



January 18, 2024 (Corrected 1/29/2024)

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*Comments submitted via email to [lauren.whybrew@orcaa.org](mailto:lauren.whybrew@orcaa.org)*

**Re: Comments on the Olympic Region Clean Air Agency’s Preliminary Determination to Conditionally Approve Pacific Northwest Renewable Energy’s Request to Construct a New Wood Pellet Manufacturing Facility at 411 Moon Island Road, Hoquiam, WA 98550**

Dear Ms. Whybrew:

The National Parks Conservation Association, Earthjustice, and Olympic Park Advocates (“Conservation Organizations”) submit the following comments on the Olympic Region Clean Air Agency’s (“ORCAA”) preliminary determination to conditionally approve Pacific Northwest Renewable Energy’s (“PNWRE”) request to construct a new wood pellet manufacturing facility (“Proposed Pellet Mill”) at 411 Moon Island Road, Hoquiam, WA 98550. ORCAA’s public notice explains that:

If approved, the proposed facility will emit air pollution from combustion of woody biomass in an industrial furnace, from the drying of biomass feedstock, and from other wood processing activities. The facility will be a “Major Source” of air pollution [under Title V] because emissions of several air pollutants, including Oxides of Nitrogen (NO<sub>x</sub>), Carbon Monoxide (CO), and Particulate Matter (PM), may exceed 100 tons per year or more.<sup>1</sup>

ORCAA’s preliminary determination suggests that proposed pellet mill is not a “Major Stationary Source” as defined in 40 C.F.R. § 52.21(b) and not subject to the Prevention of Significant Deterioration (“PSD”) permitting program required by WAC 173-400-700 through

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<sup>1</sup> ORCAA Public Notice, *available at* <https://www.orcaa.org/notices/notice-of-construction-pacific-northwest-renewable-energy-2/>.

WAC 173-400-860.<sup>2</sup> ORCAA’s preliminary determination further suggests that “[t]his conclusion will be assured through annual limits.”<sup>3</sup>

As discussed in these comments, there are serious errors in the permit application and associated analysis. Contrary to ORCAA’s preliminary determination, the proposed pellet mill is subject to the PSD major source construction permit requirements and case-by-case Maximum Achievable Control Technology determination air toxics requirements. Notably, using emission data collected from other wood pellet mills, the facility-wide potential to emit for several air pollutants greatly exceed the estimates in the application submitted by the permit applicant. The estimates in the table below are conservative because as discussed in these comments the permit applicant did not include all emitting sources, such as from the marine vessels, all emergency engines and other sources.

**Table 1. Facility-Wide Potential Estimates: Permit Applicant’s and Revised Based on Source Test Data from Wood Pellet Mills.**

	VOC	HAPs	CO	NOx	PM (filterable)
Permit Applicant Estimate	67 TPY	1.32 TPY	185 TPY	230 TPY	108
Revised Estimate	215 TPY	40 TPY	493 TPY	113 TPY	108
<i>Brief summary of the issue</i>	The permit applicant failed to include VOC emission from: the five pellet storage silos (discussed in section I.B) and from the wet hammermills (discussed in section I.D).	The permit applicant failed to accurately and completely calculate HAP emissions. Discussed in sections I.D and I.E).	The permit applicant failed to include CO emissions from the five pellet storage silos. Discussed in section I.C.	The permit applicant applied an incorrect emission factor for calculating NOx emissions. Discussed in section II.A.	Because the proposed pellet mill is subject to PSD, fugitive emissions for PM (and the other pollutants) must also be included.

Based on the revised facility-wide potential to emit estimates, the proposed pellet mill would be:

- A major source of HAPs (and required to conduct a case-by-case Maximum Achievable Control Technology analysis)
- Trigger PSD major source requirements for CO emissions (at both the 100 TPY and 250 TPY thresholds)
- Trigger PSD major source requirements for VOCs (at the 100 TPY threshold)

<sup>2</sup> ORCAA, New Source Preliminary Determination to Approve, Wood Pellet Manufacturing Facility, Pacific Northwest Renewable Energy, LLC, No. 23NOC1606 (Nov. 30, 2023), at 30. (“Preliminary Determination”). (Attachment A).

<sup>3</sup> Preliminary Determination at 30.

- Trigger PSD major source requirements for NOx (at the 100 tpy threshold)
- Trigger PSD major source requirements for PM (at the 100 tpy threshold)

The List of Attachments appears at the end of these comments and are available to download at:

[https://drive.google.com/drive/folders/1cDkiqvefBZjz4AuYMWh6hiMzwfGI5uHA?usp=drive\\_link](https://drive.google.com/drive/folders/1cDkiqvefBZjz4AuYMWh6hiMzwfGI5uHA?usp=drive_link).

**National Parks Conservation Association (NPCA)** is a national organization whose mission is to protect and enhance America's National Parks for present and future generations. NPCA performs its work through advocacy and education. NPCA has over 1.5 million members and supporters nationwide, including more than 49,000 members and supporters in Washington state, with its main office in Washington, D.C., and 24 regional and field offices. NPCA is active nation-wide in advocating for strong air quality requirements to protect our parks, including submission of petitions and comments relating to visibility issues, regional haze SIPs, climate change and mercury impacts on parks, and emissions from individual power plants and other sources of pollution affecting National Parks and communities. NPCA's members live near, work at, and recreate in all the national parks and wilderness areas, including those that would be directly affected by emissions from the proposed new wood pellet mill.

**Earthjustice** is a non-profit public-interest environmental law organization that partners with community groups and non-profits to protect people's health, to preserve magnificent places and wildlife, to advance clean energy, and to combat climate change.

**Olympic Park Advocates (OPA)** is a 501(c)(3) nonprofit citizens conservation organization working to protect the beauty, integrity and biological diversity of Olympic National Park and the Olympic ecosystem. OPA was founded in 1948 to defend the Park against attacks on its spectacular old-growth rain forest valleys. Seventy-three years later, OPA's more than 240 Washington members recognize that having pristine air in Olympic National Park is necessary for the protection of this special place.

**If granted, this permit would allow harmful amounts of pollution from this facility, degrading air quality in Olympic and Mount Rainier national parks and harming human health in nearby communities.**

The Clean Air Act ("CAA" or "Act") requirements for new source construction are not met in PNWRE's permit application. Despite the Act's regional haze legal requirements to ensure reasonable progress at national parks and the federal and state permitting requirements for construction of new sources, PNWRE's permit application contains fundamental flaws. ORCAA must issue a denial of the request to construct unless PNWRE supplements its permit application with the missing information that complies with the legal requirements of ORCAA's regulations, the Act and federal regulations, and ORCAA and the Washington Department of Ecology require that the proposed new emissions meet all legal requirements.

Of significant concern are the proposed new air pollutant emissions that would contribute to regional haze pollution at nearby Olympic<sup>4</sup> and Mount Rainier National Parks<sup>5</sup>, as well as contribute to local impacts. Olympic and Mount Rainier National Parks are designated as Class I air protection areas. National parks over 6,000 acres, like Olympic and Mount Rainier, and national wilderness areas over 5,000 acres that were in existence before August 1977 are designated as Class I areas, as defined by an amendment to the Clean Air Act. Olympic is approximately 75 km and Mount Rainier approximately 150 km in distance from the proposed

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<sup>4</sup> Nitrogen deposition is a concern of the National Park Service at Olympic National Park (“... accumulation of nitrogen in mountain lakes influence water quality in Olympic National Park,” *see* National Park Service, Olympic National Park, Environmental Factors, *available at*

<https://www.nps.gov/olymp/learn/nature/environmentalfactors.htm>. (Attachment B).

<sup>5</sup> “Mount Rainier National Park staff are very involved in the National Park Service's comprehensive air resources management program, designed to assess air pollution impacts and protect air quality related values. Air quality related values include scenic vistas; sensitive natural ecosystem processes, functions, and components; and cultural resources. ... **Air Pollution at Mount Rainier** Mount Rainier National Park is located downwind of a number of urban and industrial areas to the northwest and southwest and is not isolated from the by-products of industrialization. Man-made air pollutants are transported long distances and have been detected through air quality monitoring programs. A number of stationary and mobile sources of pollutants affecting the park include a variety of sources in the Puget Sound region as far north as Vancouver, and as far south as Portland, Oregon. ... **Visibility Impairment** Nearly two million visitors come to Mount Rainier each year to enjoy the scenery, but the view is often obscured by regional haze, especially in the summer. Haze is caused when sunlight encounters fine pollution particles in the air. Some light is absorbed by particles. Other light is scattered away before it reaches an observer. More pollutants result in more absorption and scattering of light, which reduce the clarity and color of what we see. ... **Acid Deposition** As precipitation water passes through the air it reacts with carbon dioxide, sulfur oxides, and nitrogen oxides to form acids. These compounds then fall to the Earth in either dry form (such as gas and particles) or wet form (such as rain, snow, and fog). The park's lakes and streams are very sensitive to acidic deposition because the soils and bedrock cannot neutralize acids well. Acid deposition impacts aquatic organisms and ecosystems as well as terrestrial life through direct contact and by changing the chemical balance in the soil and increasing the acidity of lakes and streams. Water quality for approximately 20 of the major streams in the park have been inventoried along with approximately 48% of the park lakes. Of these, 10 stream sites have been documented as extremely sensitive, while lakes on the west and south sides of the park tend to be more sensitive. Spring snowmelt or late summer storms can cause highly acidic deposition events which can affect the aquatic ecology of these surface waters. ... **Ozone** Plants can be sensitive to ozone at levels well under the national health standards for people. Lichens, mosses, and liverworts are often the most sensitive components of the vegetation within an ecosystem and can serve as early indicators of air pollution effects. Plants such as trees, shrubs, and herbaceous species are also injured by ozone which can damage leaves and needles and weaken the plants' ability to withstand disease and insect infestations. Clean air is defined as ozone concentrations ranging from 15 to 30 ppb (parts per billion). Elevated ozone levels (above 80 ppb) were measured at Longmire in the southwest section of Mount Rainier National Park during the summers of 1987 and 1988. Values above 80 ppb were not uncommon at an ozone monitor at Carbon River in the northwest corner of the park during 1989 to 1992 and there were a few readings above 100 ppb. Similar values have been measured at Tahoma Woods, while ozone levels at Paradise have, on some days, been the highest recorded in the state. High levels of ozone have also been measured in rural areas surrounding the park in Enumclaw (10 miles north of the park), Cedar River (30 miles north of the park), and Pack Forest (15 miles west of the park). Chlorotic foliar spotting on the foliage of ponderosa pine at Pack Forest has been reported and scientists hypothesized that ozone-sulfur dioxide synergism was responsible for the damage. Ozone impacts on sensitive vegetation in the Pacific Northwest have received little attention until recent years because of the relatively low levels of ozone in the area. Ozone sensitive species in Mount Rainier have recently been identified and are being monitored in selected areas. ... **Air Toxics** Air Toxics is a term that includes persistent organic pollutants and heavy metals. ... Air toxics also originate from local and regional sources. These contaminants ... may accumulate in annual snowpack, particularly in higher elevation ecosystems. Once deposited, many pollutants, particularly persistent organic pollutants, accumulate and concentrate in foodwebs, threatening the viability of aquatic and terrestrial ecosystems. These air toxics are of particular concern because they remain in the environment a long time, can accumulate in the biological tissue of organisms, and are toxic to humans and wildlife.” *Infra* n.6.

