

Lakeview Area PM Advance Program Action Plan - Update

October 2021

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Executive Summary

In 2014, the Town of Lakeview and Lake County (Lakeview area) prepared a PM Advance Plan in conjunction with DEQ. For the past six years, the Town and County have been implementing the plan and seeing the results of their efforts. Fine particulate matter (PM_{2.5}) is the biggest concern in the Lakeview area due to smoke impacts from woodstoves, fireplaces and other wood burning appliances besides wildfire smoke in the summer. Other sources of PM_{2.5} include open burning, prescribed burning, smoke from industrial stacks, and some road dust (a small fraction of the dust is sized PM_{2.5}) from vehicle travel and vehicle exhaust itself such as from diesel engines.

Monitoring

In recent years, monitoring showed that the Lakeview area struggled to meet the 24-hour PM_{2.5} standard. During the 2019 and 2020 seasons, when wildfire days are removed from the analysis, PM_{2.5} levels were well below the standard, with the 3-year average (2018-2020) is well below the 24-hour standard. Good air quality and relatively short air stagnation events combined with compliance of the no burn ordinances helped keep the concentrations of PM_{2.5} lower.

Key Strategies

To continue to meet the standard, the Lakeview area will need to maintain and enhance their key strategies of reducing PM_{2.5} from wood stoves, open burning, industrial operations and other sources of fine particulate matter. Compliance with their town and county ordinances and ongoing public outreach and education are critical to their success. These ordinances include the mandatory wood stove curtailment and open burning requirements. The implementation of these ordinances is ongoing.

1. Overview and Monitoring

Lakeview is a small community in the South Central part of Oregon that experienced periodic poor air quality in the 1990s and more recently in the 2000s and 2010s. In 2014, the Town of Lakeview and Lake County submitted an action plan to achieve emission reductions to help the area meet the daily and annual PM_{2.5} standard.

A single federal reference method sampler for PM_{2.5} is located in Lakeview at the corner of Center and M Street. DEQ has monitored at this site since 1991 for PM₁₀ and since 2007 for PM_{2.5}.

1.1 Yearly Monitoring Results

In 2018 - 2020, the Lakeview area met the daily standard (98th percentile) not including wildfire smoke. Although EPA doesn't initially look at the data this way, eventually they would need to do so. Lakeview had been experiencing progress and a downward trend over the past few years after a challenging 2017 where there were also more days with air stagnation. (*Figure 1*).

