# **Portola Wood Stove Change-Out 2018 Progress Report**

COVERING CHANGE-OUTS COMPLETED  
THROUGH 12/31/2018



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## EXECUTIVE SUMMARY

The Northern Sierra Air Quality Management District (District) developed the Portola Fine Particulate Matter (PM<sub>2.5</sub>) Attainment Plan (Plan) to demonstrate attainment of the PM<sub>2.5</sub> standard by 2021. The core element of the attainment strategy is implementing the Greater Portola Wood Stove Change-out Program (Program) in Plumas County funded by the U.S. Environmental Protection Agency (U.S. EPA) 2015 Targeted Air Shed Grant Program. The goal of the Program is to replace 600 old, uncertified wood stoves with cleaner burning and more energy efficient home heating devices. The change-outs will take place between 2016 and 2020, with an estimated 100 to 150 change-outs per year. The District is offering incentives, up to the full cost of purchase and installation, to qualified residents of the Plumas County PM<sub>2.5</sub> Nonattainment Area (Nonattainment Area) using uncertified wood stoves or inserts as a primary source of heat.

The District and California Air Resources Board (CARB) developed an enforceable measure to allow U.S. EPA to credit the incentive emission reductions towards the attainment demonstration. According to U.S. EPA guidelines, emission reductions achieved from the implementation of an incentive program can be credited towards an attainment demonstration if they meet the following integrity elements: enforceable, quantifiable, surplus, and permanent.<sup>1</sup> The reductions achieved due to change-outs completed between 2016 and 2018 meet all of these integrity elements.

As part of the enforceable measure, CARB must submit an annual report that includes the elements listed below. This progress report demonstrates that the Program met each of these requirements as outlined below:

- Identify each project implemented during the previous calendar year by Program tracking number, description of both baseline and new equipment, and quantified emission reductions (Appendix A);
- Provide an internet link to the EPA Burnwise Emission Calculator used to calculate emission reductions (Alternative Calculator was used as explained in Chapter II);
- Describe the actions taken and documentation collected by CARB to confirm each project's compliance with Program requirements (Chapter IV);
- Determine whether the quantified annual PM<sub>2.5</sub> emission reductions are projected to achieve the full amount of enforceable commitment of 0.045 tons per day (tpd) by December 31, 2019 and 0.077 tpd by December 31, 2021 (Table 2 and Figure 3); and
- Describe any changes to relevant forms and related impacts on Program integrity (Chapter VI).

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<sup>1</sup> See "Guidance on Incorporating Voluntary Mobile Source Emission Reduction Programs in State Implementation Plans (SIPs)," October 24, 1997, at page 6-7; "Improving Air Quality with Economic Incentive Programs," January 2001 at Section 4.1; "Incorporating Emerging and Voluntary Measures in a State Implementation Plan (SIP)," September 2004 at pages 3-4' and "Diesel Retrofits: Quantifying and Using Their Emission Benefits in SIPs and Conformity," February 2014 at pages 27-29.

In addition to the annual report, CARB committed to performing a retrospective assessment which would evaluate the overall performance of the Program and develop recommendations for future enhancements to Program implementation. This assessment, included in every third annual report, shall include the following:

- Comparison of projected rate of wood stove change-outs (units/year, as described in plan submission) with actual rate of change-outs;
- Comparison of projected numbers of change-outs by type (e.g., wood to pellet stove, or wood to gas stove, as described in plan submission) with actual change-outs by type;
- Description of the geographic distribution of change-outs;
- Adequacy of State resources to implement the Program over the expected life of the Program;
- Comparison of projected PM2.5 air quality improvements from implementation of Program (as described in plan submission) to monitored PM2.5 air quality data;
- Discussion of implementation difficulties and potential solutions – e.g., coordination with stove retailers, types of landlord/tenant complaints; and
- Discussion of reasons for changing Program forms, if any.

The 2018 Enforceable Commitment Report (Report) includes the first retrospective assessment.

## **I. CHANGE-OUTS COMPLETED BETWEEN 2016 AND 2018**

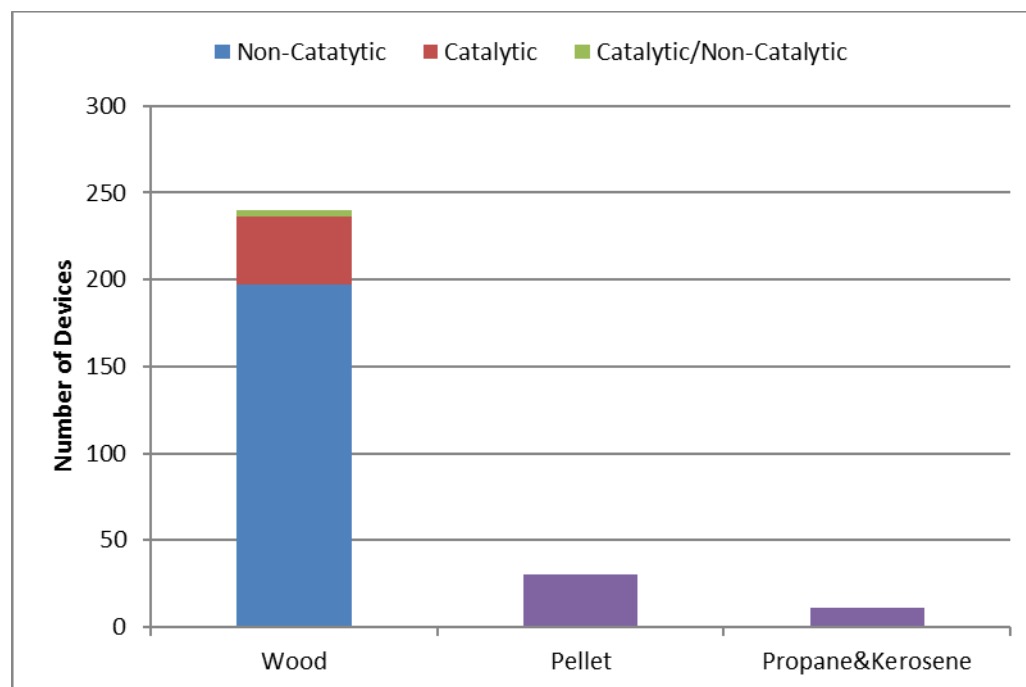
As part of the enforceable measure, the District committed to changing-out 350 stoves between 2016 and 2018. With 281 change-outs completed by December 31, 2018, the District was sixty nine change-outs or 20 percent short of the original estimate. Eighty seven percent of the baseline devices (old devices) were uncertified wood stoves with a default PM2.5 emission rate of 30.60 pounds per ton and an efficiency of 54 percent.<sup>2</sup> The remaining thirteen percent were comprised of fireplaces (4 percent) and old certified devices no longer working properly (9 percent). Most of the households replaced their old devices with U.S. EPA certified wood stoves. Thirty households chose pellet stoves and eleven household chose a propane or a kerosene stove as the replacement option (see Appendix A). Figure 1 illustrates the devices replaced through December 31, 2018 grouped by the device type.

There are two main categories of wood stoves depending on the construction, combustion, and emission characteristics of the device: non-catalytic and catalytic. Non-catalytic stoves have built-in features allowing re-circulating and re-burning of the smoke to keep the devices running cleanly and efficiently. Catalytic stoves are equipped with a ceramic or metal honeycomb device called a combustor. The catalyst material reduces the ignition temperature of the unburned volatile organic compounds (VOC) and carbon monoxide (CO) in the smoke, thus making the smoke ignite at lower temperatures. As these gasses burn, the temperature inside the catalyst increases to a point at which the ignition of the gasses is self-sustaining. There are also hybrid models on the market, which combine catalytic and non-catalytic technology.

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<sup>2</sup> AP-42 Tables 1.10-1 and 1.10-5: <https://www3.epa.gov/ttnchie1/ap42/ch01/final/c01s10.pdf>

Figure 1. Number of Replacement Devices by Type Installed through 12/31/2018



## II. CALCULATIONS

Initial estimates of emission reductions achieved by replacing uncertified wood stoves with cleaner burning and more energy efficient home heating devices were based on the U.S. EPA Burnwise Emission Calculator (EPA Calculator).<sup>3</sup> The EPA Calculator is designed to calculate the average emission reductions for the entire Program using the default emission factors. In order to come up with device specific emission estimates, CARB staff developed a supplemental calculator, referred to as the CARB Calculator.

The CARB Calculator was used to estimate PM<sub>2.5</sub> emission reductions achieved by replacing 281 wood stoves between 2016 and 2018 with cleaner-burning and more energy efficient alternatives. The individual calculations for each device, along with the device tracking number and new equipment type, are presented in Appendix A. Listed below are the step-by-step instructions and formulas.

The first step in calculating emission reductions required converting certification test emission rates in grams per hour (g/hr) to emission factors in pounds per ton (lb/ton), as described below:

1. The certification test emission rate was scaled upward by 50 percent to reflect the real-world in-home performance;<sup>4</sup>

<sup>3</sup> Available at <https://www.epa.gov/burnwise/burn-wise-additional-resources>

<sup>4</sup> <https://www3.epa.gov/ttnchie1/conference/ei17/session4/houck.pdf>

2. The scaled emission rate was divided by the average burn rate of 1.5 kilograms per hour (kg/hr) to calculate grams of PM2.5 emissions per kilogram of wood (g/kg);<sup>5</sup> and
3. The result was multiplied by 2 to convert g/kg to lb/ton.

The average certification test emission rate for the 240 devices between 2016 and 2018 was 3.0 g/hr. Table 1 provides additional information about the emission limits of the wood burning devices installed in between 2016 and 2018.

Table 1. Breakdown of Wood Burning Devices Installed between 2016 and 2018 by the Emission Rate

<b>Certification Test Emission Rate</b>	<b>Number of Devices</b>
Not exceeding 3.0 g/hr	89
Between 3.0 g/hr and 4.0 g/hr	119
Greater than 4.0 g/hr	32
<b>Total</b>	<b>240</b>

The following equation was used to calculate emission factor in pounds per ton:

$$\text{Equation 1: } EF = (ER \times 1.5) / BR \times 2$$

Where:

- EF* Emission factor in pounds per ton
- ER* Emission rate in grams per hour
- BR* Average burn rate in kilograms per hour of operation
- 1.5 Factor used to scale certification test emission rate to reflect real world emissions
- 2 Factor used to convert grams per kilogram to pounds per ton

The average emission factor of 6.05 lb/ton calculated using Equation 1 is close to the emission factor of 8.76 lb/ton estimated in the Regulatory Impact Analysis for Residential Wood Heaters NSPS Review Table 4.3 (NSPS Review).<sup>6</sup> Considering that the average replacement device had about 1/3 lower certification test emission rate than the 4.5 g/hr assumed in NSPS Review, the calculated emission factors seem appropriate.

<sup>5</sup> Based on information received from Gary Blais of U.S. EPA Burnwise Program on August 2, 2016, titled "Conversion Factor TB." The spreadsheet was prepared by Tom Butcher, Research Engineer; Brookhaven National Laboratory.

<sup>6</sup> [https://www3.epa.gov/ttnecas1/docs/ria/wood-heaters\\_ria\\_final-nsps-revision\\_2015-02.pdf](https://www3.epa.gov/ttnecas1/docs/ria/wood-heaters_ria_final-nsps-revision_2015-02.pdf)

The following formulas were used to calculate PM2.5 emissions of the old device, the new device, and the difference between them.

$$\text{Equation 2: } E_{old} = (EF_{old} \times WU \times WD)/2000$$

$$\text{Equation 3: } E_{new} = (EF_{new} \times WU \times WD \times (EFC_{old}/EFC_{new}))/2000$$

$$\text{Equation 4: } E_{benefit} = E_{old} - E_{new}$$

Where:

$E_{old}$	Emissions of old device (ton/year)
$E_{new}$	Emissions of new device (ton/year)
$EF_{old}$	Emission factor for the old device (lb/ton)
$EF_{new}$	Emission factor for the replacement device (lb/ton)
$WU$	Wood usage (cords/year)
$WD$	Wood density (ton/cord)
$EFC_{old}$	Device efficiency for the old device (%)
$EFC_{new}$	Device efficiency for the new device (%)
$E_{benefit}$	Emission reductions from change-out (ton/year)

Since emission factors for pellet stoves are considered to be more representative of an actual in-home usage,<sup>7</sup> a default emission factor of 3.06 lb/ton, consistent with NSPS Review, was used for all pellet stoves.<sup>8</sup> Portola households who use a pellet stove as a main source of heat use two to three tons of pellet fuel per year.<sup>9</sup> In order to ensure a conservative estimate, three tons was assumed in estimating emission reductions. Consistent with the California's Short-Lived Climate Pollutant Reduction Strategy<sup>10</sup> propane and kerosene fueled heating devices were assumed to have negligible PM2.5 emissions.