pellet mill. In addition to these parks, some of the surrounding U.S. Forest Service wilderness areas are also designated as Class I areas. Areas designated as Class I and are intended to receive the highest level of air-quality protection including being subject to the Prevention of Significant Deterioration (PSD) provisions under the Clean Air Act.<sup>6</sup>

## **Factual and Legal Background**

The proposed pellet mill would be located on an approximately 60-acre parcel in the city of Hoquiam, Washington. The Proposed pellet mill is designed to produce, store, and export up to 440,800 short tons per year (“TPY”) of wood pellets and is proposed to operate at least 8,000 hours per year. The proposed location is adjacent to the Willis Enterprises Moon Island Chip Mill (“Willis Enterprises”) and near Terminal 3 at the Port of Grays Harbor.<sup>7</sup> An automated enclosed conveyor would draw pellets from the silos according to loading schedules and transport them via enclosed conveyor<sup>8</sup> to the neighboring Willis Enterprises’ existing conveyors and marine vessel loadout facilities.<sup>9</sup>

ORCAA’S regulations provide that a Notice of Construction (NOC) Application is required for the Construction of any stationary source. The NOC must be approved by ORCAA, unless certain actions are involved (which do not apply the Proposed pellet mill).<sup>10</sup>

In order to receive approval from ORCAA, the proposed construction of the stationary source must meet certain requirements.<sup>11</sup> These requirements include the local/State Best

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<sup>6</sup> See National Park Service, Mount Rainier National Park, Air Quality, *available at* <https://www.nps.gov/mora/learn/nature/airquality.htm>. (Attachment C); *see also* National Park Service, Mount Rainier National Park, **Mount Rainier’s Wilderness: A Defense against Climate Change**, *available at* <https://www.nps.gov/mora/learn/nature/climatechange.htm>.

<sup>7</sup> Preliminary Determination at 3.

<sup>8</sup> Port of Grays Harbor Wood Pellet Plant, Notice of Construction Permit Application (July 2023), at 3 (“A new conveyor would transport wood pellets from the silos and connect them to the existing Willis Enterprises conveyor system located on the Willis Enterprises chip mill site. Pellets would then be conveyed to the Port of Grays Harbor Terminal 3 for loading onto vessels.”) (“Permit Application”). (Attachment D).

<sup>9</sup> Preliminary Determination at 11. (Willis Enterprises operates under an RC2-class ORCAA registration (source number 2112, file number 647), its classification means that it has reported potential to emit greater than or equal to 30 TPY of any combination of pollutants. The existing conveyors and vessel loadout facilities owned by Willis Enterprises are under a separate air permit and already registered with ORCAA.)

<sup>10</sup> Excerpt from EPA-approved SIP rules for ORCAA, 40 C.F.R. part 52.2470(c) Table 6 – Additional Regulations Approved for the Olympic Region Clean Air Agency (ORCAA) Jurisdiction, *available at* <https://www.epa.gov/air-quality-implementation-plans/washington-sip-epa-approved-regulations-table-6-olympic-region>. (Attachment E).

### **ORCAA Rule 6.1 Notice of Construction Required**

(a) Approval of a Notice of Construction (NOC) Application required. It is unlawful for any person to cause or allow the following actions unless a Notice of Construction application has been filed with and approved by the Agency, except for those actions involving stationary sources excluded under Rule 6.1(b) and (c):

- (1) Construction, installation, or establishment of any stationary source;
- (2) Modification to any existing stationary source; or,
- (3) Replacement or substantial alteration of emission control technology installed on an existing stationary source.

### <sup>11</sup> **ORCAA Rule 6.1.4 Requirements for Approval**

(a) Attainment or Unclassified area requirements. The following requirements apply to any new stationary source or modification proposed in an attainment or unclassified area:

Available Control Technology (“State-BACT”).<sup>12</sup> ORCAA Rule 6.1.4(a)(2) and the Washington State Implementation Plan under 40 C.F.R. part 52.2470(c), Table 6, require a finding that a new source in an attainment area will employ State-BACT for all pollutants not previously emitted. State-BACT is defined in WAC 173-400-030(13) as:<sup>13</sup>

[A]n emission limitation based on the maximum degree of reduction for each air pollutant subject to regulation under chapter 70A.15 RCW emitted from or which results from any new or modified stationary source, which the permitting authority, on a case-by-case basis, taking into account energy, environmental, and economic impacts and other costs, determines is achievable for such source or modification through application of production processes and available methods, systems, and techniques, including fuel cleaning, clean fuels, or treatment or innovative fuel combustion techniques for control of each pollutant.

Preliminary Determination at 25. Additionally, the emission limitations established through the State-BACT analysis must be met continuously.<sup>14</sup> The State-BACT emission limitation and compliance requirements mirror the Federal-BACT requirements for major sources.<sup>15</sup> *Moreover, while these comments generally focus on the flaws in “State-BACT” requirements, to the extent the proposed pellet mill is a major source for an air pollutant, the “State-BACT” issues are also relevant to the PSD BACT requirements.*

In 2001, EPA explained that it was not necessary to approve the Act’s section 112(g) (case-by-case Maximum Achievable Control Technology (MACT) standards for the 188

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- (1) The proposed new stationary source or modification will comply with all applicable new source performance standards, national emission standards for hazardous air pollutants, national emission standards for hazardous air pollutants for source categories, emission standards adopted under chapter 70A.15 RCW [Washington Clean Air Act] and applicable emission standards in ORCAA’s Regulations.
  - (2) The proposed new stationary source or modification will employ BACT for all air pollutants not previously emitted or whose emissions would increase because of the new stationary source or modification. ...
  - (4) If the proposed project is subject to WAC 173-400-700 through 750 [Review of Major Stationary Sources of Air Pollution, PSD permits] or WAC 173-400-800 through 860 [Major Stationary Source and Major Modification in a Nonattainment Area], Ecology has issued a final permit under those programs.
  - (5) If the proposed new stationary source or the proposed modification will emit any toxic air pollutants regulated under chapter 173-460 WAC [CONTROLS FOR NEW SOURCES OF TOXIC AIR POLLUTANTS], the stationary source meets all applicable requirements of that program.”

<sup>13</sup> EPA Approved Regulations in the Washington SIP, *available at* <https://www.epa.gov/sites/default/files/2017-02/documents/sip-wa-approved-regulations-ecology-table2.pdf>. (Attachment F).

<sup>14</sup> See ORCAA Rule 1.4 Definitions. “‘Emission standard’ and ‘emission limitation’ means a requirement established under the FCAA or chapter 70.94 RCW [this chapter of Washington State law was recodified to 70A.15 RCW<sup>14</sup>] which limits the quantity, rate, or concentration of emissions of air contaminants on a continuous basis, including any requirement relating to the operation or maintenance of a source to assure *continuous emission reduction* and any design, equipment work practice, or operational standard promulgated under the FCAA or chapter 70.94 RCW.”

<sup>15</sup> WAC 173-400-710(1) adopts the federal definition of BACT by reference; *see also* “WAC 173-400-030 (29) “Emission standard,” “emission limitation” and “emission limit” means a requirement established under the Federal Clean Air Act or chapter 70.94 RCW which limits the quantity, rate, or concentration of emissions of air contaminants on a continuous basis, including any requirement relating to the operation or maintenance of a source to assure continuous emission reduction and any design, equipment work practice, or operational standard promulgated under the federal Clean Air Act or chapter 70.94 RCW.”

hazardous air pollutants) delegation to this local air permitting agency because the Act directly confers on the permitting authority the obligation to implement section 112(g) and to adopt a program which conforms to the requirements of EPA's regulation. Therefore, the permitting authority need not apply for approval under section 112(l) in order to use its own program to implement section 112(g).<sup>16</sup>

ORCAA's rules contain the requirements for processing NOC applications and where a proposed project "does not meet the applicable approval requirements in Rule 6.1.3, then a final determination to deny approval and an Order to Deny Construction will be issued..."<sup>17</sup>

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<sup>16</sup> 66 Fed. Reg. 48,211, 48,212-48,213 (Oct. 19, 2001) ("Additionally, EPA is not delegating the regulations that implement CAA sections 112(g) and 112(j), codified at 40 CFR part 63, subpart B, to Ecology and the four local agencies. EPA recognizes that subpart B need not be delegated under the section 112(l) approval process. When promulgating the regulations implementing CAA section 112(g), EPA stated its view that "the Act directly confers on the permitting authority the obligation to implement section 112(g) and to adopt a program which conforms to the requirements of this rule. Therefore, the permitting authority need not apply for approval under section 112(l) in order to use its own program to implement section 112(g)" (see 61 FR 68397). Similarly, when promulgating the regulations implementing section 112(j), EPA stated its belief that "section 112(l) approvals do not have a great deal of overlap with the section 112(j) provision, because section 112(j) is designed to use the Title V permit process as the primary vehicle for establishing requirements" (see 59 FR 26447). Therefore, state or local agencies implementing the requirements under sections 112(g) and 112(j) do not need approval under section 112(l).")

<sup>17</sup> **ORCAA Rule 6.1.2 Application Processing**

**(f) Denial.** If the Agency determines that a proposed project subject to approval of an NOC application does not meet the applicable approval requirements in Rule 6.1.3, then a final determination to deny approval and an Order to Deny Construction will be issued and served as provided for in these Regulations. Any Order to Deny Construction must:

- (1)** Be in writing;
- (2)** Set forth the objections in detail regarding the specific law or rule or rules of these Regulations that will not be met by the proposed project; and,
- (3)** Must be signed by the Executive Director of the Agency or an authorized representative.

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## **I. The Permit Application is Materially Incomplete.**

### **A. The Proposed Pellet Mill Must be Classified as a Fuel Conversion Plant under the federal Clean Air Act Major Source Prevention of Significant Deterioration Permit Program.**

The major source Prevention of Significant Deterioration (“PSD”) permit requirements applicable to the proposed pellet plant are found in WAC 173-400-700 through 173-400-860. The State’s PSD requirements, just like federal PSD regulations in 40 C.F.R. § 52.21, adopt by reference the definition of “major stationary source” in 40 C.F.R. § 51.21(b), which contains the list of 28 source categories for which the major source emissions threshold is 100 tons per year (TPY) of any individual regulated new source review (NSR) pollutant.<sup>18</sup> Sources not listed have a major source emissions threshold of 250 TPY. The relevant category on the list of 28 is “fuel conversion plant.” EPA’s regulations do not include a definition of “fuel conversion plant” nor do the State’s.