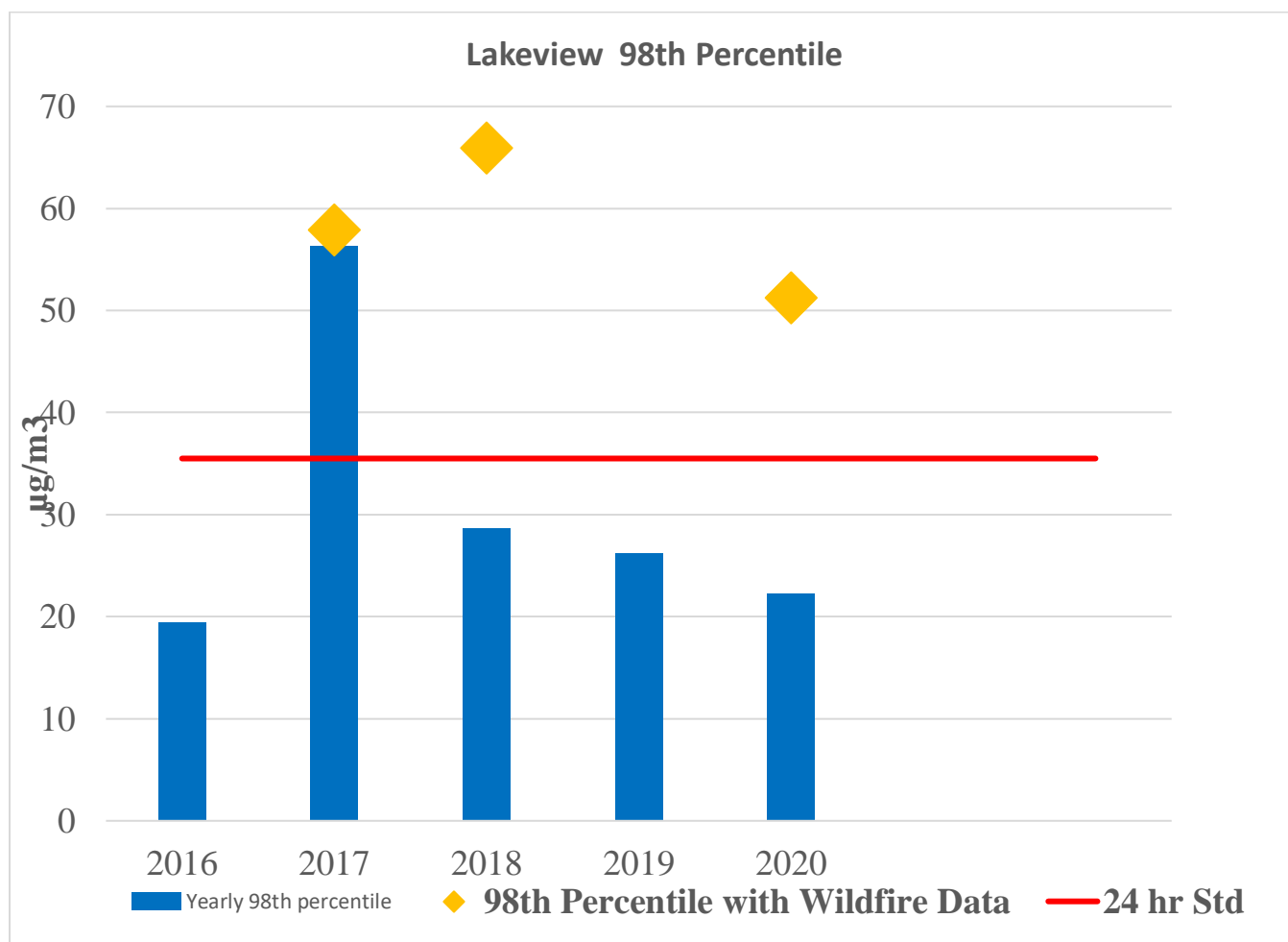


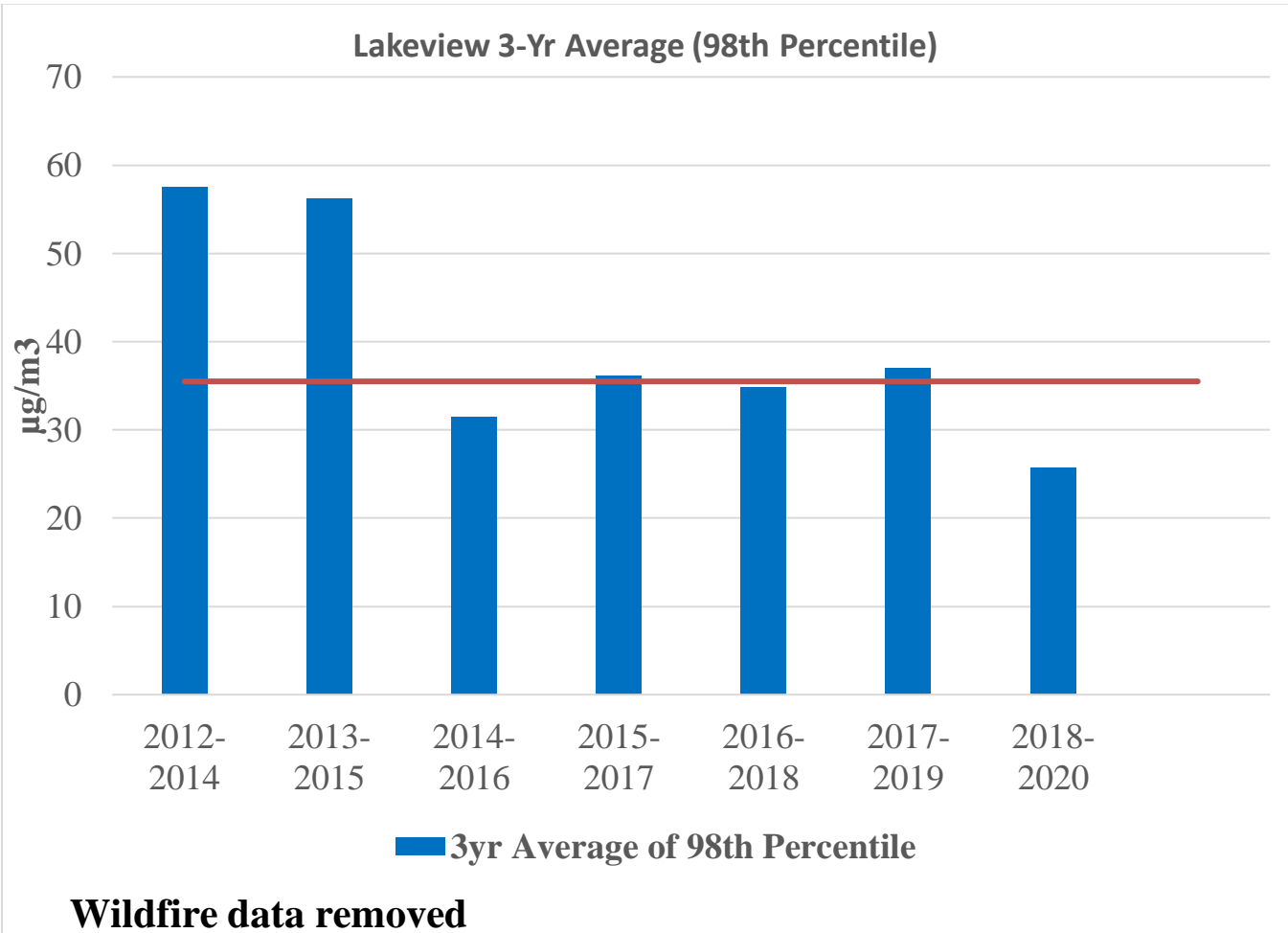
Figure 1: 24-hr 98th percentile concentrations measured at Center and M Street Monitor