### III. EMISSION REDUCTIONS

The District made an enforceable commitment to achieve PM2.5 emission reductions of 0.045 tpd by December 31, 2019 and 0.077 tpd by December 31, 2021 by replacing uncertified wood stoves with cleaner burning and more efficient home heating devices in the Nonattainment Area. The emission reductions can only be used for State Implementation Plan (SIP) purposes if they are fully realized throughout the calendar year. Therefore, the reductions associated with devices replaced through the end of 2016, 2017, and 2018 are respectively compared to 2017, 2018, and 2019 emission estimates. The level of emission reductions achieved through December 31, 2018 ensures that the District meets 2019 milestone and is on track to meet 2021 milestone.

<sup>7</sup> <https://www3.epa.gov/ttnchie1/ap42/ch01/related/woodstove.pdf>

<sup>8</sup> [https://www3.epa.gov/ttnecas1/docs/ria/wood-heaters\\_ria\\_final-nsps-revision\\_2015-02.pdf](https://www3.epa.gov/ttnecas1/docs/ria/wood-heaters_ria_final-nsps-revision_2015-02.pdf).

<sup>9</sup> Quincy Hot Spot personal communication

<sup>10</sup> [https://www.arb.ca.gov/cc/shortlived/meetings/03142017/final\\_slcp\\_report.pdf](https://www.arb.ca.gov/cc/shortlived/meetings/03142017/final_slcp_report.pdf)

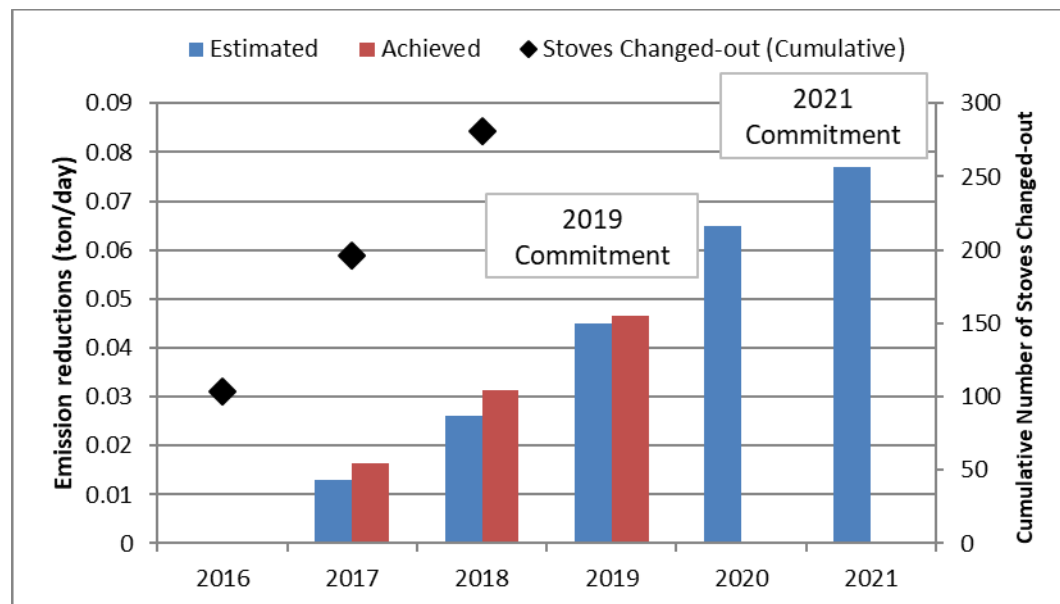


Although only 281 of the 350 devices estimated to be replaced by the end of 2018 were installed, the emission reductions meet the 2019 RFP milestone because the installed devices have significantly lower PM2.5 emission rates compared to the initial estimate. In order to have a conservative estimate, the assumption was that each qualified uncertified device will be replaced with a Phase II wood stove with an average certification test emission rate of 7.5 g/hr. The 240 wood burning replacement devices installed between 2016 and 2018 had an average certification test emission rate of 3.0 g/hr. The remaining 41 devices were even cleaner and included 30 pellet stoves with average emission rates of 1.4 g/hr and 11 propane/kerosene stoves. The change-out statistics through December 31, 2018, including the number of specific devices and associated emission reductions are summarized in Table 2. Figure 2 compares the reductions achieved to the initial estimates and 2019 and 2021 enforceable commitment.

Table 2. Summary of Change-outs Completed between 2016 and 2018

<b>Total Installations as of 12/31/18</b>	<b>281</b>
<b>Summary by Replacement Device Type</b>	
Non-catalytic Stoves	197
Catalytic Stoves	39
Catalytic/Non-catalytic Stoves	4
Pellet Stoves	30
Propane/Kerosene Stove	11
<b>Summary of Emission Reductions</b>	
Total PM2.5 Emissions Saved (tons per year)	16.969
Total PM2.5 Emissions Saved (tons per day)	0.046
Initial Estimate (tons per day)	0.045
<b>Additional PM2.5 Reductions Achieved</b>	<b>0.001</b>

Figure 2. Comparison of PM2.5 Emission Reductions Achieved to the 2019 and 2021 Enforceable Commitment



#### IV. QUANTATIVE MILESTONE

Section 189(c) of the Clean Air Act (CAA) requires that attainment plans for all PM2.5 nonattainment areas contain quantitative milestones that (1) demonstrate reasonable further progress (RFP) and (2) are achieved every three years until the area is redesignated to attainment. These milestones are set to ensure that the Nonattainment Area is making generally linear progress towards attainment and is on track to attain the NAAQS by the applicable attainment date. In case of Plumas County PM2.5 Nonattainment Area the first quantitative milestones date is October 2019. Section 189(c)(2) of the CAA requires each state containing a PM2.5 nonattainment area to submit, no later than 90 days after the applicable milestone date, a quantitative milestone report demonstrating that all SIP measures have been implemented and that the milestone has been met. The quantitative milestone report for the Nonattainment Area is due January 2020. Each quantitative milestone report must include, at minimum:

- A certification by the Governor or Governor’s designee that the SIP control strategy is being implemented consistent with the (RFP) commitment;
- Technical support, including calculations, sufficient to document completion statistics for appropriate milestones and to demonstrate that the quantitative milestones have been satisfied and how the emission reductions achieved to date compare to those required or scheduled to meet RFP; and
- A discussion of whether the area will attain the applicable PM2.5 NAAQS by the projected attainment date.<sup>11</sup>

<sup>11</sup> 40 CFR 51.1013(b)

The U.S. EPA requires that the RFP demonstration for milestone years includes a direct PM2.5, as well as PM precursors that have been determined to be significant. As demonstrated in Section V.C of the Plan, PM precursors were determined to be insignificant for attainment. Therefore, this report only addresses direct PM2.5 emissions. Table 3 summarizes projected emission reductions for each quantitative milestone year by sector.

Table 3. RFP Projected Emissions for Quantitative Milestone Years (tpd)

Sector	2019	2022
Wood Stove Change-out	0.045	0.077
Total	0.045	0.077

By the first milestone, 2019, the Nonattainment Area was expected to reduce directly emitted PM2.5 by 0.45 tpd. As listed in Table 2 and illustrated in Figure 2, change-outs completed by December 31, 2018 will reduce PM2.5 emissions by 0.46 tpd by the 2019 milestone. Therefore, the area met the 2019 quantitative milestone. The emission reductions needed to demonstrate RFP have been achieved, the 2019 quantitative milestone have been met, and the ongoing progress is being made to attain 2012 annual standard by December 31, 2021. As outlined in Section VIII, District and CARB will intensify their efforts to ensure that optimal emission reductions are achieved from change-outs.

As part of the attainment demonstration, District and CARB committed to implementing the Greater Portola Wood Stove Change-out Program and continuing ongoing reductions in the mobile sector. These commitments have been satisfied. District made additional commitments listed in Table 4 of the Plan referred to as 'Other Commitments'. Any potential emission reductions achieved from the 'Other Commitments' were not needed for attainment. All of the 'Other Commitments' have been met, except for prohibiting open burning during winter. District committed to developing an open burning rule and taking it to the District's Board for adoption by March 31, 2019. District is developing that rule and will take it to the District Board in 2019.

## **V. DOCUMENTATION COLLECTED TO CONFIRM PROJECT COMPLIANCE WITH PROGRAM REQUIREMENTS**

On a monthly basis CARB receives reports from the District listing each installation and the associated expenditures by tracking number. Every quarter the District submits progress reports to CARB summarizing change-outs accomplished during the quarter. For verification purposes CARB staff periodically requests before and after photos for select installations.

Per the Program design, wood stove installers are not reimbursed prior to completing the installation and submitting the following documentation to the District:

- Completed Application
- Owner/Tenant Agreement, if applicable
- Cost estimate approved by the District
- Exceeds \$3500/\$4500 form, if applicable
- Photo of the non-certified device installed in the residence before removal
- Photo of the new EPA certified device installed in the residence
- Program Tracking Form
- Acknowledgement of Training Form
- Verification of surrendering the device to the City of Portola Public Works Yard
- Photo of non-certified device destroyed
- Copy of Permit
- Final Invoice

The stove installer delivers the old, uncertified stove to the City of Portola Public Works Yard with the Program Tracking Number written on the stove. City staff destroy the stove, generally by cutting a hole in at least one panel with a plasma torch, and take a picture of the destroyed stove showing the Program Tracking Number. The inoperable stove is recycled. City staff sign the Program Tracking Form, taking responsibility of the old stove from the installer and sign the Verification of Destruction Form when the old stove has been destroyed.

After the installation is complete and residents have been using the new stove for at least one winter, the District will follow up with a survey to verify that the installation has been satisfactorily completed and that the resident is following the installer's recommendations on proper burning techniques and wood storage. The follow-up is conducted by an in-home visit, phone call, and/or mail survey.

Figure 3 shows an example of the picture of the original stove and the replacement stove maintained as part of the documentation. Figure 4 shows a picture of stove being destroyed by the City of Portola staff and a picture of stoves stored at the City of Portola yard awaiting transport to the recycling facility. Figure 5 shows pictures of two stoves, with tracking numbers printed on the top of each stove, deemed permanently inoperable.

Figure 3. Example of before (left) and after (right) pictures collected as part of the documentation for change-out 2016-011



Figure 4. Picture of stove being destroyed (left) and stored for recycling (right)



Figure 5. Pictures of Stoves Deemed Permanently Inoperable by the City of Portola Staff



## VI. CHANGES TO GRANT TERMS AND CONDITIONS

In December of 2018, CARB proposed to U.S. EPA that the grant be modified to allow funding additional elements summarized in Table 4. U.S. EPA has not yet approved these changes.

Table 4. Summary of proposed changes to the Targeted Air Shed Grant.

Activity	Outputs	Outcomes	Performance Measure
Heat Pump Pilot Project	Install heat pumps in five homes.	Promote heat pumps in the community. Reduce PM2.5 Emissions 0.35 tons annually.	Track reductions using existing database and spreadsheet.
Education and Outreach Coordinator	Full time staff responsible for educating households and promoting clean home heating	Ensuring optimal emission reductions.	In addition to emissions, track air quality to ensure that emission reductions lead to commensurate air quality improvements.
Chimney Sweep	Sweep 200 chimneys, inspect stoves, and educate residents		
Wood Shed Project	Build 50 wood sheds.		
Woodstove Registration	Register every certified stove	Provide a way for a District Inspector to verify that households without certified stove are not burning wood on non-burn days.	Track concentrations on mandatory Woodburning Curtailment to verify Program effectiveness.

## VII. CHANGES TO RELEVANT FORMS

The forms updated in 2018 are summarized in Table 5 and included in Appendix B.