The permit applicant and ORCAA suggest that wood pellet production is not among the 28 listed categories, and therefore the threshold for PSD applicability is 250 TPY and fugitive emissions are not included for comparison to the major-source threshold.<sup>19</sup> Neither the ORCAA nor the permit applicant provide any discussion or rationale for the assertion that none of 28 categories apply. ORCAA further suggests that “[t]his conclusion will be assured through annual limits.”<sup>20</sup> Neither the permit applicant nor ORCAA addressed the question of whether the proposed pellet plant should be considered a “fuel conversion plant” – one of the 28 listed categories – for PSD applicability purposes. As the agency in the State responsible for implementing EPA PSD permit program, Washington must reasonably interpret and apply the PSD regulations. Based on the below analysis, the pellet plant operations (and emissions units) associated with the process change of solidifying the wet woody biomass into pellets constitutes a fuel conversion plant.

Classifying the process of converting wood from one form to another as a process covered by “fuel conversion plants” is consistent with EPA’s statement in the Cleveland Electric memo.<sup>21</sup> At the plant in question, Cleveland Electric proposed to produce fuel gas by means of gasifying municipal waste. EPA concluded that this process qualified as a fuel conversion plant and made the following statement: "Fuel conversion plants obviously include those plants which accomplish a change in state (e.g., solid to liquid to gas) for a fuel. This definition includes conversion of the following fuels: fossil (e.g., coal or oil shale); biomass (e.g., wood or peat);

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<sup>18</sup> WAC 173-400-720(4)(a)(vi).

<sup>19</sup> Permit Application at 6; Permit Application, Appendix A, NOC Application Forms and SEPA Documentation, Form 7, PSD Applicability Form at 3 (“Permit Application, Appendix A”) (Attachment G); Preliminary Determination at 30.

<sup>20</sup> *Id.*

<sup>21</sup> EPA Memorandum from Edward J. Lillis, Chief Permits Programs Branch, AQMD, to George T. Czerniak, Chief Air Enforcement Branch, Region V, Applicability of Prevention of Significant Deterioration (PSD) and New Source Performance Standards (NSPS) to the Cleveland Electric, Incorporated, Plant in Willoughby, Ohio (May 26, 1992), available at <https://www.epa.gov/sites/default/files/2015-07/documents/clvlnDel.pdf>. (“Cleveland Electric Memo”) (Attachment H).

and anthropogenic (e.g., municipal waste derived fuel and inorganic fuel). The majority of such sources are likely to accomplish these changes through either gasification, liquefaction, or solidification. . . . Generally, however, applicability for this source category is determined by whether a facility changes state (e.g., solid to gas) or form (e.g., process sawdust into a pellet) of a fuel”<sup>22</sup> and the change is permanent, not temporary.<sup>23</sup>

The proposed wood pellet mill is a “fuel conversion plant” under the PSD regulations. First, the proposed processes at the wood pellet mill would convert the wet raw wood material to a solid form, the pellets, which changes the state of the wood.<sup>24</sup> Moreover, in the drying line, natural gas, diesel, and propane are used as fuels for the furnace and hog fuel (wood bark) would be burned to produce energy for drying the wet raw wood material. Natural gas would be burned for RTO. The RCO for the four dry hammer mills and pellet coolers would burn natural gas. The essential features of the pellet mill use a process and change material from a wet, raw material to a solid form. The solidification processes that would be used to create the pellets also would use natural gas, diesel, and propane to start the furnace process, wood to fuel the furnace, and natural gas to power the control air pollution emissions at the RTO and RCO.

This interpretation is also consistent with EPA’s statements in its July 31, 2003 letter.<sup>25</sup> In that analysis, while EPA communicated that the change in state in that instance was from a liquid to a gas, it concluded that the plant at issue was not a fuel conversion plant because the vaporization of liquid natural gas occurs without the need for chemical or process change. The permit applicant’s process here of converting wet woody biomass to a solid form – the wood pellets – would not occur without a process, such as that proposed by the permit applicant. Moreover, in the 2003 letter, EPA provided a list of the types of fuel conversion plants under the

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<sup>22</sup> *Id.* at 3.

<sup>23</sup> EPA Letter from C.J. Sheehan, Office of Regional Counsel, EPA Region 6 to M. Cathey, Managing Director, El Paso Energy Bridge Gulf of Mexico (Oct. 28, 2003), *available at* <https://www.epa.gov/sites/default/files/2015-07/documents/20031028.pdf>. (Attachment I).

<sup>24</sup> *See* EPA Memorandum from Kent Berry, Director Policy Analysis Staff, U.S. EPA, to Asa B. Foster, Jr., Director, Air and Hazardous Materials Division, U.S. EPA Region IV, “Clarification of Sources Subject to Prevention of Significant Deterioration (PSD) Review” at 1 (Jan. 20, 1976), *available at* <https://www.epa.gov/sites/default/files/2015-07/documents/phosphat.pdf> (Explaining that “Fuel conversion plants are defined for purposes of PSD as those plants which accomplish a change in state for a given fossil fuel. The large majority of these plants are likely to accomplish these changes through coal gasification, coal liquefaction, or oil shale processing.”) (Attachment J). Notably, EPA Memorandum did not say “all” of the fuel conversion plants accomplish the changes through the examples provided.); *see also* “Cleveland Electric Memo”, at 3, (“The production of low heat value fuel gas at the Cleveland Electric facility also classifies the source as a fuel conversion plant. Fuel conversion plants obviously include those plants which accomplish a change in state (e.g., solid to liquid to gas) for a fuel. This definition includes conversion of the following fuels: fossil (e.g., coal or oil shale); biomass (e.g., wood or peat); and anthropogenic (e.g., municipal waste derived fuel and inorganic fuel). The majority of such sources are likely to accomplish these changes through either gasification, liquefaction, or solidification. The category of fuel conversion plants may include, but is not limited to, some types of sources within standard industrial classifications 1311, 2819, 2969, 2421, and 2999. Generally, however, applicability for this source category is determined by whether a facility changes the state (e.g., solid to gas) or form (e.g., process sawdust into a pellet) of a fuel. Therefore, the Cleveland Electric facility fits into the fuel conversion plant category as well.”)

<sup>25</sup> EPA Memorandum from Racqueline Shelton, Group Leader, Integrated Implementation Group, to Guy Donaldson, Acting Chief, Air Permits Section, EPA Region 6, Request for Guidance on the Definition of Fuel Conversion Plants for Purposes of Prevention of Significant Deterioration (PSD) (July 31, 2003), *available at* <https://www.epa.gov/nsr/guidance-definition-fuel-conversion-plants>. (Attachment K).

PSD regulations and the list included “coal gasification, oil shale processing, conversion of municipal waste to fuel gas, processing of sawdust into pellets.”<sup>26</sup>

The legislative history regarding the addition of “fuel conversion plant” to the definition of “major emitting facilities” shows that EPA recommended adding fuel conversion plants when the source category was added as one of the 100 TPY major source categories in the Clean Air Act Amendments of 1977. Yet the amendments did not include a definition for this source category. Rather, the legislative history made a one passing reference to the coal gasification, coal liquefaction, and oil share processing “etc.” to provide examples of the types of facilities that would be included.<sup>27</sup>

Wood is a type of fuel used in a wide variety of stationary source combustion activities. For example, the 1977 legislative history shows that when EPA reported to congress in how it collected emission inventory information from combustion activities at stationary sources, air pollutant emissions were reported by the type of fuel used in different applications.<sup>28</sup> Indeed, the use of wood as a fuel was included as a category for which emission inventory information was reported to EPA in all three areas of the stationary source combustion activities (residential, commercial and institutional, and industrial). Additionally, when the National Academy of Sciences provided its Report to congress during the 1977 legislative session, it explained that

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<sup>26</sup> *Id.* at 1-2.

<sup>27</sup> The legislative history is also instructive in considering whether the proposed wood pellet mill should be classified as a “fuel conversion plant.” In August 1977, Congress adopted the Clean Air Act Amendments of 1977 with the statutory PSD section. The 1977 amendments included the PSD 100 TPY / 250 TPY two-tier concept in the definition of “major emitting facilities” along with a list of the source categories having a 100-TPY PSD major source threshold. EPA developed a list of 19 source categories to include in the list of sources subject to the 100-TPY threshold and EPA’s list was an extract from the Research Corp. of New England, which had listed 190 types of sources. The “committee took 28, be printed in the RECORD at this point as an illustration of what the committee examined and the kinds of sources the committee intended to include and exclude...” 1976 WL 162302 (CAA77), 18, A&P 122 Cong. Record S12775, S12782] 1977 WL 173804 (CAA77), 1977 WL 173804 (CAA77), 20 (Aug. 2, 1976). Of the categories listed, 17 that were covered by EPA’s regulation included the largest emitters of SO<sub>2</sub> and TSP on a nationwide basis at that time. The legislative history explains that the “fuel conversion plants, are fuel conversion plants (coal gasification and liquefaction, oil shale processing, etc.) were included due to their significant growth potential...” 1977 WL 173804 (CAA77), 20 (Aug. 2, 1976), citing *Technical Support Document-EPA Regulations for Preventing the Significant Deterioration of Air Quality*, U.S. Environmental Protection Agency, Office of Air Quality Planning & Standards (Jan. 1975), at 27-28.; The listed categories included fuel conversion plants, but without any definition of the term. 42 U.S.C. § 7479(1). Pub.L. 95-95, Title I, § 127(a), Aug. 7, 1977, 91 Stat. 740.

<sup>28</sup> The legislative history includes two citations to the EPA Federal Register notice summarizing emission inventory data for fuel used in residential, commercial and institutional, and industrial applications. In all three applications, one of the types of fuel identified was “wood” (For the types of fuel used in residential applications, and commercial and institutional, EPA’s emission inventory included: Anthracite Coal, Bituminous Coal, Distillate Oil, Residual Oil, Natural Gas, Wood, and Other. For the types of fuel used in industrial applications, EPA’s emission inventory included: Anthracite Coal, Bituminous Coal, Coke, Distillate Oil, Residual Oil, Natural Gas, Wood, and Other.); 1971 WL 120521 (CAA77), 24, A&P CAA77 HEARINGS (20) (Part 7 OF 7), 514, citing APPENDIX D. (POLLUTANT) EMISSIONS INVENTORY SUMMARY, (EXAMPLE REGIONS AND WHERE EMISSION LIMITATIONS ARE DEVELOPED) \_\_\_\_\_ AIR QUALITY CONTROL REGION--DATA REPRESENTATIVE OF CALENDAR YEAR; *see also* 1972 WL 121321 (CAA77), 62, A&P CAA77 HEARINGS (27B) (Part 6 OF 6), 883, citing FEDERAL REGISTER, VOL. 36, NO. 158-AUG. 14, 1971, Appendix D-- (Pollutant) Emissions Inventory Summary, tons/yr. (or metric tons/yr.) (Example Regions) \_\_\_\_\_ Air Quality Control Region Data Representative of Calendar Year \_\_\_\_." (emphasis added).