The area was not designated nonattainment for the 24-hour PM_{2.5} NAAQS in 2007 because there was not sufficient monitoring information available at the time of the designations. However, in 2013, prolonged winter inversions occurred causing a significant increase in ambient concentrations and caused Lakeview to violate the standard. Since 2013, the Lakeview area has worked hard to bring the levels back below the standard. In 2018, the Lakeview area experienced favorable weather patterns with minimal inversions and air stagnation events and had increased compliance with the wood stove ordinance ignoring wildfire smoke. In 2019 we had similar conditions to bring good air quality to the area, along with good compliance with the wood stove curtailment advisory, but the 2020 wildfire season hit the area fairly hard. Yet not considering wildfire data, the area stayed in attainment with the NAAQS for the 3rd year in a row.

1.2 Three Year Average Monitoring Data

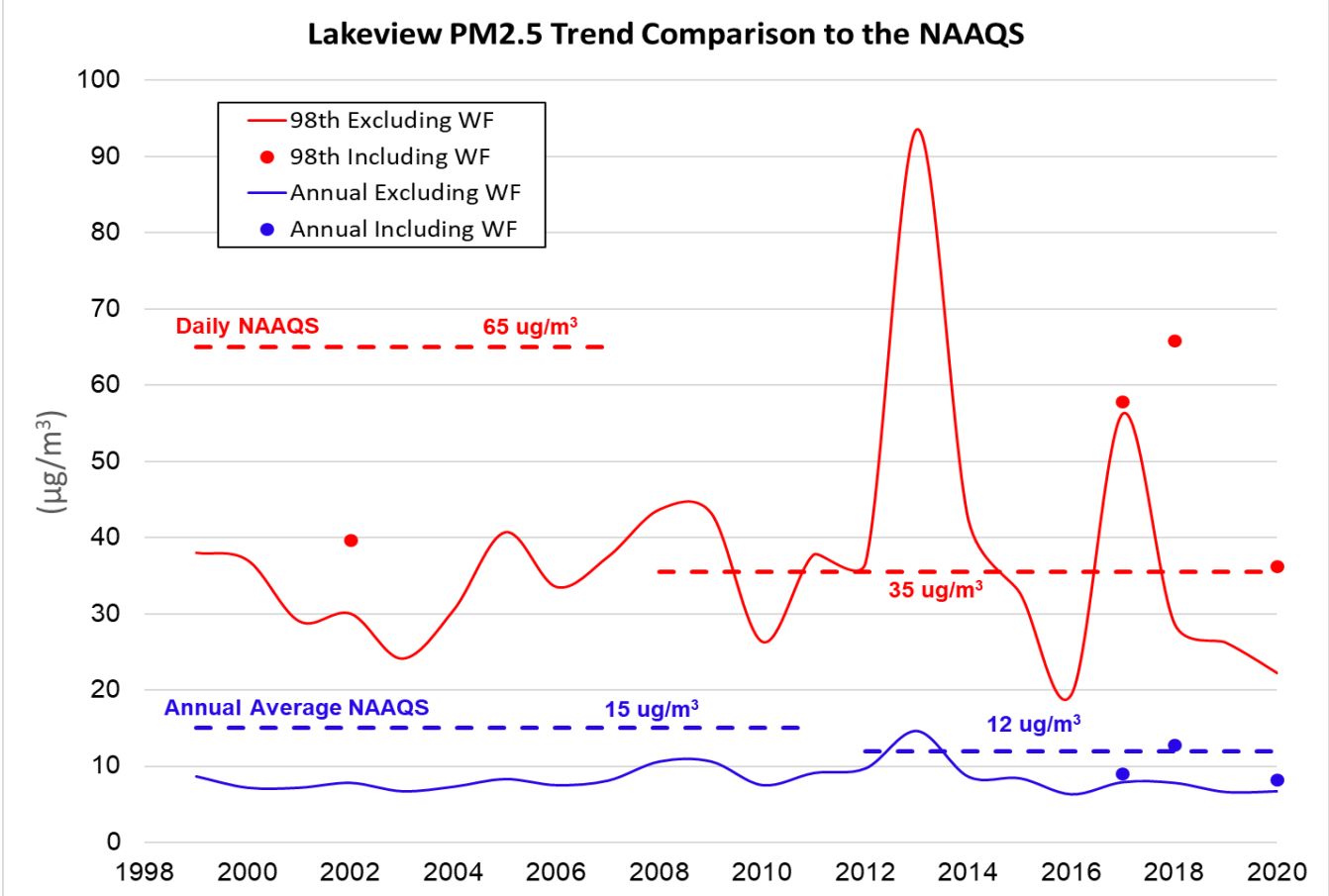
Lakeview is currently meeting the standard (a 3-yr average of 98 percentile 24-hour data) based on the most recent data (2018-2020) at a level of 26 µg/m³. The high annual data of 2017 skewed the 3-year average greatly until this past year where the last three, lower value years are averaged. The past 3 years, not considering wildfire smoke, brings the area well into attainment with the NAAQS once again. **Figure 2** shows the 3-year averages over the past few years:

Figure 2: Three Year Average 98th Percentile Concentration Measured at Center and M Street without wildfire impacts.



In Figure 3 below you can see the trend comparisons with the annual and daily NAAQS over the last 20 years.

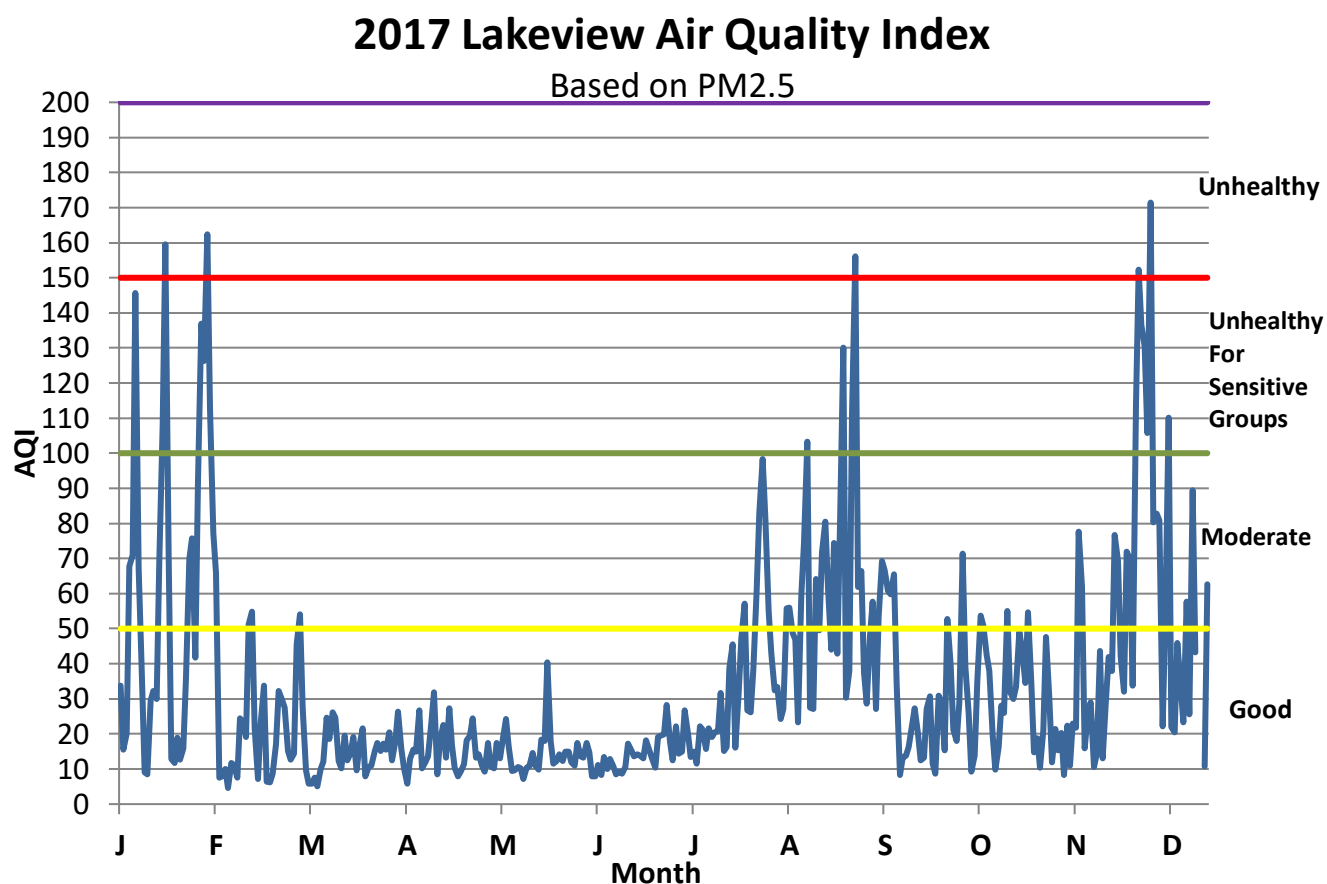
Figure 3: PM2.5 Daily and Annual Trend Comparisons to the NAAQS