Table 5. Program forms revised in 2018

Form	Reason
NSAQMD Generator Use Agreement	Secure agreement from households using generator
CDC Generator Warning	Inform households about hazards associated with using generator
Mobile home info needed	Summarizes information needed to apply for a permit
NSAQMD Zone 2 Application	Revise income limits with 2019 numbers

## VIII. RETROSPECTIVE ASSESSMENT

CARB committed to include a retrospective assessment in every third annual report to evaluate the overall performance of the Program and develop recommendations for future enhancements to Program implementation. The assessment must include the following:

- Comparison of projected rate of wood stove change-outs (units/year, as described in plan submission) with actual rate of change-outs;
- Comparison of projected numbers of change-outs by type (e.g., wood to pellet stove, or wood to gas stove, as described in plan submission) with actual change-outs by type;
- Description of the geographic distribution of change-outs;
- Adequacy of State resources to implement the Program over the expected life of the Program;
- Comparison of projected PM2.5 air quality improvements from implementation of the Program (as described in plan submission) to monitored PM2.5 air quality data;
- Discussion of implementation difficulties and potential solutions – e.g., coordination with stove retailers, types of landlord/tenant complaints; and
- Discussion of reasons for changing Program forms, if any.

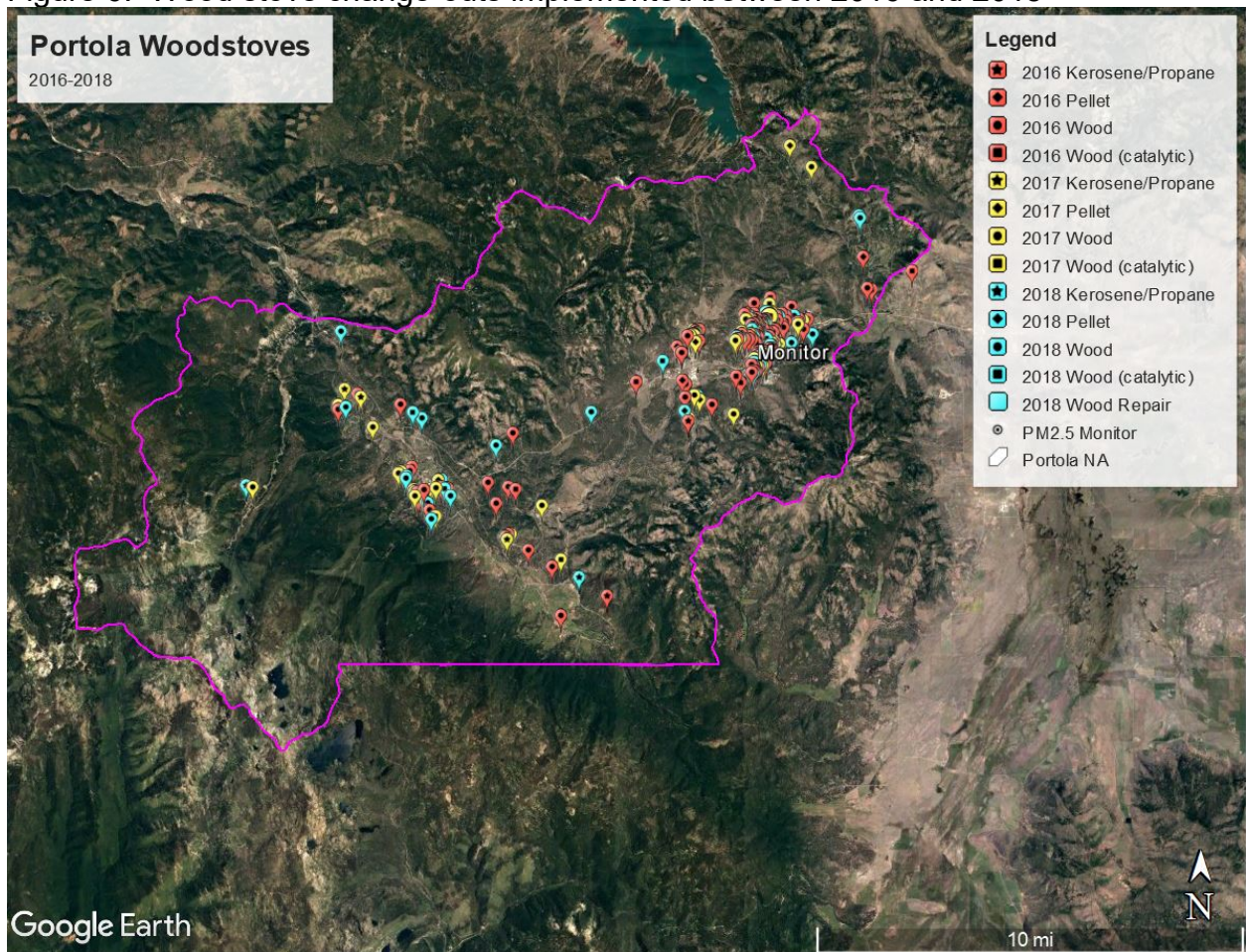
Most elements of the retrospective assessment are included in the annual report, but are briefly summarized below:

The rate of implemented to projected change-outs per year was on track in 2016 and 2017, but lagged in 2018. In 2016 and 2017, Portola residents were eager to participate in the Program and implementation was significantly easier. However, by 2018, more outreach was required to contact households that either had not heard of the Program or had been hesitant to participate. Some of these change-outs during this time were more challenging due to either the location of the home and/or the condition of the dwelling. In addition, in June of 2018, a Woodsmoke Reduction Program, offering incentives for replacement of uncertified stoves with less polluting home heating

alternatives, was implemented for areas outside of the Nonattainment Area. This placed additional demands on the two wood stove installers participating in both programs. Overall, between 2016 and 2018, 20 percent fewer devices were installed compared with initial estimates. However, cleaner devices were installed compared to those originally considered in the attainment demonstration. Attainment was demonstrated on the premise that an uncertified stove would be replaced with a Phase II certified stove with an emission rate of 7.5 g/hr. The actual change-outs include 240 wood stoves with average emission rates of 3 g/hr, 30 pellet stoves with an average emission rate of 1.4 g/hr, and 11 propane and kerosene stoves.

Almost 80 percent of stoves have been installed in the City of Portola. This is consistent with the District's contention that the highest PM2.5 concentrations are expected in the area of highest population density. In addition, weather conditions during winter nights generally involve little to no wind and low mixing heights. Thus, wood burning emissions from nearby communities are unlikely to have a strong impact on Portola's PM2.5 concentrations under these stagnant winter conditions. Figure 6 illustrates the replacement devices installed in the Nonattainment Area between 2016 and 2018.

Figure 6. Wood stove change-outs implemented between 2016 and 2018

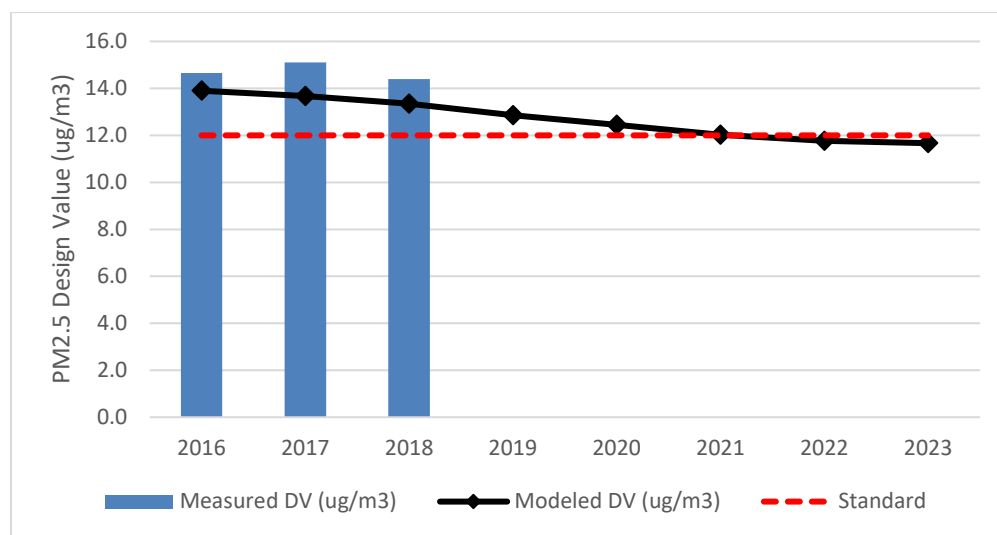




The State has adequate resources to continue implementing the Program. The same project manager has been overseeing the Program since the beginning and support staff are assigned, as needed.

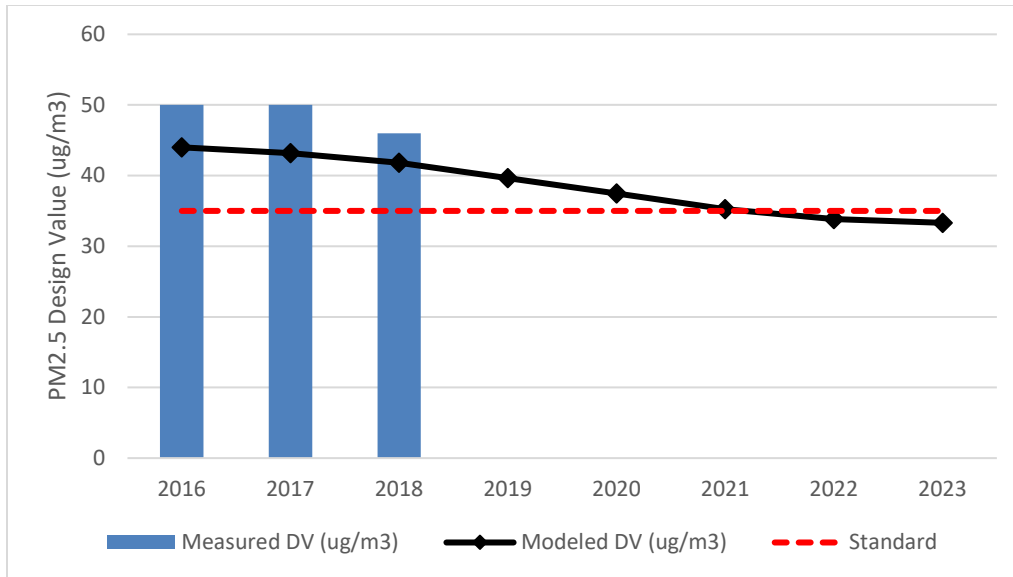
Despite changing-out close to 300 stoves, the air quality did not improve as rapidly as projected. Between 2016, the beginning of the Program implementation, and 2018 the annual and the 24-hr design values decreased 1.7 and 8 percent, respectively. Figures 7 and 8 compare measured and modeled design values since the beginning of the Program. 2018 design values were 7.9 percent (Figure 7) and 10 percent (Figure 8) above the projected annual and 24-hr design values, respectively. Operator usage contributes greatly to the success of achieving emission reductions from wood-to-wood replacement. Many Program participants report that it takes time to adjust their burning practices since the U.S. EPA certified wood stove function quite differently than their previous, uncertified wood stoves. In order to ensure optimal stove operation, the new stove has to be well maintained and properly operated using good quality firewood. Most households use their wood stoves in the easiest way, which unfortunately does not ensure the optimal stove operation. Furthermore, emission reductions are influenced by the quality of wood. Moist, unseasoned wood, even if burned in a low-emitting device, will still lead to high emissions. The use of properly-sized wood pieces is also important. Wood should be split to a maximum size of four to six inches, depending on the size of the stove, to increase surface area and reduce emissions. All participants are trained in using the new stove at the time of installation. But if the installation is completed in the summer months, they are less likely to recall all the information provided by the time the stove is used in winter. In order to maximize the air quality improvements, the District intensified the effort to conduct follow-up visits with every household that participated in the Program. During follow-up visits, District staff instructs households on optimal stove operation. District distributes a Stove Installation flier, which summarizes key factors in ensuring optimal operation, to every household participating in the Program.

Figure 7. Comparison of Measured Annual Design Values to Modeled<sup>12</sup>



<sup>12</sup> Data influenced by 2018 wildfires were excluded from the design value calculations.