“[t]he primary emissions for stationary sources are from fuel combustion” and included in the list of fuels used during combustion was “wood waste.”<sup>29</sup> From the 1977 legislative history it is clear that “wood” and “wood waste” were considered a type of fuel.

Furthermore, it appears the only location in the 1977 legislative history where “fuel conversion plants” were referred to “fossil fuel conversion plants” was in testimony discussing the then “shortages in low-sulfur liquid fuel” and because of the shortages a particular category of conversion plants had “become increasingly dependent on coal to generate electricity.”<sup>30</sup> Thus, it logically follows that in addition to the examples of “coal gasification,” “coal liquefaction” and “oil shale processing” that fuel conversion plants must also include other sources used for fuel, notably wood.

Congress explicitly identified the major source category relevant here in the definition of “major emitting facility” as “fuel conversion plant.” The major source category was neither identified as fossil fuel conversion plants nor is there anything in the legislative history to suggest congress intended that the category include only those plants that convert fossil fuels.<sup>31</sup>

Since EPA’s proposed PSD regulations in 1973, to the list of source categories that is used today, the “fuel conversion plant” category has never been defined.<sup>32</sup> This list (still without

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<sup>29</sup> AIR QUALITY AND AUTOMOBILE EMISSION CONTROL REPORT BY THE COORDINATING COMMITTEE ON AIR QUALITY STUDIES NATIONAL ACADEMY OF SCIENCES NATIONAL ACADEMY OF ENGINEERING PREPARED FOR THE COMMITTEE ON PUBLIC WORKS UNITED STATES SENATE PURSUANT TO S. Res. 135, APPROVED AUGUST 2, 1973, VOLUME 3, THE RELATIONSHIP OF EMISSIONS TO AMBIENT AIR QUALITY, SEPTEMBER 1974, SERIAL NO. 93-24, COMMITTEE ON PUBLIC WORKS," 1974 WL 162630 (CAA77), 70, A&P CAA77 COMM. PRINT 1974 (13D) (Part 3 OF 6), 17-18. (In addition to wood waste, the Academy’s Report listed the following fuels: coal, fuel oil, natural gas, and liquified petroleum gas.)

<sup>30</sup> JOHN KRAUTKRAEMER, TESTIMONY OF THE ENVIRONMENTAL DEFENSE FUND AND THE COLORADO OPEN SPACE COUNCIL ON THE PREVENTION OF SIGNIFICANT DETERIORATION OF AIR QUALITY BEFORE THE SUBCOMMITTEE ON ENVIRONMENTAL POLLUTION OF THE SENATE COMMITTEE ON PUBLIC WORKS Denver, Colorado, February 15, 1977, 1977 WL 173812 (CAA77), 3; also cited at 1977 WL 173811 (CAA77), 111.

<sup>31</sup> Interpretations of the regulation that have limited fuel conversion plants to only those that convert “fossil” fuel are unreasonably restrictive; *see e.g. see generally* EPA Letter from Gregg M. Worley, Chief Air Permits Section, EPA Region 4, to E.A. Veronica Barringer, Bureau of Air Quality, South Carolina Department of Health and Environmental Services, (June 4, 2007) *available at* <https://www.epa.gov/sites/default/files/2015-07/documents/fuelcon2.pdf>. (Attachment L); *see also* EPA Letter from Donald Dossett, P.E., Manager Stationary Source Unit, EPA Region 10, to Claudia Davis, Western Region Air Quality Manager, Oregon Department of Environmental Quality (Sept. 26, 2017), *available at* <https://www.epa.gov/sites/default/files/2017-10/documents/jordcove.pdf>. (Attachment M).

<sup>32</sup> When EPA added the term “major stationary source” to its PSD regulations it adopted the source categories from the Act, it did not add definitions. Prior to 1977 amendments to the Clean Air Act, EPA’s 1973 proposed PSD regulations listed 16 source categories, that list did not include fuel conversion plants. 38 Fed. Reg. 18,986 (July 16, 1973). EPA’s 1974’s preamble that proposed amendments to PSD regulations mentioned that the list of sources subject to the permit program had been expanded to include the “fuel conversion plants” and noted that that source type include sources “such as coal gasification and oil shale plants.” 39 Fed. Reg. 31,000, 31,003 (Aug. 27, 1974). EPA’s statement was in a proposed action and thus not a final agency action. Furthermore, EPA’s 1974 preamble statement “such as” merely provided examples of the types of sources that could be included as fuel conversion plants, it was neither limiting the types of fuel covered nor a definition. EPA promulgated the first set of PSD regulations in 1974 and these regulations contained “fuel conversion plants” as a listed source category but EPA did

a definition for fuel plant conversion) remains in current federal PSD regulated and is adopted by reference in the current Washington State PSD regulations.

ORCAA does not have authority to interpret and implement the PSD regulations. The PSD regulations applicable to wood pellet plant are in the SIP regulations that EPA approved for the Washington Department of Ecology to implement.<sup>33</sup> The PSD regulations are not part of ORCAA's EPA-approved SIP regulations. Notably, ORCAA Rule 1.4 explicitly explains that the local permitting agency does not have authority to implement the PSD regulations:

**“Prevention of Significant Deterioration (PSD)”** means the program in WAC 173-400-700 to 173-400-750. Ecology is responsible for the PSD program for stationary sources in ORCAA's jurisdiction.

Instead, the PSD regulations fall under the Washington Department of Ecology's jurisdiction. Thus, ORCAA does not have authority to interpret the PSD regulations and answer the question of whether the proposed plant is a “fuel conversion plant.” Furthermore, as discussed below, several of the regulated NSR pollutants exceed the 100 TPY threshold and at least one exceeds the 250 TPY threshold. Therefore, the permit applicant must seek a PSD permit from the State for this major stationary source under either the 100 or 250 TPY threshold. If ORCAA attempts to create emission limitations and associated monitoring, recordkeeping and reporting requirements to allow the proposed pellet mill to escape major source PSD permitting, ORCAA must nevertheless defer to the State in responding to this significant question raised during the public comment period of whether the proposed pellet mill constitutes a “fuel conversion plant.” The State's proposed determination must be subject to the State's notice and comment process.

In addition to ORCAA's mischaracterization of the proposed pellet mill, as discussed below, the proposed approval order terms are not adequate to create synthetic minor emission limits and fail to include the required monitoring, recordkeeping and reporting requirements necessary for practical enforceability. Moreover, the permit applicant has not accurately calculated many of the air pollutants, including carbon monoxide (“CO”) emissions. Using the correct emission factor from the stack test at another wood pellet mill, the potential criteria pollutant CO emissions exceed the 250 TPY PSD thresholds. Additionally, applying the 100 TPY PSD threshold, PM, NO<sub>x</sub> and VOC would be triggered for PSD review, along with greenhouse gases. ORCAA must deny the permit application. The permit applicant must apply to Washington for a PSD permit.

In summary, ORCAA lacks authority to consider and respond to this comment. It must defer to the State of Washington. Based on the above analysis the proposed wood pellet plant must be classified as a fuel conversion plant because the proposed wood pellet plant would be a process to solidify the wet woody biomass to the solid pellet form.

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not define the term. 39 Fed. Reg. 42,510, 45,516 (Dec. 5, 1974). In 1978, EPA promulgated the PSD regulations, which were pursuant to the Clean Air Act Amendments of 1977, and subsequently amended them in August 1980 in response to *Alabama Power Company v. Costle*, 636 F.2d 323 (D.C. Cir. 1979). The 1980 PSD regulations contained the 100-tpy source category list with fuel conversion plants as one of the categories but without a definition.

<sup>33</sup> WAC 173-400-700 to 173-400-750, *supra* n.13.

## **B. VOC Emissions from the Five Wood Pellet Storage Silos Are Not Included in the Permit Application.**

The permit application does not include any VOC emissions from the silos that will store wood pellets. Thus, the permit application's State-BACT analysis ignores VOC emissions from the storage silos,<sup>34</sup> does not establish a State-BACT emission limit, and underestimates the proposed pellet mill's true potential to emit of VOCs. This is in contrast to existing source testing for wood pellet storage silos, conducted by the State of Georgia at the Georgia Biomass wood pellet plant.<sup>35</sup> The State of Georgia permitting agency, Georgia Environmental Protection Division ("Georgia EPD") formulated an emission factor for wood pellet storage and handling of 0.4 lb/ oven dried tons (ODT), which the agency requires wood pellet plants to use in calculating PTE, with limited recent exception.<sup>36</sup> This emission factor is based on direct emissions testing of the wood pellet storage silos at Georgia Biomass, an 825,000 TPY wood pellet plant located in Waycross, Georgia.<sup>37</sup> Based on the Georgia EPD emission factor, an additional 88 TPY of VOC emissions must be added to the proposed pellet mill's facility-wide emission inventory for the emissions from the five pellet silos (EP-10, EP-11, EP-12, EP-13 and EP-14), a State-BACT analysis conducted, and an emission limit established for the VOC emissions from the five pellet storage silos.<sup>38</sup> Thus, the revised estimate of facility-wide VOC should be 155 TPY. If the permit applicant wishes to use a lower emission factor, it can only do so after providing adequate justification, supported by credible evidence, demonstrating that the planned silos are not capable of emitting at the same rate as those tested at Georgia Biomass.

## **C. Carbon Monoxide Emissions from the Five Wood Pellet Storage Silos Are Not Included in the Permit Application.**

According to the permit application, the proposed pellet mill's five pellet storage silos will not emit any carbon monoxide (CO).<sup>39</sup> This conclusion, however, contradicts numerous studies conducted over the past decade demonstrating that bulk storage of wood pellets is a significant source of CO emissions.<sup>40</sup> Tragically, numerous real-world incidents have confirmed

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<sup>34</sup> Permit Application at 23.

<sup>35</sup> Georgia EPD Memorandum re: Emission Factors for Wood Pellet Manufacturing (Jan. 29, 2013) (Attachment N) ("Georgia EPA Memo").

<sup>36</sup> *Id.* at 4; *see also* Georgia EPD, SIP Construction Permit and Title V Significant Modification Application Review for Hazlehurst Wood Pellets, at 5 (Sept. 2019) (explaining why Georgia EPD was making an exception to its normal requirement to utilize the 0.4 lb/ODT emission factor). (Attachment O).

<sup>37</sup> Georgia EPA Memo, *supra* n.35, at 5.

<sup>38</sup> Silo emissions, (440,800 ODT/yr \* 0.4 lb/ODT) / 2,000 = 88 TPY VOC.

<sup>39</sup> Permit Application, Appendix C, Emission Calculations, at PDF 3. (Attachment P). ("Permit Application, Appendix C").