The 2017 year (see figure below, Figure 4) was the last year for very poor data in the Lakeview area. People appear to be following the guidelines now (2021) for when it is ok to burn more closely, and outreach into the community on poorer air quality days by the Town staff has helped tremendously. Evaluating the annual trend line, including wildfire data is valuable to remember and pay attention to as each winter season is close to beginning. There were difficult days in the early 2017 and late 2017 times in the year as can be seen below where the PM_{2.5} values were well above 35 µg/m³, the current air quality standard.

During that year initially there was not an Air Quality DEQ representative assisting until later in the year, and the Town's person helping with the calls started to do so in the 2nd half of 2017 also. It is difficult to predict what the year and data would look like if those same weather conditions exist again for us however.

Figure 4: 2017 Lakeview Air Quality Index



2. Emissions Update

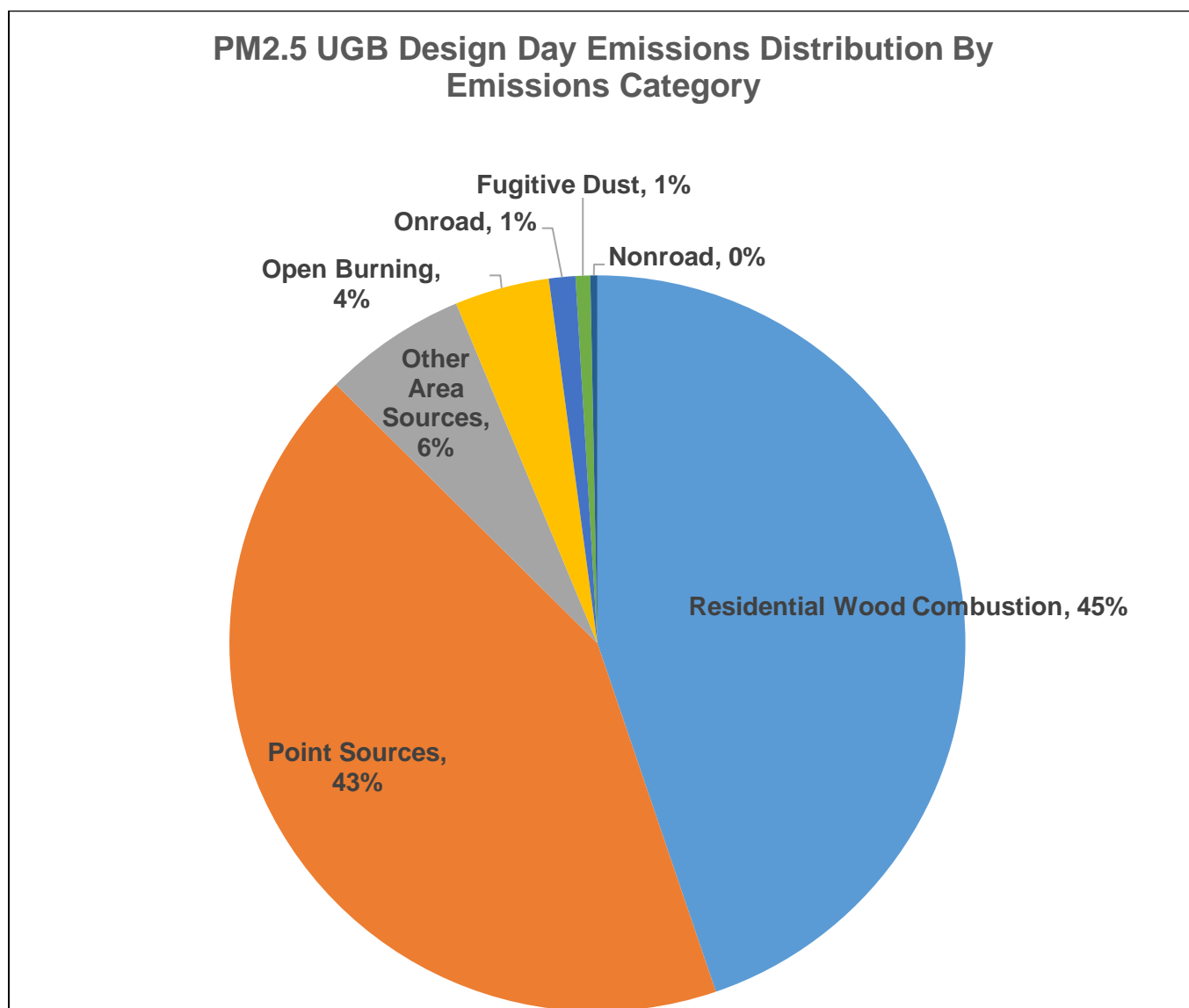
The emissions inventory estimate for the Lakeview UGB has been updated to include the 2017 National Emission Inventory data; all data was analyzed and adjusted for area specific conditions. Although these are still only emission source estimates, it provides good insights into what the cold-day emissions could be from various sources when assuming industrial emissions and residential woodstoves to be at their maximum allowed or feasible. The predicted emission inventory for 2017 is in **Table 1** below. It is difficult to determine a more precise estimate for Residential Wood Combustion without a more detailed survey of the community, which collects details on the number of wood stoves and pellet stoves and whether or not they are certified.