Figure 8. Comparison of Measured 24-hr Design Values to Modeled<sup>13</sup>



The PM2.5 pollution from certified wood stoves, even under optimal operating conditions, is still much higher than pollution from other heat sources. Therefore, the District is trying to maximize the number of non-wood replacements. The reductions achieved by replacing a wood burning device with a non-wood device are more certain as they are less influenced by fuel quality, operator error, and lack of regular maintenance. The District is offering higher incentives for switching to non-wood home heating. In addition, the District offers a generator to each household interested in switching to a pellet stove or non-wood heater but worried about loss of power.

Furthermore, modifications to the grant proposed in Table 3, if approved by the U.S. EPA, would help reduce PM2.5 concentrations. CARB and the District applied for a 2018 Targeted Air Shed Grant seeking additional funding for improving outreach and education, enforcement, and establishing a reliable source of dry wood.

The rate of applications coming to the District has slowed down. Initially, there were a large pool of applicants interested in the Program. With time, the interest diminished and the District needed to employ new advertising tactics in an attempt to reach potential applicants that had not yet heard about the Program or were hesitant to participate due to the inconvenience associated with any remodeling project. The District is planning to hire an Education and Outreach Coordinator whose responsibility will include identifying remaining households with uncertified stoves and assisting them with the application process. A Wood Stove Fair will be scheduled in the second quarter of 2019 to meet several objectives. The first objective is for more residents to know the Program exists and will continue for another one and a half years. The second objective will be to educate residents on proper burning techniques and best fuel management practices.

<sup>13</sup> Data influenced by 2018 wildfires were excluded from the design value calculations.

Increasing the rate of follow-up surveys is critical. This educational opportunity is limited by staff resources. Approval of the amendments requested in Table 3 will allow an additional staff person to focus on this outreach. In addition, being able to provide a chimney sweep services will provide another source of wood burning education to the residents.

To further reach residents that are hesitant to either relinquish their old, uncertified stoves or are wary of government Programs, information about the upcoming mandatory curtailment program is being disseminated. The 'Clear the Air; Check Before You Light' Program has been introduced and promoted the last two winters as a voluntary Program. Beginning January 1, 2021, there will be a mandatory no burning component. Residents are being urged to upgrade to certified stoves before there are mandatory no burn days as certified stoves and non-wood heating devices will be exempt.

A number of Program forms have been changed to date to improve Program implementation. The main changes included the following:

- Updating income limits;
- Updating list of eligible devices to accommodate grant revisions;
- Adding Spanish versions;
- Generating a Stove Installation Flier to help ensure optimal stove operation;
- Streamlining installations in mobile homes; and
- Adding liability and warning forms for providing generators with pellet stoves, as needed.

# Appendix A

## Greater Portola Wood Stove Change-out Program Emission Benefit Calculator

Constants & Conversions	Value	Unit	Source
<b>PM2.5 Emission Factors</b>			
Uncertified Stove	30.60	lb PM2.5/ton wood	AP-42, Table 1.10.-1 <sup>14</sup>
Fireplace	34.60	lb PM2.5/ton wood	AP-42, Table 1.9.-1 <sup>15</sup>
Pellet Stove	3.06	lb PM2.5/ton wood	2015 NSPS - Regulatory Impact Analysis for Residential Wood Heaters NSPS Review Table 4.3 <sup>16</sup>
2015 NSPS Stove	8.76	lb PM2.5/ton wood	2015 NSPS - Regulatory Impact Analysis for Residential Wood Heaters NSPS Review Table 4.3 <sup>17</sup>
Propane, Electric, or Kerosene	0.00		California Short-Lived Pollutant Reduction Strategy <sup>18</sup>
<b>Efficiency</b>			
Uncertified Stove Efficiency	54	%	AP-42, Table 1.10-5 <sup>19</sup>
Certified Stove Efficiency	68	%	AP-42, Table 1.10-5 <sup>20</sup>
Pellet Stove Efficiency	68	%	AP-42, Table 1.10-5 <sup>21</sup>
Fireplace	7	%	Review of Fireplace Use and Technology, OMNI Environmental <sup>22</sup>
<b>Other Constants &amp; Conversions</b>			
Wood Use	4.3	cord/year	District Survey
Wood Density	1.04	ton/cord	U.S. EPA Burnwise Emission Calculator
Average Burn Rate	1.5	kg/hour	Gary Blais Personal Communications
Emission Rate Scaling Factor	1.5		
Conversion from lb to ton	2000		
Conversion from g/kg to lb/ton	2		

<sup>14</sup> <https://www3.epa.gov/ttnchie1/ap42/ch01/final/c01s10.pdf>

<sup>15</sup> <https://www3.epa.gov/ttnchie1/ap42/ch01/final/c01s09.pdf>

<sup>16</sup> [https://www3.epa.gov/ttnecas1/docs/ria/wood-heaters\\_ria\\_final-nsps-revision\\_2015-02.pdf](https://www3.epa.gov/ttnecas1/docs/ria/wood-heaters_ria_final-nsps-revision_2015-02.pdf)

<sup>17</sup> Ibid

<sup>18</sup> [https://www.arb.ca.gov/cc/shortlived/meetings/03142017/final\\_slcp\\_report.pdf](https://www.arb.ca.gov/cc/shortlived/meetings/03142017/final_slcp_report.pdf)

<sup>19</sup> <https://www3.epa.gov/ttnchie1/ap42/ch01/final/c01s10.pdf>

<sup>20</sup> Ibid

<sup>21</sup> Ibid

<sup>22</sup> <http://www.omni-test.com/publications/firepl.pdf>

Program Tracking # (YYYY-XXX)	New Fuel	Install Date	Emission Rate (g/hr)	Device Type	Emission Factor (lb/ton)	Emissions (ton/year)		
						Before	After	Difference
2016-001	wood	5/23/16	2.9	NC	5.8	0.0684	0.0103	0.0581
2016-003	wood	8/9/16	1.9	NC	3.8	0.0684	0.0067	0.0617
2016-006	wood	5/11/16	3.5	NC	7	0.0684	0.0124	0.0560
2016-007	wood	8/5/16	3.3	NC	6.6	0.0684	0.0117	0.0567
2016-008	wood	6/24/16	0.58	NC	1.16	0.0684	0.0021	0.0664
2016-009	wood	5/10/16	3.2	NC	6.4	0.0684	0.0114	0.0571
2016-011	wood	5/27/16	3.8	NC	7.6	0.0684	0.0135	0.0549
2016-012	wood	5/19/16	3.09	NC	6.18	0.0684	0.0110	0.0574
2016-015	wood	5/11/16	3.2	NC	6.4	0.0684	0.0114	0.0571
2016-016	wood	8/4/16	3	NC	6	0.0684	0.0107	0.0578
2016-017	wood	7/14/16	3.5	NC	7	0.0684	0.0124	0.0560
2016-019	wood	6/13/16	2.3	NC	4.6	0.0684	0.0082	0.0603
2016-020	wood	6/23/16	4.4	NC	8.8	0.0684	0.0156	0.0528
2016-021	wood	5/25/16	3.8	NC	7.6	0.0684	0.0135	0.0549
2016-022	wood	8/18/16	3.6	NC	7.2	0.0684	0.0128	0.0556
2016-023	wood	6/28/16	2.77	NC	5.54	0.0684	0.0098	0.0586
2016-024	wood	5/19/16	2.4	NC	4.8	0.0684	0.0085	0.0599
2016-025	wood	7/14/16	3.5	NC	7	0.0684	0.0124	0.0560
2016-026	wood	9/1/16	0.08	NC	0.16	0.0684	0.0003	0.0681
2016-028	wood	5/16/16	3.5	NC	7	0.0684	0.0124	0.0560
2016-029	wood	6/21/16	4.4	NC	8.8	0.0684	0.0156	0.0528
2016-030	wood	10/19/16	3.9	NC	7.8	0.0684	0.0139	0.0546
2016-032	wood	7/25/16	4.4	NC	8.8	0.0684	0.0156	0.0528
2016-033	wood	8/2/16	3.2	NC	6.4	0.0684	0.0114	0.0571
2016-035	wood	7/8/16	2.9	NC	5.8	0.0684	0.0103	0.0581
2016-036	wood	6/22/16	3.8	NC	7.6	0.0684	0.0135	0.0549
2016-037	wood	10/11/16	4.2	NC	8.4	0.0684	0.0149	0.0535
2016-038	wood	6/23/16	3.2	NC	6.4	0.0684	0.0114	0.0571
2016-039	wood	7/26/16	3.5	NC	7	0.0684	0.0124	0.0560
2016-040	wood	7/19/16	3.6	NC	7.2	0.0684	0.0128	0.0556
2016-041	wood	7/8/16	4.1	NC	8.2	0.0684	0.0146	0.0539
2016-042	wood	6/14/16	2.7	NC	5.4	0.0684	0.0096	0.0588
2016-044	wood	7/14/16	3.8	NC	7.6	0.0684	0.0135	0.0549

Program Tracking # (YYYY-XXX)	New Fuel	Install Date	Emission Rate (g/hr)	Device Type	Emission Factor (lb/ton)	Emissions (ton/year)		
						Before	After	Difference
2016-045	wood	7/12/16	4.4	NC	8.8	0.0684	0.0156	0.0528
2016-046	wood	7/28/16	2.1	NC	4.2	0.0684	0.0075	0.0610
2016-047	wood	7/22/16	3.2	NC	6.4	0.0684	0.0114	0.0571
2016-048	wood	12/5/16	3.6	NC	7.2	0.0684	0.0128	0.0556
2016-049	wood	8/3/16	3.5	NC	7	0.0684	0.0124	0.0560
2016-050	wood	7/11/17	2.1	NC	4.2	0.0684	0.0075	0.0610
2016-051	wood	7/26/16	3.2	NC	6.4	0.0684	0.0114	0.0571
2016-054	wood	8/17/16	2.3	NC	4.6	0.0684	0.0082	0.0603
2016-055	wood	9/14/16	3.6	NC	7.2	0.0684	0.0128	0.0556
2016-056	wood	8/26/16	3.1	NC	6.2	0.0684	0.0110	0.0574
2016-057	wood	12/16/16	3.5	NC	7	0.0684	0.0124	0.0560
2016-058	wood	7/29/16	3	NC	6	0.0684	0.0107	0.0578
2016-059	wood	8/19/16	2.3	NC	4.6	0.0684	0.0082	0.0603
2016-061	wood	8/12/16	3.9	NC	7.8	0.0684	0.0139	0.0546
2016-062	wood	8/9/16	3.8	NC	7.6	0.0684	0.0135	0.0549
2016-064	wood	8/2/16	3	NC	6	0.0684	0.0107	0.0578
2016-065	wood	8/17/16	3.6	NC	7.2	0.0684	0.0128	0.0556
2016-066	wood	12/20/16	3.9	NC	7.8	0.0684	0.0139	0.0546
2016-068	wood	9/15/16	2.3	NC	4.6	0.0684	0.0082	0.0603
2016-069	wood	9/14/16	3.7	NC	7.4	0.0684	0.0131	0.0553
2016-070	wood	11/18/16	3.2	NC	6.4	0.0684	0.0114	0.0571
2016-072	wood	9/9/16	3.9	NC	7.8	0.0684	0.0139	0.0546
2016-073	wood	4/19/18	3.29	NC	6.58	0.0684	0.0117	0.0567
2016-074	wood	8/9/16	2.1	NC	4.2	0.0684	0.0075	0.0610
2016-075	wood	11/3/16	4.47	NC	8.94	0.0684	0.0159	0.0525
2016-076	wood	9/7/16	3.8	NC	7.6	0.0684	0.0135	0.0549
2016-078	wood	10/13/16	3.5	NC	7	0.0684	0.0124	0.0560
2016-079	wood	8/18/16	3.8	NC	7.6	0.0684	0.0135	0.0549
2016-080	wood	6/27/17	1.9	NC	3.8	0.0684	0.0067	0.0617
2016-082	wood	9/9/16	3.5	NC	7	0.0684	0.0124	0.0560
2016-083	wood	10/11/16	3.5	NC	7	0.0684	0.0124	0.0560
2016-084	wood	9/13/16	3.7	NC	7.4	0.0684	0.0131	0.0553
2016-085	wood	10/19/16	3.5	NC	7	0.0684	0.0124	0.0560
2016-089	wood	9/8/16	3	NC	6	0.0684	0.0107	0.0578
2016-091	wood	10/6/16	3	NC	6	0.0684	0.0107	0.0578
2016-093	wood	12/1/16	3.5	NC	7	0.0684	0.0124	0.0560
2016-096	wood	10/18/16	4.4	NC	8.8	0.0684	0.0156	0.0528
2016-098	wood	11/18/16	3.2	NC	6.4	0.0684	0.0114	0.0571