<sup>40</sup> Urban R. A. Svedberg, *et al.*, *Emissions of Hexanal and Carbon Monoxide from Storage of Wood Pellets, a Potential Occupational and Domestic Health Hazard*, 48 Ann. Occup. Hyg., No. 4, 339-349 (2004) (Attachment Q); Lydia Soto-Garcia, *et al.*, *Exposures to Carbon Monoxide from Off-Gassing of Bulk Stored Wood Pellets*, Center for Air Resources Engineering and Science, Clarkson University, Energy Fuels, 29, 218-226 (2015) (Attachment R); Mohamad Arifur Rahman, *et al.*, *Carbon Monoxide Off-Gassing From Bags of Wood Pellets*, 62 Annals of Work Exposures and Health, Issue 2, 248-252 (Dec. 25, 2017) (Attachment S) ("Rahman, *et al.*"); Jaya Shankar Tumuluru, *et al.*, *Analysis on Storage Off-Gas Emissions From Woody, Herbaceous, and Torrefied Biomass*, 8 Energies 1745, 1751 (March 2, 2015) (Attachment T); Xingya Kuang, *et al.*, *Rate and Peak Concentrations of Off-Gas Emissions in Stored Wood Pellets—Sensitivities to Temperature, Relative Humidity, and Headspace*, 53 Ann. Occup. Hyg., No. 8,

this, with at least 14 fatal accidents due to carbon monoxide poisoning from bulk wood pellet storage since 2002.<sup>41</sup> The danger is so high that the New York State Department of Health has recommended that “signs should be posted at [wood pellet] storage areas to warn everyone about potential carbon monoxide hazards.”<sup>42</sup>

Most critically, in terms of an emission factor, one study found that softwood pellets stored at 35° C (95° F) for two days had an emission factor of approximately 0.7 g/kg, which equates to 1.4 lb/ton of pellets.<sup>43</sup> This emission factor produces an emission rate at the proposed pellet mill of 308 tons of CO per year, well over either of PSD major-source thresholds (100 or 250) TPY. Wood pellets stored in silos frequently reach and maintain temperatures well above 35° C even when ambient temperatures are much lower, meaning this emission factor is likely applicable nearly year-round.

The additional CO emissions of 308 TPY must be added to the proposed pellet mill’s facility-wide emission inventory estimate for CO of 185 TPY, a major source PSD BACT analysis conducted, a permit application submitted to the Washington Department of Ecology, and either an emission limit established by Washington Department of Ecology for the CO emissions from the five pellet storage silos or an approval order denial issued. Because ORCAA does not have authority to act on sources with potential to emit at levels subject to the major source PSD regulations, it must defer to the Washington Department of Ecology’s determination for the CO emissions from the proposed pellet mill.

#### **D. The Permit Application Fails to Include Emissions from and Propose Controls for the VOC and HAP Emissions from the Hammermills.**

As discussed in the letter from SELC, the permit applicant proposes to operate wet (aka green) hammermills that will not be vented to any VOC controls.<sup>44</sup> Moreover, the permit applicant improperly listed these hammermills as not emitting any VOCs or HAPs. Most comparable wood pellet mills vent these units to the furnace or dryer RTO for VOC and HAP control. Furthermore, emission stack tests on uncontrolled wet hammermills<sup>45</sup> show the proposed wet hammermills will likely emit up to 60 tons of VOCs and six tons of HAPs (in addition to the emission rates calculated elsewhere in these comments). These emissions and controls must be included in a revised permit application.

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789-796 (Aug. 5, 2009) (Attachment U) (“Kuang”); Wolfgang Stelte, Danish Technological Institute, *Guideline: Storage and Handling of Wood Pellets*, at 6 (Dec. 2012) (Attachment V) (“Stelte”).

<sup>41</sup> Rahman, *et al.*, *supra* n.40, at 1.

<sup>42</sup> New York State Department of Health, Carbon Monoxide (CO) Hazards from Wood Pellet Storage, *available at* [https://www.health.ny.gov/environmental/emergency/weather/carbon\\_monoxide/docs/pellets.pdf](https://www.health.ny.gov/environmental/emergency/weather/carbon_monoxide/docs/pellets.pdf). (Attachment W).  
<sup>43</sup>  $(440,800 \text{ ODT/yr} * 1.4 \text{ lb/ton}) / 2,000 \text{ lbs} = 308 \text{ tpy CO}$ ; *see also* Kuang, *supra* n.40 at 792.

<sup>44</sup> Letter from Patrick J. Anderson, Southern Environmental Center, Heather Hillaker, Southern Environmental Law Center, to Lauren Whybrew, ORCAA, “Hazardous Air Pollutant (HAP) Deficiencies in Preliminary Determination for Pacific Northwest Renewable Energy LLC (PNWRE),” (Jan. 8, 2024). (Attachment X). (“SELC Letter”).

<sup>45</sup> Enviva Pellets Wiggins, LLC, Air Emission Test Report (Oct. 31, 2013) (Attachment Y); Enviva Pellets Amory, LLC, Air Emission Test Report (Oct. 31, 2013) (Attachment Z).

**E. The Permit Application Includes Woefully Inaccurate Emission Estimates for Hazardous Air Pollutants, Which Must be Revised and a Case-by-Case MACT Analysis Conducted.**

As discussed in the comment letter submitted from SELC to ORCAA,<sup>46</sup> the permit application estimates plant-wide hazardous air pollutants (“HAP”) at 1.32 TPY,<sup>47</sup> relying on EPA AP-42 emission factors that are specific to wood pellet plants and other inappropriate emission factors. This estimate is woefully inaccurate. The HAP pollutant emissions are of concern to NPCA not only because of the potential adverse impacts to the adjacent residential community and nearby elementary, middle and high schools (the proposed pellet mill is within a mile and a half of Emerson elementary school, Hoquiam middle school and Hoquiam high school), but because the HAPs that would be emitted at the greatest quantities by the proposed pellet mill are also characterized as VOCs. By volume, the most significant HAPs emitted are all also VOCs, and include the following:

- Acrolein
- Acetaldehyde
- Formaldehyde
- Methanol
- Phenol
- Propionaldehyde

These particular VOC pollutants impact regional haze at the National Parks. Moreover, the National Park Service expresses concerns regarding the impacts of air toxic pollution at Mount Rainier National Park.<sup>48</sup>

Reliance on emissions factors is problematic because the EPA AP-42 emission factors do not reliably predict emissions from specific sources and should not be used to establish or demonstrate compliance with approval order limits. The emission factors were developed to provide *approximations* of average emissions from certain kinds of activities and equipment and were not intended to be used for permitting and enforcement.<sup>49</sup> Consequently, EPA has repeatedly cautioned that the AP-42 factors “are not likely to be accurate” and thus “[u]se of these factors as source-specific permit limits ... is not recommended by EPA.”<sup>50</sup>

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<sup>46</sup> SELC Letter.

<sup>47</sup> Permit Application, Appendix C at PDF 4.

<sup>48</sup> See *supra* n.5.

<sup>49</sup> EPA, A-42, available at [https://www.epa.gov/system/files/documents/2024-01/introduction\\_2024.pdf](https://www.epa.gov/system/files/documents/2024-01/introduction_2024.pdf). EPA explains that an AP-42 emission factor is “a representative value that attempts to relate the quantity of a pollutant released to the atmosphere with an activity associated with the release of that pollutant. These factors are usually expressed as the mass of the pollutant divided by a unit mass, volume, distance, or duration of the activity emitting the pollutant (e.g., kilograms of particulate matter emitted per megagram of coal burned). Such factors facilitate estimation of emissions from various sources of air pollution. In most cases, these factors are simply averages of all available data of acceptable quality, and are generally assumed to be representative of long-term averages for all facilities in the source category (i.e., a population average).” AP-42 (2024), Introduction at 1 (underlining in original), available at <https://www.epa.gov/sites/default/files/2020-09/documents/c00s00.pdf>.

<sup>50</sup> EPA, Reminder About Inappropriate Use of AP-42 Emission Factors, Publication No. EPA 325-N-20-001 at 1, (Nov. 2020) (“EPA AP-42 Enforcement Alert”), available at <https://www.epa.gov/sites/default/files/2021-01/documents/ap42-enforcementalert.pdf>.

The recent permit application for a proposed pellet mill in Longview (“Proposed Longview Pellet Mill”) of similar size (450,00 oven dry metric tons (ODMT)/yr) submitted to Washington’s Southwest Clean Air Agency includes a plant-wide HAP emission inventory of 48.90 TPY for all HAPs, and 22.55 TPY for the maximum of a single HAP.<sup>51</sup> The Proposed Longview Pellet Mill application explains that “HAP/TAP [toxic air pollutants under State law]<sup>52</sup> and VOC emissions from the hammermills and pelletizers were updated [in the permit application] to use stack test data from a representative site, the ABE Facility in Gloster, MS.”<sup>53</sup> The permit applicant further explained that it used “HAP/TAP emissions from the dryer use stack test data from the ABE Facility to supplement the AP-42 factors used in the Application.” Furthermore, the permit applicant added “[a] safety factor of 25% ... to the emission factors for conservatism ... [all of which] ... resulted in additional HAP/TAP being included in the emission calculations.”<sup>54</sup>

The permit applicant for the proposed pellet mill must supplement its permit application with accurate HAP/TAP and VOC emission calculations, following the methodology used at the Proposed Longview Pellet Mill. Once the emission estimates are updated, the proposed pellet mill must be classified as a major source of HAPs under the federal Clean Air Act. The permit applicant must conduct the case-by-case MACT analysis required under the federal Clean Air Act. The permit applicant must also use the corrected emission inventory of TAP emissions rerun the TAP model analysis required by State law.<sup>55</sup>

#### **F. The Calculations for NOx Emissions Must be Corrected.**

The permit applicant erred in calculating the emission factor for NOx for the furnace emissions estimated for drying line emissions based on 52 lbs/hour for total PTE of 227.8 TPY.<sup>56</sup> This emission factor is based on the amount of wood in the dryer. This is improper; NOx is a product of combustion, and therefore the amount of wood being dried is not directly correlated to NOx emissions. In terms of the Enviva Greenwood testing,<sup>57</sup> the wood pellet furnace there operated at an average heat input of 135 MMBtu/hr during the testing,<sup>58</sup> and emitted NOx at a rate of 18.5 lb/hr.<sup>59</sup> Based on the emission testing at the Enviva Greenwood pellet mill, the proper emission factor therefore is 0.137 lb/MMBtu, not the 52 lbs/hour suggested by the permit applicant.

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<sup>51</sup> Letter from Jennifer Pohlman, Senior Consultant, Trinity Consultants, to Danny Phipps, Air Quality Engineer 1, Southwest Clean Air Agency, Completeness Determination for ADP Application CO-1057 dated August 25, 2022 (March 29, 2022) at PDF 18. (Attachment AA). (“SWCAA Letter”).

<sup>52</sup> Preliminary Determination at 28 (“The Air Toxics Rule provides a multi-tiered, screening approach under WAC 173-460-080 to assess health impacts and demonstrate compliance with the ambient impact requirement under WAC 173-460-070, which is that TAP increases must be sufficiently low to protect human health and safety from potential carcinogenic and/or other toxic effects.”)

<sup>53</sup> SWCAA Letter at PDF 2.

<sup>54</sup> SWCAA Letter at PDF 2.

<sup>55</sup> Preliminary Determination at 2, 28-30.