Table 1: Emission Inventory Estimation for 2017

Source	Estimated 2017 Year, lbs/day
Residential Wood Combustion	219
Permitted Sources	209
Residential Open Burning	20
Prescribed Fire	0
Fugitive Dust	3
Other Area Sources	31
Nonroad	2
Onroad	6
Total	489

The Lakeview area has made significant progress and is meeting the standard for 2018-2020. **Figure 4** depicts the emission estimates in a visual manner. The difference between the point source and residential emissions are that the point source emissions are generally hotter and rise higher in the atmosphere. Point source emissions are limited to a few areas in primarily the industrial zone on the north end of the Town, whereas the residential emissions are spread throughout the community and do not have the velocity or heat in the plume to rise much above the emission points or chimney. Open burning can be from residents, but is not well known how much actually takes place during this time when open burning is restricted. Other area sources can for example include oil heaters in homes, restaurant grilling and the possible use of commercial wood heaters.

Figure 5: PM2.5 Urban Growth Boundary Design Day Emissions Distribution



3. Implemented Strategies

Over the years, Lakeview and DEQ have developed strategies to manage particulate matter air pollution concentrations in the Lakeview area, based in part on its history of dealing with particulate (PM₁₀) pollution from the early 1990s. The emission reduction measures identified in this section include actions to address residential

wood heating smoke, restrictions on residential open burning, and public education. These strategies were implemented initially in 2014 and they continue to this day with slight revisions to reflect the current issues and challenges.

3.1 Mandatory Woodstove Curtailment Program

In 2015, the Town of Lakeview and Lake County changed their wood burning ordinance to a mandatory curtailment program. Since this change, considerable reductions have been observed. Inside the Town and County, the urban growth boundary require residents to curtail their residential wood combustion on red days (high pollution, high health risk days) and curtail their uncertified woodstove use on yellow days (moderate pollution days). In November 2016, the exemption program that allowed low income and sole source homeowners to burn even on yellow and red days, was no longer offered within the Town limits but still exists for the area between the Town limits to the UGB. For those residents with sole source of heat or low-income, they were prioritized for the woodstove changeout program to provide them with a new cleaner heating device. This is now year four of implementing the program without exemptions and the number of exemptions has decreased. We are seeing local resident observing the curtailment advisory determinations yet there still is some non-compliant people and those who really only have a woodstove for heat. Some of these stoves are not in very good condition also and we are working to get them exchanged to cleaner heating devices.

The advisory continues to be available to the public every day during the wood heating season (November 1 – February 28). One Town Air Quality program staff person or more is responsible for providing the advisory calls and conducting patrols to see if there is compliance with the advisory. Implementation and enforcement of the advisory will continue to occur through letters and home visits. Specifically, for any offenders, a warning letter is issued that also includes information about funding opportunities for changeouts if there is funding available. While the ordinance has the potential to issue fines for continued offenses, the primary focus of enforcement would be through education and awareness, such as printed materials delivered to the home and/or a home visit by the program staff or other Town or County personnel.

Continued enforcement of the curtailment program, increased public awareness as a result of the program and better compliance shows the change in public behavior towards addressing woodsmoke. **Table 2** shows the number of advisory call days made.

Table 2: 2020 – 2021 Winter Heating Season Advisory Calls

2020 - 2021 Winter Heating Season		
Green Advisory Calls	Yellow Advisory Calls	Red Advisory Calls
119	1	0

It was a lighter winter and burning was not an issue. During the 2020-2021 season year the Town conducted no compliance surveys as there were no Red advisory days. Program staff followed up with public inquiries, discussing the curtailment program and the need and importance of complying with the ordinance.

3.2 Woodstove Changeout Program & Weatherization of Homes

Lakeview has had a history of conducting woodstove changeouts by replacing old uncertified stoves with cleaner burning units.

A \$75,000 grant from the Oregon Legislature was awarded in late 2019, running through March of 2021 and the projection was to change out 9-10 wood stoves and build about 14 one-cord storage sheds for those who need them. Although the COVID-19 pandemic slowed down the progress of this program, it was finally finished in March of 2021.