Program Tracking # (YYYY-XXX)	New Fuel	Install Date	Emission Rate (g/hr)	Device Type	Emission Factor (lb/ton)	Emissions (ton/year)		
						Before	After	Difference
2016-099	wood	5/17/17	4.2	NC	8.4	0.0684	0.0149	0.0535
2016-101	wood	10/10/16	4.4	NC	8.8	0.0684	0.0156	0.0528
2016-103	wood	10/12/16	4.4	NC	8.8	0.0684	0.0156	0.0528
2016-104	wood	11/22/16	3.2	NC	6.4	0.0684	0.0114	0.0571
2016-106	wood	10/21/16	3.5	NC	7	0.0684	0.0124	0.0560
2016-107	wood	2/24/17	1.9	NC	3.8	0.0684	0.0067	0.0617
2016-108	wood	8/18/17	3.5	NC	7	0.0684	0.0124	0.0560
2016-109	wood	12/7/16	3.1	NC	6.2	0.0684	0.0110	0.0574
2016-111	wood	11/3/16	4.2	NC	8.4	0.0684	0.0149	0.0535
2016-112	wood	11/21/16	3.9	NC	7.8	0.0684	0.0139	0.0546
2016-113	wood	11/17/16	3	NC	6	0.0684	0.0107	0.0578
2016-115	wood	10/17/16	4.4	NC	8.8	0.0684	0.0156	0.0528
2016-118	wood	10/31/16	3.89	NC	7.78	0.0684	0.0138	0.0546
2016-120	wood	12/20/16	4.4	NC	8.8	0.0684	0.0156	0.0528
2016-121	wood	11/8/16	4.4	NC	8.8	0.0684	0.0156	0.0528
2016-122	wood	11/16/16	4.4	NC	8.8	0.0684	0.0156	0.0528
2016-123	wood	12/16/16	3.5	NC	7	0.0684	0.0124	0.0560
2016-126	wood	1/27/17	3.5	NC	7	0.0684	0.0124	0.0560
2016-127	wood	9/6/18	3.3	NC	6.6	0.0684	0.0117	0.0567
2016-128	wood	12/19/16	4.47	NC	8.94	0.0684	0.0159	0.0525
2016-129	wood	6/14/17	3.8	NC	7.6	0.0684	0.0135	0.0549
2016-131	wood	11/7/17	3.5	NC	7	0.0684	0.0124	0.0560
2016-132	wood	12/12/16	4.4	NC	8.8	0.0684	0.0156	0.0528
2016-133	wood	12/7/16	3.5	NC	7	0.0684	0.0124	0.0560
2016-134	wood	12/7/16	4	NC	8	0.0684	0.0142	0.0542
2016-135	wood	7/14/17	3.8	NC	7.6	0.0684	0.0135	0.0549
2016-136	wood	12/15/16	3.2	NC	6.4	0.0684	0.0114	0.0571
2016-137	wood	12/20/16	2.3	NC	4.6	0.0684	0.0082	0.0603
2016-138	wood	1/27/17	3.6	NC	7.2	0.0684	0.0128	0.0556
2016-139	wood	1/24/17	3.2	NC	6.4	0.0684	0.0114	0.0571
2016-145	wood	3/16/17	3.5	NC	7	0.0684	0.0124	0.0560
2016-146	wood	6/20/17	3.5	NC	7	0.0684	0.0124	0.0560
2016-147	wood	3/30/17	3.5	NC	7	0.0684	0.0124	0.0560
2016-148	wood	12/28/16	2.8	NC	5.6	0.0684	0.0099	0.0585
2016-149	wood	1/31/17	3.5	NC	7	0.0684	0.0124	0.0560
2016-150	wood	8/3/17	3.5	NC	7	0.0684	0.0124	0.0560
2016-151	wood	7/6/17	3.59	NC	7.18	0.0684	0.0127	0.0557
2017-001	wood	5/21/17	3.2	NC	6.4	0.0684	0.0114	0.0571

Program Tracking # (YYYY-XXX)	New Fuel	Install Date	Emission Rate (g/hr)	Device Type	Emission Factor (lb/ton)	Emissions (ton/year)		
						Before	After	Difference
2017-002	wood	8/9/18	3.4	NC	6.8	0.0684	0.0121	0.0563
2017-003	wood	3/9/17	3.9	NC	7.8	0.0684	0.0139	0.0546
2017-155	wood	5/26/17	4.4	NC	8.8	0.0684	0.0156	0.0528
2017-156	wood	5/10/17	3.2	NC	6.4	0.0684	0.0114	0.0571
2017-157	wood	3/27/17	3.2	NC	6.4	0.0684	0.0114	0.0571
2017-159	wood	3/31/17	3.2	NC	6.4	0.0684	0.0114	0.0571
2017-161	wood	4/12/17	1.9	NC	3.8	0.0684	0.0067	0.0617
2017-163	wood	9/5/17	4.2	NC	8.4	0.0684	0.0149	0.0535
2017-164	wood	5/25/17	3	NC	6	0.0684	0.0107	0.0578
2017-165	wood	5/20/17	3.2	NC	6.4	0.0684	0.0114	0.0571
2017-166	wood	6/30/17	0.8	NC	1.6	0.0684	0.0028	0.0656
2017-168	wood	5/19/17	2.3	NC	4.6	0.0684	0.0082	0.0603
2017-169	wood	6/28/17	3.09	NC	6.18	0.0684	0.0110	0.0574
2017-170	wood	9/12/18	3.29	NC	6.58	0.0684	0.0117	0.0567
2017-171	wood	6/7/17	3.8	NC	7.6	0.0684	0.0135	0.0549
2017-172	wood	6/13/17	3.8	NC	7.6	0.0684	0.0135	0.0549
2017-173	wood	7/14/17	3.59	NC	7.18	0.0684	0.0127	0.0557
2017-174	wood	8/22/17	3	NC	6	0.0684	0.0107	0.0578
2017-177	wood	7/17/17	3.4	NC	6.8	0.0684	0.0121	0.0563
2017-179	wood	9/4/18	3.8	NC	7.6	0.0684	0.0135	0.0549
2017-182	wood	8/7/17	2.9	NC	5.8	0.0684	0.0103	0.0581
2017-183	wood	8/24/17	4.29	NC	8.58	0.0684	0.0152	0.0532
2017-184	wood	10/12/17	4.4	NC	8.8	0.0684	0.0156	0.0528
2017-187	wood	7/25/17	3.89	NC	7.78	0.0684	0.0138	0.0546
2017-188	wood	8/23/17	1.9	NC	3.8	0.0684	0.0067	0.0617
2017-190	wood	9/6/17	3.89	NC	7.78	0.0684	0.0138	0.0546
2017-191	wood	8/17/17	3.1	NC	6.2	0.0684	0.0110	0.0574
2017-192	wood	8/16/17	3.99	NC	7.98	0.0684	0.0142	0.0543
2017-193	wood	11/30/17	3.89	NC	7.78	0.0684	0.0138	0.0546
2017-194	wood	7/27/17	4.4	NC	8.8	0.0684	0.0156	0.0528
2017-195	wood	11/30/17	3.5	NC	7	0.0684	0.0124	0.0560
2017-197	wood	12/5/17	3.89	NC	7.78	0.0684	0.0138	0.0546
2017-199	wood	12/5/17	3.59	NC	7.18	0.0684	0.0127	0.0557
2017-200	wood	11/20/17	3.86	NC	7.72	0.0684	0.0137	0.0547
2017-203	wood	11/15/17	2.1	NC	4.2	0.0684	0.0075	0.0610
2017-205	wood	9/7/17	2.5	NC	5	0.0684	0.0089	0.0595
2017-207	wood	8/30/17	3.5	NC	7	0.0684	0.0124	0.0560



Program Tracking # (YYYY-XXX)	New Fuel	Install Date	Emission Rate (g/hr)	Device Type	Emission Factor (lb/ton)	Emissions (ton/year)		
						Before	After	Difference
2017-208	wood	12/21/17	3.39	NC	6.78	0.0684	0.0120	0.0564
2017-210	wood	2/7/18	4.4	NC	8.8	0.0684	0.0156	0.0528
2017-211	wood	11/21/17	3.89	NC	7.78	0.0684	0.0138	0.0546
2017-212	wood	11/20/17	3.89	NC	7.78	0.0684	0.0138	0.0546
2017-213	wood	12/1/17	3.8	NC	7.6	0.0684	0.0135	0.0549
2017-216	wood	12/26/17	4.2	NC	8.4	0.0684	0.0149	0.0535
2017-217	wood	12/6/17	3.29	NC	6.58	0.0684	0.0117	0.0567
2017-221	wood	11/9/17	4.4	NC	8.8	0.0684	0.0156	0.0528
2017-223	wood	1/26/18	3.5	NC	7	0.0684	0.0124	0.0560
2017-225	wood	8/2/18	4.2	NC	8.4	0.0684	0.0149	0.0535
2017-228	wood	2/6/18	3.3	NC	6.6	0.0684	0.0117	0.0567
2017-229	wood	1/31/18	3.39	NC	6.78	0.0684	0.0120	0.0564
2017-231	wood	2/21/18	3.69	NC	7.38	0.0684	0.0131	0.0553
2017-232	wood	1/10/18	1.9	NC	3.8	0.0684	0.0067	0.0617
2017-234	wood	12/8/17	4.4	NC	8.8	0.0684	0.0156	0.0528
2017-236	wood	3/6/18	1.9	NC	3.8	0.0684	0.0067	0.0617
2018-239	wood	9/21/18	1.54	NC	3.08	0.0684	0.0055	0.0630
2018-241	wood	4/26/18	3.89	NC	7.78	0.0684	0.0138	0.0546
2018-242	wood	10/4/18	1.9	NC	3.8	0.1080	0.0067	0.1012
2018-244	wood	2/6/18	3.89	NC	7.78	0.0684	0.0138	0.0546
2018-245	wood	2/7/18	3.89	NC	7.78	0.0684	0.0138	0.0546
2018-246	wood	9/20/18	1.54	NC	3.08	0.0684	0.0055	0.0630
2018-250	wood	5/13/18	3.5	NC	7	0.0684	0.0124	0.0560
2018-251	wood	6/6/18	3.5	NC	7	0.0684	0.0124	0.0560
2018-254	wood	4/4/18	4.29	NC	8.58	0.1080	0.0152	0.0927
2018-256	wood	4/30/18	3.9	NC	7.8	0.1080	0.0139	0.0941
2018-260	wood	5/9/18	3.29	NC	6.58	0.0684	0.0117	0.0567
2018-261	wood	6/26/18	3.29	NC	6.58	0.0684	0.0117	0.0567
2018-263	wood	5/24/18	4.2	NC	8.4	0.1080	0.0149	0.0930
2018-265	wood	3/28/18	0.58	NC	1.16	0.1080	0.0021	0.1059
2018-266	wood	3/14/18	2.84	NC	5.68	0.0684	0.0101	0.0583
2018-267	wood	5/1/18	3.9	NC	7.8	0.0684	0.0139	0.0546
2018-270	wood	3/19/18	3.9	NC	7.8	0.0684	0.0139	0.0546
2018-271	wood	6/4/18	3.89	NC	7.78	0.0684	0.0138	0.0546
2018-272	wood	8/31/18	3.5	NC	7	0.1080	0.0124	0.0955
2018-273	wood	5/18/18	3.29	NC	6.58	0.0684	0.0117	0.0567
2018-276	wood	9/12/18	1.1	NC	2.2	0.0684	0.0039	0.0645
2018-278	wood	5/8/18	4.29	NC	8.58	0.0684	0.0152	0.0532