<sup>56</sup> Permit Application, Appendix C, Table C-8a at PDF 14.

<sup>57</sup> Air Control Techniques, Air Emissions Test Report for Enviva Pellets Greenwood, at 20 (April 4, 2019) (Attachment BB) (“Enviva Greenwood Test Report”).

<sup>58</sup> *Id.* at Appendix IG: Process Data, Table 4 at 212.

<sup>59</sup> *Id.* at 20.

The Preliminary Determination explains that the furnace will combust hog fuel to provide heat for the dryer and will have a maximum heat input capacity of 164.81 MMBtu/hr,<sup>60</sup> and the conditions of approval allow for heat rate at the furnace of 165 MMBtu/hr.<sup>61</sup> Based on the heat input, the furnace at the proposed pellet mill will emit 113 TPY of NOx.<sup>62</sup> The permit applicant must include all sources of NOx (*i.e.*, Regenerative Catalytic Oxidizer (“RCO”) emissions from the dry hammermill and pellet cooler (5.8 MMBtu/hr gas consumption<sup>63</sup>), Regenerative Thermal Oxidizer (“RTO”) emissions (20.2 MMBtu/hr gas consumption<sup>64</sup>), all emergency engines (e.g., emergency generators and fire water pumps), the marine vessels, and any other combustion sources not yet disclosed (e.g., propane vaporizer) at the proposed pellet mill and recalculate the total TPY of NOx.

## II. The Permit Application is Missing Emitting Units and Emission Sources.

Once the missing emission units are added and the emission estimates corrected, ORCAA must re-evaluate applicability of the Act’s requirements. Once emissions from the missing emission units are added and the emission estimates corrected, ORCAA must evaluate applicability of the Act’s requirements, as well as whether the proposed pellet mill exceeds major source thresholds. ORCAA must provide the public with an opportunity to review and comment on the new information, or, if the proposed pellet mill exceeds major source thresholds, defer permitting authority to the Washington Department of Ecology.

### A. The Permit Application Fails to Disclose and Use Accurate Methodology to Estimate NOx Emissions.

Proposed potential facility-wide NOx emissions are projected at 230 TPY from three emission units:

- Drying line (EP-04) (227.76 TPY)
- Emergency generator (GEN-01) (0.17 TPY)
- RCO at the dry hammer mill and pellet cooler (EP-08) (1.82 TPY)<sup>65</sup>

This projection is of concern because it is close to the threshold for PSD major source permitting, which is 250 TPY. The permit application fails to provide the supporting documentation necessary for the public to review and comment on the emission estimate for the drying line. For the projected 227.76 TPY from the drying line, the permit application indicates

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<sup>60</sup> Preliminary Determination at 7.

<sup>61</sup> *Id.* at 33, (Recommended Conditions of Approval ¶ 2).

<sup>62</sup> We calculate this as follows:  $(0.137 \text{ lb/MMBtu} * 1,650,000 \text{ MMBtu/year}) / 2000 \text{ lbs/ton} = 113 \text{ TPY}$  of NOx from the furnace, while the remainder of known emissions from the proposed pellet mill would emit 17 TPY NOx  $(0.137 \text{ lb/MMBtu} * (58,000 \text{ MMBtu/hr RCO} + 20,200 \text{ MMBtu/hr RTO}))$ , for a total of 130 TPY NOx. This facility-wide NOx emission estimate does not include emissions from the emergency engines (because it appears the permit applicant did not include all the engines and did not use the BACT assumptions) and the permit applicant did not include NOx emissions from the marine vessels.

<sup>63</sup> Preliminary Determination, at 34, (Recommended Conditions of Approval ¶ 2).

<sup>64</sup> Preliminary Determination, at 33, (Recommended Conditions of Approval ¶ 2).

<sup>65</sup> Permit Application, Appendix C, Table C-1 at PDF 3.

that the “[e]mission rates are based on vendor data,”<sup>66</sup> however, there is neither a citation to where that vendor data can be located in the application nor does our review of the application find any vendor data. The public must be provided access to the “vendor data” in order to review and comment. The permit applicant must supplement the application with this missing information so that the public can fully evaluate the accuracy of the potential to emit estimate.

For emissions from the emergency generator, the permit application indicates that emissions are based on “EPA Tier 3 emission standards.”<sup>67</sup> As discussed below, the Tier 3 engines are not representative of BACT controls.

Finally, the permit application explains that the projected emissions of 1.82 TPY NO<sub>x</sub> from the RCO at the dry hammer mill and pellet cooler were estimated based on EPA’s AP-42 emission factors,<sup>68</sup> and the application used the emission factor for “Residential Furnaces” to estimate these emissions. The RCO is not a residential furnace, and the permit applicant does not explain why this generic emission factor for residential emission units is representative of emissions from the units at the proposed pellet mill. Furthermore, as discussed above, the permit applicant’s reliance on emissions factors is problematic because AP-42 emission factors do not reliably predict emissions from specific sources and should not be used to establish or demonstrate compliance with approval order limits. EPA’s 2020 Enforcement Alert further explained AP-42 emission factors should not be used to establish or determine compliance with source-specific emission limits because of impacts to 1-hour and short-term National Ambient Air Quality Standards (NAAQS).<sup>69</sup>

## **B. The Permit Application Does Not Appear to Include NO<sub>x</sub> Emissions for Several Sources.**

The permit application does not appear to include estimates for NO<sub>x</sub> emissions from the combustion of gas in the estimates for the Dryer RTO.<sup>70</sup> Notably the emission estimates for those emission units include break-out tables for other pollutants that are created from combustions of gas (SO<sub>2</sub> and N<sub>2</sub>O), however, NO<sub>x</sub> emissions are not identified and included in those tables. NO<sub>x</sub> emissions from combustion of gas must be added or the permit applicant must explain how they are included in the overall total estimate.

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<sup>66</sup> Permit Application, Appendix C, Table C-8a at PDF 14.

<sup>67</sup> Permit Application, Appendix C, Table C-12a at PDF 21.

<sup>68</sup> Permit Application, Appendix C, Table C-9a at PDF 17 (“Combustion emission factors are from AP-42, Table 1.4-1, No SCC – Uncontrolled, 7/98, and Table 1.2-2”).

<sup>69</sup> EPA, AP-42 Enforcement Alert at 1-2. (“With the advent of 1-hour and short-term National Ambient Air Quality Standards (NAAQS), permit limits must be able to account for short term fluctuations. AP-42 emission factors also do not account for short term variation in emissions as the emission factors are intended for use in developing area-wide annual or triannual inventories. In developing emission factors, test data are typically taken from normal operating conditions and generally avoid conditions that can cause short-term fluctuations in emissions. These short-term fluctuations in emissions can stem from variations in process conditions, control device conditions, raw materials, ambient conditions, or other similar factors. This means that if facilities use AP-42 emission factors as permit limits, facilities increase their chances of violating their short-term permit limits. It also increases the likelihood of a geographic area’s noncompliance with the NAAQS.”)

<sup>70</sup> Permit Application, Appendix C, at Table C-8a at PDF 14 (does not indicate if NO<sub>x</sub> emissions from gas combustions are included).

Furthermore, the permit applicant indicates that diesel engines will power the emergency fire pump,<sup>71</sup> however, there are no emission estimates for these engines identified in the permit application. In contrast, the permit application for the Longview Pellet Mill expressly includes NOx emissions from the engines that will support the fire pumps.<sup>72</sup> The missing information must be clarified, and emission estimates added as necessary.

### **C. The Permit Application Fails to Include Maritime Vessel Emissions from the Loadout Area, which is on Adjacent Property That Would Serve the Proposed Pellet Mill.**

The permit applicant proposes to draw finished wood pellets from the storage silos and transport them via enclosed conveyor to the adjacent property owned by another company, Willis Enterprises. Once the wood pellets are on Willis Enterprises' property, the wood pellets would be moved via that company's existing conveyors and marine vessel loadout facilities.<sup>73</sup> Loadout of the wood pellet product is primarily planned to occur at the ship loadout facility on the adjacent owner's property.<sup>74</sup> The permit applicant explains that "[t]he Project would increase vessel traffic by approximately one ship every 5 to 6 weeks, or 10 per year." Emissions from vessels at berth ("dockside") that would load the wood pellets for transport<sup>75</sup> are considered primary emissions for estimating facility-wide emissions for applicability of the Clean Air Act requirements<sup>76</sup> because they are maritime emissions from operations related to the "ship loadout

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<sup>71</sup> The Vendor Information provided in Appendix D, expressly notes that unless expressly mentioned certain parts and services are not included in the quote, these items include "water pumps." Permit Application, Appendix D, Vendor Information at 70. ("Permit Application, Appendix D"). (Attachment CC). However, Appendix A indicates that the proposed pellet plant would include fire water pumps and generators. ("Stationary sources of diesel particulate matter (DPM) would be emitted at rates greater than regulatory *de minimis* levels by the emergency generator and diesel engines that power the emergency fire water pumps, but these sources would only operate during an emergency, and would fall within acceptable cancer risk and ORCAA thresholds.") Permit Application, Appendix A at PDF 30. (*emphasis added*). The permit applicant's apparent assertion that this emitting units and air pollution would be excused from permitting requirements is wrong. The emissions from all emitting units must be considered in the facility-wide emission inventory prepared to determine applicable requirements under the Act.

<sup>72</sup> See e.g. SWCAA Letter at PDF 17.

<sup>73</sup> Preliminary Determination at 11.

<sup>74</sup> Preliminary Determination at 11 ("PNWRE will also have the ability to deliver pellets via a truck unloading system; however, this system would be used only in special circumstances. PNWRE proposes no more than 10 loaded trucks per day and 32,000 tons per year of truck loadout utilization.")

<sup>75</sup> Permit Application, Appendix A at PDF 25 ("The processing of wood chips at the proposed facility includes ... a ship loadout area.")

<sup>76</sup> EPA Draft NSR Workshop Manual at A-18 (Oct. 1990), *available at* <https://www.epa.gov/nsr/nsr-workshop-manual-draft-october-1990> ("Secondary emissions do not include any emissions which come directly from a mobile source, such as emissions from the tailpipe of a motor vehicle or from the propulsion unit of a train or a vessel. This exclusion is limited, however, to only those mobile sources that are regulated under Title II of the Act (see 43 FR 26403 - note #9). Most off-road vehicles are not regulated under Title II and are usually treated as area sources. [As a result of a court decision in *NRDC v. EPA*, 725 F.2d 761 (D.C. Circuit 1984), emissions from vessels at berth ("dockside") not to be included in the determination of secondary emissions but are considered primary emissions for applicability purposes.]") ("NSR Workshop Manual.") That the vessel emissions generated in loading the pellets at the port should be included in the applicability determination comes from definitions in the Act. The Act's definition of "stationary source" requires the permitting agency authority to consider emissions from external combustion engine vessels in preconstruction and operating permits. 42 U.S.C. § 7602(z). That definition means "generally any source of an air pollutant except those emissions resulting directly from an internal combustion

area.” The permit applicant must estimate air pollutant emissions from the vessel traffic and supplement the permit application.<sup>77</sup> Because emissions from the vessels will impact air quality at considerable distances from the proposed pellet mill and these impacts are not limited to just the area near the loading dock. The air quality modeling must consider maritime emissions associated with the project beyond those that occur close to the loading dock because they will have an impact on air quality concentrations.