Fourteen wood storage shelters were built and eleven (11) wood stoves changed out. Five (5) woodstoves were replaced with new certified woodstoves, and six (6) were replaced with heat pumps. This was a good program and helped the area achieve some goals. Some of the wood stove replacements were for old stoves which had been in poor regard for many years, some with worn out areas on them or truly holes, allowing for far too much wood to be combusted for the energy provided for the home.

3.3 Open Burning Prohibitions

The Town of Lakeview and Lake County established an ordinance prohibiting outdoor open burning that extends to the urban growth boundary limits between November 1 and March 1st of each year. The ban has been effective in controlling open burning in the critical winter months when potential PM_{2.5} exceedances might occur.

3.4 Public Education and Awareness

The County will work in coordination with the Town of Lakeview to reach out to the urban growth boundary (UGB) on education and outreach efforts. DEQ has provided funding to the Town of Lakeview, through an interagency agreement, to conduct ongoing and enhanced education efforts in the Lakeview community about proper use of woodstoves and how to reduce wood smoke through proper wood storage and other techniques.

Although difficult to quantify, the enhanced educational efforts include:

- 1) Improved education on burning properly, wood storage, seasoned wood, and types of wood to burn
- 2) Public education in schools and service groups
- 3) Installation of reader board (in a high visibility spot) to inform residents of curtailment call

Daily advisories were available to the public by 11:30AM each day, seven days a week between November 1 and March 1 of the 2020 and first half of the 2021 season. The advisories were available to the public by the following media outlets:

- 1) Local Radio Stations
- 2) Town Website
- 3) Stoplight in the second story window at Town Hall, Flags
- 4) Local reader board located in front of the fire hall and the Fairgrounds
- 5) 24-hour hotline
- 6) Flash Friday- Lake Co Examiner: a local broadcast of the definitions of RED-YELLOW-GREEN.
- 7) Email to those who sign up, and
- 8) Facebook

The advisories were prepared based on information from the National Weather Service, Oregon Department of Forestry forecasts and local knowledge of the weather patterns. DEQ will also work through a forecast and be available to Town of Lakeview staff to call and discuss the advisory determination for that day.

The Air Quality Coordinator worked one-on-one with residents providing information on energy assistance programs, alternative heat sources, red days, burning clean, and other program-related issues.

Local agencies observed and complied with burning restrictions.

3.5 Prescribed Burning

The U.S. Forest Service continues to maintain its agreement with the Town of Lakeview and Lake County to not burn within the Lakeview Special Protection Zone (LSPZ or Goose Lake Valley airshed) an area surrounding the Town of Lakeview, during poor air quality days. The Collins Pine Company also has a similar agreement. This helps prevent smoke impacts from prescribed burning entering into Lakeview’s airshed.

4. Future Efforts

1. The Lakeview area will continue to implement the mandatory woodstove curtailment program for the 2021 - 2022 wood heating season and future years. Compliance surveys on red and yellow days will continue, with warning letters sent out to any violators of the ordinance.
2. Lake County will work in coordination with the Town of Lakeview to reach out to areas in the greater Lakeview area airshed on education and outreach efforts. Two flagpoles are located around the community and one in front of Town Hall to fly the wood stove advisory color of the day during the November – February season.
3. The community will continue to seek out additional funding to pursue future woodstove changeouts.
4. Reinstating the Town block grant for residential improvements to be used to replace wood stoves when money has been paid back from the program.
5. Continued efforts to conduct education and outreach regarding proper use of woodstoves, reducing woodsmoke, and daily woodstove curtailment advisories. Woodstove curtailment notices are also posted on the County Fairground’s reader board, a high visibility location. The Town will continue to work on community outreach through community fairs and groups, print and social media outreach.
6. Investigate alternate monitoring opportunities to assess woodsmoke in areas throughout Lakeview and the urban growth boundary (UGB). This may involve the use of low-cost sensors.
7. Reviewing existing ordinances to determine if there are opportunities for additional ways to reduce woodsmoke (e.g., requiring only certified devices in new construction homes, addressing auxiliary wood burning devices in non-residential structures).
8. The Town and County will work together to possibly align the local ordinances and finance curtailment and enforcement procedures.
9. Join the Alert Sense program to utilize their home and resident notification system of red and yellow days.
10. Build cord-wood storage units (approximately 1 or 2-cords each) for residents in need as identified through the community wood program. The sheds will be kept under 200 ft. sq., and built by volunteers in the community. In the future this depends on available funding. No funds remain to pursue this work at the earlier stages of 2021.

5. Summary

In summary, the Lakeview area has a robust PM Advance Plan that is working for the community, and despite the higher numbers for 2017, the area had much improved compliance for the 2018 – 2020 and into 2021 years. Wildfire smoke and the fires themselves are more serious challenges to the well-being of the community. However during the wintertime mandatory woodstove curtailment through the ordinance is still needed.