Program Tracking # (YYYY-XXX)	New Fuel	Install Date	Emission Rate (g/hr)	Device Type	Emission Factor (lb/ton)	Emissions (ton/year)		
						Before	After	Difference
2018-280	wood	10/10/18	3.5	NC	7	0.0684	0.0124	0.0560
2018-282	wood	8/3/18	2.69	NC	5.38	0.0684	0.0096	0.0589
2018-289	wood	9/5/18	3.59	NC	7.18	0.0684	0.0127	0.0557
2018-290	wood	9/21/18	3.29	NC	6.58	0.0684	0.0117	0.0567
2018-292	wood	10/25/18	1.9	NC	3.8	0.0684	0.0067	0.0617
2018-293	wood	12/7/18	3.29	NC	6.58	0.1080	0.0117	0.0963
2018-297	wood	10/3/18	1.9	NC	3.8	0.0684	0.0067	0.0617
2018-298	wood	11/1/18	3.5	NC	7	0.0684	0.0124	0.0560
2018-299	wood	11/1/18	3.2	NC	6.4	0.0684	0.0114	0.0571
2018-301	wood	10/2/18	3.9	NC	7.8	0.0684	0.0139	0.0546
2018-314	wood	10/12/18	2.3	NC	4.6	0.1080	0.0082	0.0998
2018-315	wood	11/26/18	1.9	NC	3.8	0.1080	0.0067	0.1012
2018-320	wood	12/6/18	1.54	NC	3.08	0.0684	0.0055	0.0630
2016-010	wood	11/1/17	1.76	CAT	3.52	0.0684	0.0063	0.0622
2016-018	wood	7/21/16	1.8	CAT	3.6	0.0684	0.0064	0.0620
2016-043	wood	8/16/16	1.48	CAT	2.96	0.0684	0.0053	0.0632
2016-067	wood	8/18/16	0.45	CAT	0.9	0.0684	0.0016	0.0668
2016-071	wood	8/17/16	0.45	CAT	0.9	0.0684	0.0016	0.0668
2016-087	wood	10/5/16	2.42	CAT	4.84	0.0684	0.0086	0.0598
2016-090	wood	10/19/16	2.42	CAT	4.84	0.0684	0.0086	0.0598
2016-095	wood	9/22/16	1.76	CAT	3.52	0.0684	0.0063	0.0622
2016-102	wood	9/21/16	1.48	CAT	2.96	0.0684	0.0053	0.0632
2016-105	wood	11/16/16	1.3	CAT	2.6	0.0684	0.0046	0.0638
2016-130	wood	1/17/17	1.76	CAT	3.52	0.0684	0.0063	0.0622
2017-176	wood	6/21/17	2.4	CAT	4.8	0.0684	0.0085	0.0599
2017-178	wood	9/20/17	0.97	CAT	1.94	0.0684	0.0034	0.0650
2017-201	wood	8/17/17	3.8	CAT	7.6	0.0684	0.0135	0.0549
2017-209	wood	10/4/17	2.42	CAT	4.84	0.0684	0.0086	0.0598
2017-214	wood	11/14/17	0.045	CAT	0.09	0.0684	0.0002	0.0683
2017-215	wood	10/6/17	0.79	CAT	1.58	0.0684	0.0028	0.0656
2017-220	wood	10/31/17	0.35	CAT	0.7	0.0684	0.0012	0.0672
2017-230	wood	3/13/18	2.42	CAT	4.84	0.0684	0.0086	0.0598
2018-255	wood	4/23/18	0.09	CAT	0.18	0.0684	0.0003	0.0681
2018-258	wood	4/25/18	2.42	CAT	4.84	0.0684	0.0086	0.0598
2018-262	wood	9/25/18	2	CAT	4	0.0684	0.0071	0.0613
2018-264	wood	3/29/18	2.42	CAT	4.84	0.0684	0.0086	0.0598
2018-268	wood	8/16/18	1.76	CAT	3.52	0.0684	0.0063	0.0622
2018-274	wood	8/8/18	1.3	CAT	2.6	0.0684	0.0046	0.0638

Program Tracking # (YYYY-XXX)	New Fuel	Install Date	Emission Rate (g/hr)	Device Type	Emission Factor (lb/ton)	Emissions (ton/year)		
						Before	After	Difference
2018-277	wood	9/19/18	1.3	CAT	2.6	0.0684	0.0046	0.0638
2018-279	wood	6/18/18	1.3	CAT	2.6	0.0684	0.0046	0.0638
2018-284	wood	7/24/18	1.3	CAT	2.6	0.0684	0.0046	0.0638
2018-294	wood	7/16/18	1.3	CAT	2.6	0.0684	0.0046	0.0638
2018-300	wood	10/11/18	2.4	CAT	4.8	0.0684	0.0085	0.0599
2018-302	wood	9/18/18	2.2	CAT	4.4	0.0684	0.0078	0.0606
2018-304	wood	10/15/18	2.4	CAT	4.8	0.0684	0.0085	0.0599
2018-305	wood	10/22/18	2.42	CAT	4.84	0.0684	0.0086	0.0598
2018-308	wood	11/30/18	0.9	CAT	1.8	0.1080	0.0032	0.1048
2018-309	wood	11/5/18	2.4	CAT	4.8	0.0684	0.0085	0.0599
2018-313	wood	12/4/18	2.42	CAT	4.84	0.0684	0.0086	0.0598
2018-316	wood	12/4/18	1.3	CAT	2.6	0.0684	0.0046	0.0638
2018-318	wood	11/14/18	1.3	CAT	2.6	0.0684	0.0046	0.0638
2018-243	wood	7/19/18	7.5	repair	15	0.0684	0.0266	0.0418
2016-002	wood	5/18/16	0.8	C/NC (both)	1.6	0.0684	0.0028	0.0656
2016-004	wood	5/19/16	0.8	C/NC (both)	1.6	0.0684	0.0028	0.0656
2016-005	wood	5/17/16	0.45	C/NC (both)	0.9	0.0684	0.0016	0.0668
2016-014	wood	5/25/16	0.45	C/NC (both)	0.9	0.0684	0.0016	0.0668
2016-013	pellet	5/25/16	1.3	pellet	3.06	0.0684	0.0046	0.0638
2016-031	pellet	8/2/16	1.5	pellet	3.06	0.0684	0.0046	0.0638
2016-052	pellet	5/17/17	1.3	pellet	3.06	0.0684	0.0046	0.0638
2016-063	pellet	8/1/17	1.3	pellet	3.06	0.0684	0.0046	0.0638
2016-088	pellet	11/15/16	1.3	pellet	3.06	0.0684	0.0046	0.0638
2016-094	pellet	11/4/16	1.3	pellet	3.06	0.0684	0.0046	0.0638
2016-100	pellet	11/1/16	1.3	pellet	3.06	0.0684	0.0046	0.0638
2016-117	pellet	11/17/16	1.7	pellet	3.06	0.0684	0.0046	0.0638
2016-124	pellet	12/13/16	1.3	pellet	3.06	0.0684	0.0046	0.0638
2016-141	pellet	3/14/17	1.8	pellet	3.06	0.0684	0.0046	0.0638
2016-144	pellet	3/10/17	1.3	pellet	3.06	0.0684	0.0046	0.0638
2017-160	pellet	4/13/17	1.3	pellet	3.06	0.0684	0.0046	0.0638
2017-162	pellet	10/10/17	1.8	pellet	3.06	0.0684	0.0046	0.0638
2017-167	pellet	5/12/17	2.1	pellet	3.06	0.0684	0.0046	0.0638
2017-175	pellet	8/8/17	1.3	pellet	3.06	0.0684	0.0046	0.0638
2017-196	pellet	9/8/17	1.5	pellet	3.06	0.0684	0.0046	0.0638
2017-204	pellet	10/13/17	1.35	pellet	3.06	0.0684	0.0046	0.0638

Program Tracking # (YYYY-XXX)	New Fuel	Install Date	Emission Rate (g/hr)	Device Type	Emission Factor (lb/ton)	Emissions (ton/year)		
						Before	After	Difference
2017-218	pellet	1/31/18	1.35	pellet	3.06	0.0684	0.0046	0.0638
2017-222	pellet	12/5/17	0.73	pellet	3.06	0.0684	0.0046	0.0638
2017-233	pellet	12/11/17	1.7	pellet	3.06	0.0684	0.0046	0.0638
2017-235	pellet	1/9/18	1.6	pellet	3.06	0.0684	0.0046	0.0638
2017-237	pellet	6/1/18	1.6	pellet	3.06	0.0684	0.0046	0.0638
2018-238	pellet	4/19/18	1.1	pellet	3.06	0.0684	0.0046	0.0638
2018-275	pellet	8/14/18	1.1	pellet	3.06	0.0684	0.0046	0.0638
2018-281	pellet	5/30/18	1.39	pellet	3.06	0.0684	0.0046	0.0638
2018-285	pellet	9/27/18	1.39	pellet	3.06	0.0684	0.0046	0.0638
2018-286	pellet	7/17/18	1	pellet	3.06	0.0684	0.0046	0.0638
2018-291	pellet	8/31/18	1.3	pellet	3.06	0.0684	0.0046	0.0638
2018-296	pellet	10/24/18	1.3	pellet	3.06	0.0684	0.0046	0.0638
2018-303	pellet	11/21/18	1.75	pellet	3.06	0.0684	0.0046	0.0638
2016-053	propane	9/1/16	0	propane	0	0.0684	0.0000	0.0684
2016-092	propane	10/13/16	0	propane	0	0.0684	0.0000	0.0684
2017-185	propane	8/8/17	0	propane	0	0.0684	0.0000	0.0684
2017-186	propane	10/4/17	0	propane	0	0.0684	0.0000	0.0684
2017-202	propane	10/19/17	0	propane	0	0.0684	0.0000	0.0684
2017-224	propane	2/23/18	0	propane	0	0.0684	0.0000	0.0684
2018-248	propane	5/30/18	0	propane	0	0.1080	0.0000	0.1080
2018-253	propane	7/13/18	0	propane	0	0.1080	0.0000	0.1080
2018-269	propane	11/7/18	0	propane	0	0.0684	0.0000	0.0684
2016-125	kerosene	1/6/17	0	kerosene	0	0.0684	0.0000	0.0684
2018-259	kerosene	3/27/18	0	kerosene	0	0.0684	0.0000	0.0684
<b>Total Installations as of 12/31/18</b>								<b>281</b>
<b>Wood Stoves Total</b>								<b>240</b>
<b>Noncatalytic Stoves</b>								<b>197</b>
<b>Catalytic/Noncatalytic Stoves</b>								<b>4</b>
<b>Catalytic Stoves</b>								<b>39</b>
<b>Pellet Stoves</b>								<b>30</b>
<b>Propane Stove</b>								<b>9</b>
<b>Kerosene Stove</b>								<b>2</b>
<b>Total PM2.5 Emissions Saved (tons per year)</b>								<b>16.9688</b>
<b>Total PM2.5 Emissions Saved (tons per day)</b>								<b>0.0465</b>

## Appendix B

### Forms Revised in 2018

## List of Program Forms Updated Since 2016 Report

Form	Date Revised
NSAQMD Generator Use Agreement	9/18/2018
CDC Generator Warning	9/18/2018
Boilerplate Letter to Resident - PRE-QUALIFIED	1/10/2018
Boilerplate Letter to Resident - Zone 2 PRE-QUALIFIED	1/10/2018
Checklist for Final Packet Submission	12/13/2017
District Approved Retailers SPANISH	9/14/2017
District Approved Retailers	9/14/2017
Eligibility Criteria Overview	1/10/2018
Mobile home info needed	6/12/2018
NSAQMD Application Zone 1	1/10/2018
NSAQMD Application Zone 2	1/23/2019
NSAQMD Customer Survey	1/10/2018
NSAQMD Over \$3,500 Form	1/10/2018
NSAQMD Owner Tenant Agreement	1/10/2018
NSAQMD Program Tracking Form	1/10/2018
NSAQMD Program Tracking Form	1/10/2018
NSAQMD Program Tracking Form	1/10/2018
NSAQMD stove installation flier Feb2018	1/10/2018
NSAQMD stove installation flier Feb2018 SPANISH	1/10/2018
NSAQMD Training Form	1/10/2018



GREATER PORTOLA WOOD STOVE CHANGE-OUT PROGRAM

**GENERATOR USE AGREEMENT**

**This form is to be completed by participating Retailer/Contractor AND signed by Owner/Tenant**

Date: \_\_\_\_\_ Program Tracking #: \_\_\_\_\_

Consumer's Name: \_\_\_\_\_

Location of Installation (both pellet stove and generator): \_\_\_\_\_

Retailer/Contractor Company Name: \_\_\_\_\_

**New Cleaner Burning EPA Certified Device – PELLET STOVE**

Manufacturer: \_\_\_\_\_

Model: \_\_\_\_\_

**Inverter Generator to Provide Emergency Backup Power**

Manufacturer: \_\_\_\_\_

Model: \_\_\_\_\_

I certify that I received manufacturer's instructions for operating the Emergency Backup Power Device and will operate and maintain the device according to instructions:

Yes  No

I certify I will NOT install or operate this Emergency Backup Power Device indoors, in a garage or in an area without proper ventilation:

Yes  No

I understand there are risks associated with the operation of a gasoline-powered device. I accept those risks and have executed the Hold Harmless Agreement included with this Generator Use Agreement:

Yes  No

I understand this Emergency Backup Power Device is for the sole purpose of providing power to the pellet stove during an electrical power outage:

Yes  No

I have read and understood the information provided:

Yes  No

**Signature (Homeowner/Tenant):** \_\_\_\_\_

**HOLD HARMLESS, WAIVER OF LIABILITY AND ASSUMPTION OF RISK –  
NORTHERN SIERRA AIR QUALITY MANAGEMENT DISTRICT  
(GENERATOR USE AGREEMENT)**

The undersigned is receiving a pellet stove and generator (“Emergency Backup Power Device” or “Device”) from the Northern Sierra Air Quality Management District (“District”) as part of the District’s Greater Portola Wood Stove Change-Out Program. In the Generator Use Agreement (“Agreement”), the Owner/Tenant and the Retailer/Contractor have identified the manufacturer, model and location of the installation of the Device and have certified that they have received instructions for the operation and maintenance of the Device. In addition, the Owner/Tenant has been provided information about the potential risks involved in use of the Device including but not limited to, carbon monoxide poisoning.