#### **D. Permit Application Fails to Include Emissions from the Transport of Finished Product from the Five Wood Pellet Silos to the Ship Loadout Area.**

The permit application fails to disclose and quantify emission estimates from the transport of the finished product from the five wood pellet silos to the ship loadout area. This information must be quantified and included in a revised application. The preliminary determination explains that the adjacent property owner holds an existing air permit for its operations and that the permit applicant proposes to use the existing equipment at the adjacent property to transport the finished product to the ship loadout area. However, what is not disclosed is how the increase in operational capacity on the adjacent property impacts emissions. The proposed action does not quantify and disclose new emissions from operations at the adjacent property including emissions from moving the finished product to the ship loadout area and emissions from transferring the finished product to the marine vessels, notably other state permits for similar operations include a baghouse to control emissions are a ship loadout area. There is nothing in the proposed action to cover permit modifications for the existing source’s operations. The permitting authority must clearly identify what owner/operator is responsible for emission from use of the equipment on the adjacent property that is proposed to be used by two separate legal entities, and how that information will be monitored, what records will be keep and how that information is reported to the permitting agency.

#### **E. The Permit Application Fails to Include Any Emissions for Construction Activities.**

The permit application explains that this is a new source and that substantial earth moving will be involved.<sup>78</sup> Emissions of air pollutants from construction differs from

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engine for transportation purposes or from a nonroad engine or nonroad vehicle as defined in section 216.” CAA Section 216 definitions of “nonroad engine” and “nonroad vehicle” are limited to internal combustion engines. 42 U.S.C. §§ 7550(10), (11). Thus, the vessels powered by external combustion engines that arrive at the port and load the wood pellets would be a “stationary source” for permitting purposes. The air pollutant emissions from activities in support of the proposed pellet plant, including those for transporting the pellets from the proposed pellet mill for sale at other locations, including those from marine vessels propelled by external combustion engines, are considered stationary emissions of the proposed pellet mill for CAA Title I and Title V purposes.]

<sup>77</sup> In estimating criteria, HAP and TAP air emissions, the permit applicant must estimate the maximum number of marine vessels per year, including any operations for support (e.g., tugs), including the total number of hours per call and hours spent beyond the loadout area. Air pollutants emitted from marine vessels are anticipated to include the following: NO<sub>x</sub>, CO, SO<sub>2</sub>, PM<sub>10</sub>, PM<sub>2.5</sub>, VOC, HAPs, TAP, and CO<sub>2e</sub>.

<sup>78</sup> For example, particulate emissions from the following activity must be included, “Grading will be needed to prepare the building site, and other site components. Approximately 110,279 cubic yards of material will be excavated at the Project Site, from within an area approximately 46.5 acres in size, associated with construction of

operation, and the permit application fails to disclose and quantify those emissions. The application must be revised to include these activities, the associated emission estimates. The approval order must include methods for control, as well as the associated monitoring, recording and reporting requirements.

### **III. The Permit Application Fails to Address the Act's Regional Haze Four-Factor Analysis Requirements.**

Under 40 C.F.R. § 51.307(c), permitting agencies must ensure that new major sources or major modifications will be consistent with the Act's Regional Haze Program requirement to make reasonable progress toward the national visibility goal. As a result, permitting agencies must conduct Four-Factor Analyses for new major sources or major modifications to satisfy the Act's requirements. The Four-factor Analysis includes consideration of the following:

- Consider the costs of compliance,
- The time necessary for compliance,
- The energy and non-air quality environmental impacts of compliance, and
- The remaining useful life of any potentially affected sources.<sup>79</sup>

Washington's Department of Ecology, as the State's permitting agency approved by EPA to implement the permit program for new major sources, must ensure that for pollutants for which the proposed pellet mill is major, the 40 C.F.R. § 51.307(c) requirements are met. As the ORCAA is aware, EPA's program approval does not give it the authority to conduct these activities and make these determinations.

### **IV. The Proposed State-BACT Determinations are Flawed and Incomplete, and the Proposed Emission Limitations Fail to Reflect State-BACT.**

#### **A. The Permit Applicant Must Look Beyond a Search of EPA's RACT/BACT/LAER Clearinghouse Database to Identify State-BACT Control Technologies.**

For two emitting units, the permit applicant explains that it only searched the EPA's RACT/BACT/LAER Clearinghouse ("RBLC") to identify emission control technologies for certain emitting units. These emitting units include the following:

- **NO<sub>x</sub> BACT for Drying Line** (potential NO<sub>x</sub> emissions of 227.76 TPY)

An RBLC search to identify NO<sub>x</sub> control technologies for hog fuel-fired or wet barkfired dryers at wood pellet facilities did not yield any results. Therefore, good

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the facilities. A total of approximately 41.2 acres of the site will be graded to prepare the site." Permit Application, Appendix A at PDF 28.

<sup>79</sup> 42 U.S.C. § 7491(g)(1); 40 C.F.R. 51.308(f)(2)(i).

combustion practices, which is always available, is the only available control technology.<sup>80</sup>

- **SO<sub>2</sub> BACT for Drying Line** (potential SO<sub>2</sub> emissions of 18.5 TPY)

An RBLC search to identify SO<sub>2</sub> controls applied to hog fuel or wet bark combustion did not yield any results. Accordingly, good combustion practices, which are always available, are proposed to satisfy BACT for SO<sub>2</sub>.<sup>81</sup>

The permit applicant only considered and proposed controls if they were found in the RBLC database. While EPA created the RBLC to be used as a database of air pollution technology information, it is not a comprehensive compilation. For example, there are numerous emission control projects in the U.S. that are not subject to the Act's major source permitting programs and therefore are not documented in the RBLC. Furthermore, not all permitting agencies routinely upload determinations. The RBLC is not a comprehensive and inclusive collection of permit applications and determinations. Permit applicants must look elsewhere. Indeed, ORCAA's fact sheet on BACT determinations recognizes the need for permit applicants to look beyond the RBLC. Though ORCAA cites the Clearinghouse as "one very good resource,"<sup>82</sup> it does not suggest it is the only resource. When conducting a federal BACT analysis for the major source permitting requirements – which are the same as the State-BACT elements – EPA explains that:

Applicants are expected to identify all demonstrated and potentially applicable control technology alternatives. Information sources to consider include: EPA's BACT/LAER Clearinghouse and Control Technology Center; Best Available Control Technology Guideline – South Coast Air Quality Management District; control technology vendors; Federal/State/Local new source review permits and associated inspection/performance test reports; environmental consultants; technical journals, reports and newsletters (e.g., JAPCA and the McIvaine reports), air pollution control seminars; and EPA's New Source Review (NSR) bulletin board. The applicant should make a good faith effort to compile appropriate information from available information sources, including any sources specified as necessary by the permit agency.<sup>83</sup>

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<sup>80</sup> Permit Application at 19.

<sup>81</sup> Permit Application at 20.

<sup>82</sup> ORCAA, Instructions for Form 6, Best Available Control Technology (BACT) at 1, *available at* <https://www.orcaa.org/wp-content/uploads/Form-6-BACT-Analysis-2018.pdf> ("STEP 1: IDENTIFY AVAILABLE CONTROL TECHNOLOGIES: For the source, emissions unit, activity, or process requiring BACT, identify and list all "available" emissions control options for the pollutant in question. Available control options are those air pollution control technologies and techniques with a practical potential for application to the source, emissions unit, activity, or process. In general, any control option in commercial use in the U.S. at the time the analysis is performed should be included on the list of available control options. One very good resource for obtaining listings of control options in use for a particular source type is the U.S. EPA BACT/LAER Clearinghouse (RBLC) which can be viewed at <http://cfpub.epa.gov/RBLC/>." ) (emphasis added) (Attachment DD).

<sup>83</sup> NSR Workshop Manual at B.11.

The permit applicant's search of just one location failed to identify all demonstrated and potentially applicable control technology alternatives. ORCAA's responsibility is to "review the background search and resulting list of control alternatives presented by the applicant to check that it is complete and comprehensive."<sup>84</sup> As discussed below, because there are control alternatives available, the permit applicant failed to perform its due diligence in searching. ORCAA must require the complete search.

**B. The Proposed NOx Emission Limitations for the Dying Line Do Not Reflect State-BACT Requirements.**

For NOx emissions from the drying line, the permit applicant merely proposes good combustion practices—which it asserts is the only available control technology—with NOx emissions not to exceed 52 lb/hr as BACT for the drying line. The permit applicant suggests that NOx emissions from the drying line would result in 227.76 TPY. The permit applicant failed to evaluate low NOx burner controls, which are used at other existing pellet mills to control NOx. For example, based on source test results at the Enviva Pellets Greenwood Facility and the emission factor developed for its use of low NOx burners, the permit applicant did not propose an emission limitation based on the maximum degree of reduction, as required by State-BACT.<sup>85</sup> A second example of the availability of low NOx burner technology for the wood pellet industry is the proposed Longview Pellet Mill, which proposes to install low NOx burners because it is a demonstrated control technology in pellet manufacturing facilities.<sup>86</sup>

**C. It is Unclear Whether the Proposed PM Emission Limitations for Dry Hammer Mills and Pellet Line Meet the State-BACT Requirements.**

The vendor information for the "Pelleting Line" indicates that there was a design change from cyclones to baghouses,<sup>87</sup> while the permit application indicates both control devices are planned, proposing "the combined use of cyclofilters and baghouses for controlling PM from the dry hammer mills and pellet line."<sup>88</sup> As this could impact the stringency of the emission limitations, this discrepancy must be clarified and corrected. Furthermore, the proposed determination must be supported by determinations and source tests conducted at other pellet mills.<sup>89</sup>

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<sup>84</sup> NSR Workshop Manual at B.11.

<sup>85</sup> For example, in terms of the Enviva Greenwood testing, the furnace there operated at an average heat input of 135 MMBtu/hr during the testing, and emitted NOx at a rate of 18.5 lb/hr. *See* Enviva Greenwood Test Report, at 20; *see also id.* at Appendix IG: Process Data, Table 4 at 212. The proper emission factor therefore is 0.137 lb/MMBtu, not the 52 lb/hr suggested by Port of Grays Harbor Wood Pellet Plan.  $(0.137 \text{ lb/MMBtu} * 1,648,100) / 2000 \text{ lbs/ton} = 129 \text{ tpy NOx.}$

<sup>86</sup> *See* SWCAA Letter, at PDF 4.

<sup>87</sup> Permit Application, Appendix D at PDF 19.

<sup>88</sup> Permit Application at 22.

<sup>89</sup> *See e.g.* SWCAA Letter at PDF 6; *see also id.* at PDF 7.