In general, the Town of Lakeview and Lake County have conducted a unique set of steps to improve air quality in the area. DEQ recognizes the area for currently meeting the NAAQS standard and working on continuing to implement their ordinance and use the tools they have as outlined in the PM Advance Plan.

Appendix A – Town of Lakeview Annual Reports

TOWN OF LAKEVIEW

525 N. 1st Street • Lakeview, OR 97630
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Air Quality

2020-2021

Annual Report

The following is the report for the 2020-2021 wood smoke advisory season. Information is provided regarding the work done by the Air Quality Program Coordinator as well as some changes that have taken place in Lake County.

This being my Fourth Air Quality season and Holly Getty's First Air Quality season, I was able to see the progress we have made with educating the community on the importance of Air Quality.

On October 27, 2015 the Town Council adopted Ordinance No. 853, **An Ordinance Prohibiting the Use of Solid Fuel Burning Devices within the Town of Lakeview; Providing Certain Exemptions Therefrom; Establishing Controls for the Enforcement of this Ordinance; Providing Penalties for violations Hereof; Repealing Ordinance No. 851 in its Entirety and Declaring an Emergency.**

The County and the Town's ordinances still share both similarities and differences.

Similarities are the Ordinances address open burning. The Town addresses woodstove smoke that isn't covered by the County.

The County has made no changes to their Ordinance.

The Town is still in charge of patrolling and monitoring the County's urban growth boundary air quality program.

For the 2020-2021 season there were several days the monitor was down. Calls this year were tough due to the rough stagnant weather in December. There were 119 green burn days, 1 yellow burn day, and 0 red days.

Public Awareness

Daily advisories were made available to the public at 9:00 a.m. seven days a week beginning November until March 1, 2021.

These advisories were made available to the public in the following ways:

- 1) Local radio stations;
- 2) Town's Website;
- 3) Stop light in the second story window at Town Hall;
- 4) Flag in front of Town Hall
- 5) Reader board at the fairgrounds & Dispatch
- 6) Lake County Examiner
- 7) 24-hour hot-line;
- 8) Flash Friday- Lake Co Examiner and a local broadcast of the definitions of RED-YELLOW-GREEN;
- 9) Facebook, and
- 10) Flyers in water bills

We also contacted the community via- email per their request with the daily advisories.

Daily information was also available to the public through Town Hall.

Information for the daily advisories came from a few different intel's. I took information from the national weather service station as well as the DEQ's website to help make a decision on the burn advisory.

The Air Quality Coordinator worked one-on-one with residents providing information on energy assistance programs, alternative heat sources, red days, burning clean, and other program-related issues.

2019-2020 Wood Smoke Grant [The community participated in processing wood stove exchanges or removals and the building of wood storage sheds for the \$75,000 grant.]

Community Participation and Compliance

The AQ Coordinator conducted monitoring surveys on Yellow and Red days.

There were no letters sent out in the Town limits and all complied with the calling in and watching for what the burn day. There were no issues in the county or the urban growth boundary.

Outreach to schools to participate in air quality-related activities was not successful due to COVID-19. The Air Quality Coordinator will review and explore options for 2021-22.

Lakeview-Lake County Air Quality Committee continues to meet through online meetings due to COVID - 19 in support of achieving air quality goals.

Local agencies observed and complied with burning restrictions.

In conducting compliance surveys, the Air Quality Coordinator contacted homeowners to provide information to gain support for the need to meet community air quality compliance.

Planning Measures to Develop a Path Forward

The reader boards as well as all other methods of daily calls still contribute to the Town's outreach to the public.

With the public's input the AQ Coordinator would like to develop ways to help the community improve their air quality while not making it impossible to understand the need for improvement.

Lakeview-Lake County Air Quality Committee reviewed 2020-2021 results and is scheduled to review the plan with the intent to identify additional measures for next season.

The Town received a grant for a stove replacement program for \$75,000. (5) Five Wood Stoves were replaced with a millennium 2100 series 2020 EPA complaint heat 800-2100 square feet 1.7 grams hr. (4) Four wood stoves were replaced with Ductless hyper heat Mitsubishi 18,000 BTU 18.5 seer super high efficient includes. (4) Four wood stoves were replaced with a FH!% Hyper Heat Unit. (13) covered wood shed storage & (2) Tarps were given with each shed which is a total of 26 given out.

Planning Measure to Improve Air Quality

In the matter of improving air quality the Town continues to enforce their Ordinance as well as educating the public on the importance of Air Quality and programs available to help improve air quality.

The Town Manager continues to work with the natural gas working group to try and obtain natural gas for the area to help improve air quality.

The Town would like to determine what grant money is available to help with the change out program and be well utilized for the area to help reduce the wood smoke.

Dawn Lepori,

Town of Lakeview

Air Quality Program Coordinator