In the event of injury or illness arising out of or in the course of using the Device, the undersigned agrees to release and hold harmless the Retailer/Contractor and the District from any liability for bodily injury or personal injury arising out of the use of the Device.

The undersigned hereby releases the Retailer/Contractor and the District, its officers, agents and employees from any and all claims, demands, rights and causes of action of any kind that the undersigned may have on account of or in any way growing out of damages or liability that may arise as a result of the undersigned's use of the Device. Further, the undersigned agrees to hold the Retailer/Contractor and the District, its officers, agents and employees harmless from any damages or liability and does hereby assume any risk of injury or death which may result.

If any provision of this Agreement is determined by an appropriate court of jurisdiction to be unenforceable, the remaining provisions herein are stipulated to be enforceable and binding.

Executed this \_\_\_ day of \_\_\_\_\_, at \_\_\_\_\_, California.

OWNER/TENANT

\_\_\_\_\_

\_\_\_\_\_

Print Name

Signature

\_\_\_\_\_

\_\_\_\_\_

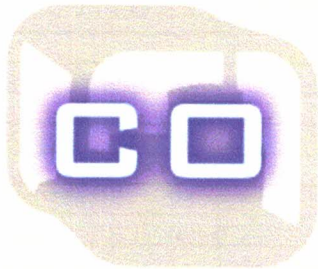
Print Name

Signature



# The National Institute for Occupational Safety and Health (NIOSH)

## CARBON MONOXIDE



### **Carbon Monoxide Hazards from Small Gasoline Powered Engines**

Many people using gasoline-powered tools such as high-pressure washers, concrete cutting saws (walk-behind/hand-held), power trowels, floor buffers, welders, pumps, compressors, and generators in buildings or semi enclosed spaces have been poisoned by carbon monoxide (CO). CO can rapidly accumulate (even in areas that appear to be well ventilated) and build up to dangerous or fatal concentrations within minutes. Examples of such poisonings include the following:

- A farm owner died of CO poisoning while using an 11-horsepower, gasoline-powered pressure washer to clean his barn. He had worked about 30 minutes before being overcome.
- A municipal employee at an indoor water treatment plant lost consciousness while trying to exit from a 59,000-cubic-foot room where he had been working with an 8-horsepower, gasoline-powered pump. Doors adjacent to the work area were open while he worked. His hospital diagnosis was CO poisoning.
- Five workers were treated for CO poisoning after using two 8 horse-power, gasoline-powered, pressure washers in a poorly ventilated underground parking garage.
- A plumber used a gasoline-powered concrete saw in a basement with open doors and windows and a cooling fan. He experienced a severe headache and dizziness and began to act in a paranoid manner. His symptoms were related to CO poisoning.

These examples show a range of effects caused by CO poisoning in a variety of work settings with exposures that occurred over different time periods and with different types of ventilation. Workers in areas with closed doors and windows were incapacitated within minutes. Opening doors and windows or operating fans does NOT guarantee safety. CO is a dangerous poison. Operating gasoline-powered engines and tools indoors is RISKY BUSINESS.

## Recommendations

It is not widely known that small gasoline-powered engines and tools present a serious health hazard. They produce high concentrations of CO—a poisonous gas that can cause illness, permanent neurological damage, and death. Because it is colorless, odorless, and nonirritating, CO can overcome exposed persons without warning. Often there is little time before they experience symptoms that inhibit their ability to seek safety. Prior use of equipment without incident has sometimes given users a false sense of safety; such users have been poisoned on subsequent occasions. Recommendations for preventing CO poisoning are provided below for employers, equipment users, tool rental agencies, and tool manufacturers.

### All Employers and Equipment Users Should:

- NOT allow the use of or operate gasoline-powered engines or tools inside buildings or in partially enclosed areas unless gasoline engines can be located outside away from air intakes. Use of gasoline-powered tools indoors where CO from the engine can accumulate can be fatal.
- An exception to this rule might be an emergency rescue situation in which other options are not available—and then only when equipment operators, assisting personnel, and the victim are provided with supplied-air respirators.
- Learn to recognize the symptoms and signs of CO overexposure: headache, nausea, weakness, dizziness, visual disturbances, changes in personality, and loss of consciousness. Any of these symptoms and signs can occur within minutes of usage.
- Always place the pump and power unit of high-pressure washers outdoors and away from air intakes so that engine exhaust is not drawn indoors where the work is being done. Run only the high-pressure wash line inside.
- Consider the use of tools powered by electricity or compressed air if they are available and can be used safely. For example, electric-powered tools present an electrocution hazard and require specific precautions for safety.
- If compressed air is used, place the gasoline-powered compressor outdoors and away from air intakes so that engine exhaust is not drawn indoors where the work is being done.
- Use personal CO monitors where potential sources of CO exist. These monitors should be equipped with audible alarms to warn workers when CO concentrations are too high or when exceeding the NIOSH Ceiling limit for CO of 200 parts per million.

### Employers Should Also:

- Conduct a workplace survey to identify all potential sources of CO exposure.
- Educate workers about the sources and conditions that may result in CO poisoning as well as the symptoms and control of CO exposure.
- Always substitute with less hazardous equipment if possible. Use equipment that allows for the placement of gasoline-powered engines outdoors at a safe distance from air entering the building.
- Monitor employee CO exposure to determine the extent of the hazard.

### Equipment Users Should Also:

- Substitute with less hazardous equipment whenever possible. Use electric tools or tools with engines that are separate from the tool and can be located outside and away from air intakes.
- Learn to recognize the warning symptoms of CO poisoning.
- If you have any symptoms, immediately turn off equipment and go outdoors or to a place with uncontaminated air.
- Call 911 or another local emergency number for medical attention or assistance if symptoms occur. Do NOT drive a motor vehicle—get someone else to drive you to a health care facility.
- Stay away from the work area until the tool has been deactivated and measured CO concentrations are below accepted guidelines and standards.
- Watch coworkers for the signs of CO toxicity.

### Tool Rental Agencies Should:

- Put warning labels on gasoline-powered tools. For example:  
WARNING—CARBON MONOXIDE PRODUCED DURING USE CAN KILL—DO NOT USE INDOORS OR IN OTHER SHELTERED AREAS.
- Tell renters that gasoline-powered tools should NOT be used indoors and explain why.
- Recommend safer tools for the intended use if available.
- Have portable, audible CO monitors for rent and encourage their use.
- Provide renters with educational materials like this information sheet.

### Tool Manufacturers Should:

- Design tools that can be used safely indoors.
- Provide warning labels for existing and new gasoline-powered equipment. For example:  
WARNING—CARBON MONOXIDE PRODUCED DURING USE CAN KILL—DO NOT USE INDOORS OR IN OTHER SHELTERED AREAS.
- Provide recommendations for equipment maintenance to reduce CO emissions.
- Recommend the use of portable, audible CO monitors with small gasoline-powered engines.

SOURCE: Center for Disease Control and Prevention (CDC)

<https://www.cdc.gov/niosh/topics/co/>

9/18/18



GREATER PORTOLA WOOD STOVE CHANGE-OUT PROGRAM

Thank you for your interest in the Greater Portola Woodstove Change-Out Program! You are pre-qualified for a repair or replacement of your current wood heating device. Because you own a mobile or manufactured home, the installation of your new heating device will be permitted by California Department of Housing and Community Development (HCD). In order to apply for a permit, specific information is required. The easiest way to gather this information is to get a copy of your title/registration card. Contact Julie Ruiz at 832-0102 to come into the office to make a copy of your title.

If you are unable to locate your title, please provide the following information. If any of this information does not match what is on record with HCD, you will need to contact HCD to establish the correct information.

Decal: \_\_\_\_\_  
(typically 3 letters and 4 numbers, i.e. AAA1111)

Insignia (HCD/HUD Label): \_\_\_\_\_

Serial Number (VIN number): \_\_\_\_\_

Manufacturer ID/Name: \_\_\_\_\_

Model: \_\_\_\_\_

Date of Manufacture: \_\_\_\_\_

Owner Name(s): \_\_\_\_\_  
(must appear exactly as noted on title and registration)

Park Name and ID (if avail.): \_\_\_\_\_  
(only applicable if located within a mobile home park)

**For assistance from HDC:**

Registration and Titling: 916-323-9224 (both English and Spanish) or 800-952-8356  
[ContactRT@hcd.ca.gov](mailto:ContactRT@hcd.ca.gov)  
<http://www.hcd.ca.gov/manufactured-mobile-home/registration-titling/index.shtml>

**PLEASE NOTE THAT INSTALLATION OF A NEW HEATING DEVICE WILL NOT BE SCHEDULED UNTIL ALL INFORMATION IS RECEIVED AND A PERMIT SECURED!**

**In some cases, if the required information cannot be located, a request for Technical Services will need to be submitted to HCD for a \$196 fee and an HCD inspector will come to the property to locate the necessary information on the home.**

Thank you for your commitment to improving air quality and public health in your community.

**NORTHERN SIERRA AIR QUALITY MANAGEMENT DISTRICT**[www.myairdistrict.com](http://www.myairdistrict.com)**Program Coordinator: 530-832-0102**

GREATER PORTOLA WOOD STOVE CHANGE-OUT PROGRAM

## **APPLICATION FOR ZONE 2 – Homes Located Outside the City of Portola Sphere of Influence and Within the Greater Portola PM2.5 Nonattainment Area**

The Northern Sierra Air Quality Management District (District) is offering a change-out program to qualified homeowners within the Greater Portola PM2.5 Federal Nonattainment Area in Plumas County, California for replacement of qualified wood heating devices with new, efficient, cleaner burning EPA certified devices. This program is funded by the U.S. EPA's 2015 Targeted Air Shed Grant Program, the District's AB2766 program and other agencies. This program is a 5-year voluntary wood stove change-out program (applications must be received by August 31, 2020).

1. Zone 2 will be available to applicants outside the City of Portola Sphere of Influence BUT within the Greater Portola PM2.5 Nonattainment Area (see attached map).
2. To qualify, the applicant must have a currently installed and operating wood heating device:
  - a. A non-EPA certified wood stove (typically manufactured/installed prior to 1992); OR
  - a. An EPA certified wood stove manufactured 20+ years ago with the emission control technology in disrepair\*; OR
  - b. An EPA certified wood stove manufactured 20+ years ago, in any condition, to be replaced with a pellet, propane or kerosene heating device; OR
  - c. An open fireplace being used as a primary heating device.
3. If the old device is removed from the home prior to application approval, the applicant will be disqualified from this program.
4. If the new device is purchased before application approval, the applicant will not qualify for this program.
5. Installation must be completed by a District-approved Retailer. Self-installation of the new device is NOT eligible.
6. This program covers the replacement of no more than one qualified wood heating device per home. This replacement should be considered the primary heating device for the home.
7. This program covers the replacement of qualified wood heating devices in manufactured/mobile homes.
8. This program includes renters if an Owner/Tenant agreement is filled out and signed by both parties.
9. Woodstove brands and models will be determined by a District-approved Retailer/Contractor (Retailer) and approved by the District.
10. Upgrades over and above the approved amount will be paid by the applicant.
11. In Zone 2 qualified applicants may be eligible for:
  - Up to \$1,500 to replace a qualified wood heating device with an EPA certified wood burning device.
  - Up to \$3,000 to replace a qualified wood heating device with a Pellet, Propane or Kerosene



heater.

- Up to \$3,500 for low income residents to replace a qualified wood heating device with an EPA certified wood burning device.
  - Up to \$4,500 for low income residents to replace a qualified wood heating device with a Pellet, Propane or Kerosene heater.
12. Must complete and submit attached Low Income Verification Form to apply for Low Income Qualification.
  13. The old, wood stove must be surrendered to the Retailer for destruction and scrap recycling. The resale or transfer of the old stove in usable condition, for the purpose of its reuse as a stove, is a violation of the terms of this program and will result in forfeiture of the grant award.
  14. A photo will be taken by the Retailer before the old device is removed, a photo will be taken to document destruction and a photo will be taken of the new, certified device after installation.
  15. To qualify, each applicant must first complete the attached application. Completed applications must be mailed to the Change-out Project Coordinator at the address on the application form. The application will be reviewed to determine if the preliminary qualification requirements have been met. Once pre-qualified, the applicant will have 30 days to schedule an in-home estimate with a Retailer. The District will approve the estimate before installation commences.

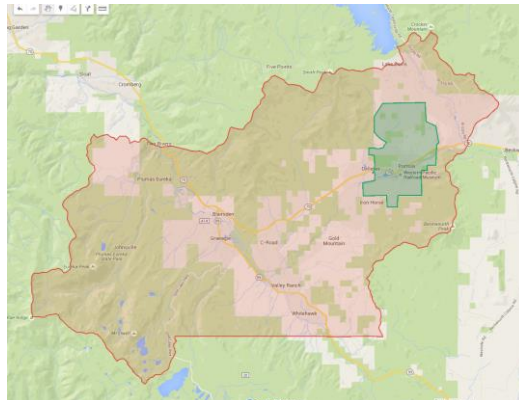
*\*An EPA certified wood stove that is 20+ years old may be repaired when the emission control technology is not functioning properly. If not repairable at a reasonable rate, it may be replaced with a new EPA certified device. This program does not cover general maintenance repairs including, but not limited to, cracked glass doors, cracked brick, worn gaskets, clogged chimney pipe/cap and chimney sweeping/cleaning.*

**NEXT STEP: Applicants will hear from the District within 21 days of receiving a submitted application. Submission of an application does not guarantee funding.**

The mission of this program is to reduce health impacts by reducing fine particulate (PM2.5) in the air from wood smoke. These microscopic particles go deep into the lungs where they may become trapped. PM2.5 is linked with premature death, work and school absences, and significant health problems including aggravated asthma, acute respiratory symptoms (such as chest pain and coughing), chronic bronchitis and decreased lung function. Sensitive individuals (those most at risk from exposure to smoke) are the elderly, children, asthmatics, adults with pre-existing heart and lung disease, pregnant women, and people engaging in strenuous outdoor activity.

**MAP of Zone 2: HOMES OUTSIDE THE CITY OF PORTOLA SPHERE OF INFLUENCE AND WITHIN THE NONATTAINMENT AREA**

Please contact the air district for further assistance.



**INCLUDES COMMUNITIES OF IRON HORSE, DELLEKER, C ROAD, MOHAWK VISTA, PLUMAS-EUREKA, BLAIRSDEN-GRAEAGLE, GOLD MOUNTAIN, WHITEHAWK, CLIO, JOHNSTVILLE, AND PORTIONS OF LAKE DAVIS**



**APPLICANT CERTIFICATION**

By submitting this application I understand the following:

- a. I understand that only currently installed and operating qualified wood heating devices are eligible to be replaced under this program.
- b. I understand that applications are processed in the order they are received and according to the District's final recommendations. No retroactive rebates are available. All applications must be received by August 31, 2020.
- c. I understand I will schedule an estimate with a District-approved Retailer within 30 days of receiving a letter of pre-qualification from the Northern Sierra Air Quality Management District (District). This deadline may be extended at the discretion of the District.
- d. I understand that only one qualified wood heating devices will be repaired/replaced with a certified device with funding from this program for primary heating of this residence.
- e. I understand I may be required to provide proof of my monthly income.
- f. I understand that if I qualify, I will use only a District-approved Retailer (Retailer). Devices purchased with funds from this program will be professionally installed. Self-installation of the device is prohibited. Any additional construction or handyman services not done by the Retailer will not be covered under this program.
- g. I will be replacing an operable qualified wood heating device that is currently in use in my residence. The Retailer who installs the new device is responsible for removing the old device (or rendering a fireplace inoperable). The old device will be rendered permanently and irreversibly inoperable.
- h. I understand that I will be disqualified from this program if I provide the District with false information or if the old, qualified wood heating device is removed from the residence prior to application approval or if a new device is purchased prior to application approval.
- i. The District does not warranty any devices purchased under this program, including, but not limited to, the quality, functionality or satisfaction of the device.
- j. I agree to hold harmless the District and its directors, employees and agents from any and all loss, damage, or liability that arises out of or is in any way connected with installation or use of the device purchased in connection with this program.
- k. I will follow proper burning practices as discussed by the Retailer and in accordance with EPA BurnWise educational materials. I will operate this device according to the manufacturer's instructions and I will not burn pressure treated wood, garbage/trash, plastic or any other prohibited materials.
- l. I understand that proper wood burning practices (e.g., burning only dry, natural wood that has been seasoned at least 6 months) and proper stove installation and operation (e.g., maintaining a hot fire) are critical to the effectiveness of my new device.
- m. I understand that I will participate in follow up training and a survey conducted by the District.



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**APPLICATION FORM For Zone 2 – Homes outside the City of Portola (Sphere of Influence)**

All sections of this application must be completed. A copy should be retained by the applicant for his or her records. The District is not responsible for materials lost by mail. Please review the Applicant Certification (page 3) before signing at the bottom. Submit the completed application by email, mail, or hand delivery to:

Julie Ruiz, Change-out Project Coordinator, NSAQMD  
[julie@myairdistrict.com](mailto:julie@myairdistrict.com)  
P.O. Box 2227, Portola, CA 96122  
257 E. Sierra, Unit E, Portola, CA 96122  
[www.myairdistrict.com](http://www.myairdistrict.com)

**Applicant Information:**

Name: \_\_\_\_\_

Physical Home Address: \_\_\_\_\_  
\_\_\_\_\_

Is this a mobile or manufactured home?  Yes  No

Mailing Address (if different): \_\_\_\_\_

Phone Number: \_\_\_\_\_ Email (if available): \_\_\_\_\_

**Existing Primary Wood Heating Device:**

Wood Stove:  Make/Model: \_\_\_\_\_ Year Stove Manufactured: \_\_\_\_\_

Fireplace:

My monthly income is<sup>1</sup>: \_\_\_\_\_

The number of people living in this home (including adults and children under 18): \_\_\_\_\_

The EPA certified device I am interested in:  Wood stove  Pellet stove  
 Propane stove  Kerosene monitor

*The District strongly encourages upgrading to a non-wood heating device to further decrease emissions.*

**Additional Information:**

How did you hear about the Change-out Program? \_\_\_\_\_

Why are you applying? (Please check all that apply.)

- Not satisfied with current device;
- To reduce pollution;
- To save money
- Other: \_\_\_\_\_

Was the grant funding a significant factor in replacing your stove?  Yes  No

How many wood burning stoves are on your property?  1  2  3

In a typical heating season, how many cords of wood do you typically burn? \_\_\_\_\_

Is your wood stove used as a primary source of heat?  Yes  No

What % of wood is used in your primary stove?  100%  75%  50%

Do you know how old your stove is? If yes, how old: \_\_\_\_\_ years

In which room of your house is your wood stove located? \_\_\_\_\_

Do you own this home?  Yes, Owner  No, Renter

**I understand and agree to all conditions of this program (pages 1-3):** \_\_\_\_\_

***(applicant signature required)***

<sup>1</sup> Must complete a Low Income Verification Form to qualify for low income funding.



**Home Heating Survey** *Please circle or fill in answers below:*

1. Status of home ownership: OWNER RENTER
2. Is your home a mobile/modular/manufactured home? YES NO
3. What year was this home built (approximately)? \_\_\_\_\_
4. What year did you purchase home or move into home? \_\_\_\_\_
5. Is this home your primary or secondary residence? PRIMARY SECONDARY
6. What is your monthly income? \_\_\_\_\_
7. How many people live in your household? \_\_\_\_\_
8. Does your residence have a wood burning device? YES NO (skip to #10)
9. If yes, circle the type of device it is (if more than one, the one you use most):

WOOD STOVE FIREPLACE PELLET STOVE FIREPLACE INSERT OUTDOOR WOOD BOILER

If your home has a second wood burning device, please indicate the type from the list above:

\_\_\_\_\_

10. If burning wood, where is it obtained? CUT BUY
11. If purchasing wood, what is the cost per cord? \$ \_\_\_\_\_
12. How many cords do you use annually? \_\_\_\_\_
13. Is your main wood burning device EPA certified (tag on back of device)? YES NO NOT SURE
14. What is the primary fuel you use for heating your home?

WOOD PROPANE FUEL OIL ELECTRICITY SOLAR KEROSENE  
 LPG GENERATOR DIESEL GENERATOR OTHER \_\_\_\_\_

15. What is the secondary fuel you use for heating your home (if any)?

WOOD PROPANE FUEL OIL ELECTRICITY SOLAR KEROSENE  
 LPG GENERATOR DIESEL GENERATOR OTHER \_\_\_\_\_

16. If your residence has a heated outbuilding, what is the fuel used? (If no heated outbuilding, skip question)

WOOD PROPANE FUEL OIL ELECTRICITY SOLAR KEROSENE  
 LPG GENERATOR DIESEL GENERATOR OTHER \_\_\_\_\_

- Do you receive any assistance from an energy assistance program (i.e. LIHEAP)? YES NO
- Are there school-age children in the home (K-12)? YES NO
- Are there any individuals over the age of 62 in the home? YES NO
- Is anyone in the home diagnosed with asthma or any respiratory/breathing disorder? YES NO
- Have you upgraded windows or insulation since moving into the home? YES NO
- Would you be willing to participate in a more in-depth survey by phone? YES NO

Date Survey Completed: \_\_\_\_\_



**LOW INCOME VERIFICATION FORM**

Residents located outside of the City of Portola Sphere of Influence, but within the Nonattainment area who wish to receive the maximum amount of funding based on income, must complete this form and submit it with an application.

2019 Gross Income Guidelines (source: CA Dept. of Community Services & Development):

Family Size	1	2	3	4	5	6	7	8
Monthly Gross Income	<b>\$2,171</b>	<b>\$2,839</b>	<b>\$3,507</b>	<b>\$4,175</b>	<b>\$4,842</b>	<b>\$5,510</b>	<b>\$5,636</b>	<b>\$5,761</b>

Have you previously applied for HEAP/LIHEAP assistance?  Yes  No

What is the monthly income of your entire household? \_\_\_\_\_

Be sure to count all of the following incomes:

- Wages
- TANF (AFDC)
- Workers Compensation
- Interest Income
- Social Security, SSI, SSP
- Disability Payments
- Pensions
- Unemployment Benefits
- Child Support
- Spousal Support
- Settlements

How many people live in your household? \_\_\_\_\_

**ATTACH INCOME DOCUMENTATION:**

(please include one of the following for each person living at this residence)

- Pay stub or
- Benefit letter or
- Income statement

**Please note that these documents will not be returned.**

Upon verification of income, applicant will be eligible for:

- Up to \$3,500 to replace a non-certified wood burning device with an EPA certified wood burning device.
- Up to \$4,500 to replace a non-certified wood burning device with a Pellet, Propane or Kerosene heater.

I declare, under penalty of perjury, that the information on this application is true and correct:

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