**D. The Proposed Emission Limitations for the Emergency Generator and Fire Pump Engines Do Not Reflect State-BACT Requirements.**

The permit applicant explains that a 300-kilowatt backup emergency generator would be installed at the proposed pellet mill. The diesel-fired engine for this generator would be certified to meet the emissions standards of 40 CFR 60, Subpart IIII and would be fired with ultra-low-sulfur diesel only. Other than emergency use, backup emergency engines are limited by 40 C.F.R. 60, Subpart IIII to no more than 100 hours per year of operation for maintenance checks and readiness testing.<sup>90</sup> The permit applicant further proposes that BACT/tBACT<sup>91</sup> for all pollutants emitted from the generator would be good combustion practices, following manufacturer's instructions for maintenance, and compliance with the applicable conditions for emergency engines from 40 CFR 60, Subpart IIII.<sup>92</sup> As discussed above, the permit applicant indicates there will be diesel engine(s) to run the emergency fire pumps.

Given that State-BACT is supposed to be based on the maximum degree of emission reduction achievable and the fact that this would be a new pellet mill, all diesel engines must meet Tier 4 emission standards as State-BACT limits. Tier 4 engines are readily available and, given that Tier 4 engines achieve the lowest emission rates of NOx, PM, and CO, such engines must be considered State-BACT for the firewater pump, emergency generator, and any other diesel engines at the proposed pellet mill.

**E. The Proposed SO<sub>2</sub> Requirements for the Drying Line Do Not Reflect State-BACT Requirements.**

As discussed above, the permit applicant's RBLC search did not yield any results to identify SO<sub>2</sub> controls applied to hog fuel or wet bark combustion. The permit applicant must search for additional controls beyond "good combustion practices" and supplement the permit application with the results of those efforts, proposing source-specific BACT requirements for the SO<sub>2</sub> emissions.

**F. State-BACT Determinations Must be Included for the Missing Emitting Units and Emission Sources.**

As discussed above, there are emissions and emission units that are not in the permit application. State-BACT analyses must be prepared for all of these and included in a supplemental permit application.

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<sup>90</sup> Permit Application at 24.

<sup>91</sup> *Id.*

<sup>92</sup> *Id.* at 24.

### **G. State-BACT Emission Limitations are Continuous Requirements and All Operating Scenarios Must Have State-BACT Determinations.**

The emission limitations established through the State-BACT analysis must be met continuously.<sup>93</sup> Despite these requirements, as discussed below, the permit application includes numerous alternative operating scenarios and the applicant fails to include proposed State-BACT emission limitations or work practices for these various scenarios. Thus, the permit application is incomplete.

First, the permit application does not include a proposed State-BACT analysis for the planned startups. It appears there was email correspondence from the permit applicant to ORCAA on these emissions, but that information is not available to the public. While ORCAA staff evaluated the permit applicant's emissions calculations and concurs with its assessment, the public cannot independently review that information. Though ORCAA explains it proposes startup constraints consistent with the cold startup descriptions provided by permit applicant, the public cannot access the adequacy of what ORCAA proposed without access to the underlying analysis.<sup>94</sup> Moreover, because the State-BACT emission limitations must be met continuously, the proposed pellet mill cannot be exempted from the State-BACT opacity limits, as is proposed.<sup>95</sup>

Second, during planned shutdowns, hot gases from both the furnace and dryer will be emitted through the emergency bypass stacks for these units until they are sufficiently cooled.<sup>96</sup> Alternative State-BACT emission limitations are not proposed during these events. The Preliminary Determination notes that it is "ORCAA's understanding" that the permit applicant "anticipates only two shutdowns of the furnace each year but assumed 10 for the air impacts analysis."<sup>97</sup> It is unclear what was assumed as inputs for the modeling for these events, as the modeling protocol was not disclosed as part of the public comment materials.

Third, during malfunctions and emergencies, the furnace automatically aborts to the furnace bypass stack in the event of a malfunction or emergency situation, like loss of power or failure of a critical piece of equipment.<sup>98</sup> Likewise, the dryer system automatically aborts to the dryer bypass stack due to similar events.<sup>99</sup> Whenever there is an abort, the furnace automatically switches to idle mode and emissions are exhausted through the bypass stack.<sup>100</sup> During malfunctions and emergencies, air emissions from the drying system may emit uncontrolled from the bypass stacks and exhaust through either of the bypass stacks is presumed to be in excess of

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<sup>93</sup> See ORCAA Rule 1.4 Definitions "'Emission standard' and 'emission limitation' means a requirement established under the FCAA or chapter 70.94 RCW [this chapter of Washington State law was recodified to 70A.15 RCW<sup>93</sup>] which limits the quantity, rate, or concentration of emissions of air contaminants on a continuous basis, including any requirement relating to the operation or maintenance of a source to assure *continuous emission reduction* and any design, equipment work practice, or operational standard promulgated under the FCAA or chapter 70.94 RCW."

<sup>94</sup> Preliminary Determination at 8.

<sup>95</sup> Preliminary Determination at 9.

<sup>96</sup> Preliminary Determination at 9.

<sup>97</sup> Preliminary Determination at 10.

<sup>98</sup> Preliminary Determination at 10.

<sup>99</sup> Preliminary Determination at 10.

<sup>100</sup> Preliminary Determination at 10.

the pollutant mass rate limits established in the approval order.<sup>101</sup> The permit applicant must not be excused from State-BACT requirements during these operations.

Fourth, the proposed pellet mill will also operate in a feedstock interruption mode, which is described as an idle-mode that may be triggered by a reduction or interruption of feedstock material to the dryer. Apparently, the permit applicant asserted in a communication with ORCAA that the furnace, dryer, dry hammer mills, and pellet coolers will all be exhausted through their respective air pollution control systems when there are feedstock interruptions,<sup>102</sup> but those communications were not made available as part of this public comment opportunity.

#### **V. The Proposed Conditions of Approval Authorize Bypass of the Air Pollution Controls, Unlawfully Excusing the Proposed Pellet Mill from Continuous Compliance with Case-by-Case Maximum Achievable Control Technology (MACT).**

Because the permit applicant intends to construct a major source of HAPS, a case-by-case MACT determination is necessary. The permit applicant has thus far proposed RTOs and RCOs to destruct the HAPs and achieve at least 95% and 96.3% destruction of VOCs. Unfortunately, the draft permit improperly allows the permit applicant to bypass air pollution controls that are required as MACT during periods of startup, shutdown and otherwise “as necessary,” apparently referring to malfunctions (“SSM exemptions”).<sup>103</sup>

These SSM exemptions are unlawful because they excuse the plant from continuous compliance with otherwise applicable emission limitations under Clean Air Act section 112. As explained by the D.C. Circuit in *Sierra Club v. EPA*, 551 F.3d 1019, 1027 (D.C. Cir. 2008), an emission limitation established under section 112 must be “continuous,” and therefore, a source cannot be exempted from compliance at any point. Specifically, the court found that a MACT standard under section 112 is an “emission standard,” and Clean Air Act section 302(k) defines “emission limitation” and “emission standard” as “a requirement established by the State or the Administrator which limits the quantity, rate, or concentration of emissions of air pollutants on a continuous basis.” *Id.* at 1021 (quoting 42 U.S.C. § 7602(k)); *see also* Clean Air Act § 112(g)(2)(B), 42 U.S.C. § 7412(g)(2) (providing that no new source may be constructed “unless the Administrator (or the State) determines that the maximum achievable control technology emission limitation under this section for new sources will be met,” and instructing that if the Administrator has not established such emission limitation, it shall be established on a case-by-case basis). ORCAA’s proposal to allow for bypass of the RTOs during periods of SSM is exactly the type of exemption from section 112 standards that the D.C. Circuit found to be unlawful. ORCAA must eliminate this unlawful exemption and ensure that the permit applicant is required to comply with section-112 standards at all times.

Additionally, ORCAA cannot excuse compliance with the numerical MACT limits by implementing a work practice standard. Under the plain language of the Act, work practice standards may only be implemented in two instances:

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<sup>101</sup> Preliminary Determination at 10.

<sup>102</sup> Preliminary Determination at 10.

<sup>103</sup> Recommended Conditions of Approval, ¶¶ 9, 10 at 37-38.

- A) When pollutants “cannot be emitted through a conveyance designed and constructed to emit or capture such pollutant;” or
- B) When “the application of measurement methodology to a particular class of sources is not practicable due to technological and economic limitations.”

42 U.S.C. § 7412(h)(1) and (2). The permit applicant has not demonstrated that it cannot route its emissions through a stack or measure those emissions during SSM events. Nor is it likely the permit applicant could do so. By the permit applicant’s own admission, during startup and shutdown it will continue to vent emissions through a stack. Additionally, the permit applicant has not claimed that it would be infeasible to measure emissions while operating the bypass stacks. In fact, in a permit application for another pellet mill, that company states explicitly that emissions associated with bypass events “were calculated based on stack testing data from comparable Enviva facilities.”<sup>104</sup>

**VI. The Permit Applicant Must Prepare and Submit a Permit Application to the Department of Ecology for PSD BACT for CO and CO<sub>2e</sub> Emissions.**

Once all stack and fugitive emissions estimates have been obtained through detailed engineering analysis of each emissions unit using the best available data or estimating technique, which as discussed above has not been done, the next step is to compare the potential emissions of each of the pollutants from the proposed pellet mill to the 100 TPY PSD major source threshold. Moreover, the potential to emit of CO is greater than 250 TPY. Because the Proposed Pellet Plant is classified as a major source because of the estimated CO emissions, the entire source is classified as a major source.

Furthermore, because the CO emissions (and any other pollutants) trigger the PSD major source permitting requirements, the proposed pellet mill must also evaluate whether the proposed CO<sub>2e</sub> emissions trigger the major source PSD requirements. CO<sub>2e</sub> emissions from the proposed pellet mill are estimated at 163,592, which exceeds the PSD major source threshold of 100,000.<sup>105</sup> Therefore, the proposed pellet mill is subject to CO<sub>2e</sub> BACT for the units with CO<sub>2e</sub> emissions (*i.e.*, the Dry Hammer Mill and Pellet Cooler, and the Drying Line). The permit applicant must prepare and submit PSD BACT determinations to the Washington State Department of Ecology.

**VII. The Permit Application Contains Deficient and Inaccurate Ambient Air Modeling.**

**A. The Permit Applicant Must Correct the Missing and Inaccurate Information and Rerun the AERMOD Model Using the Current Model Version.**

Once the corrections to the inaccurate and missing emission estimates are made, the air dispersion model inputs must incorporate the changes to the criteria pollutants and the model

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<sup>104</sup> Enviva Pellets Lucedale, Application for Initial State Permit to Construct, at 3.7.2 and 3.7.3. at 9 (Sept. 2018) (Attachment EE).

<sup>105</sup> Permit Application, Appendix C, Table C-1 at PDF 3.

must be rerun. Additionally, the permit applicant used version v22112 of AERMOD.<sup>106</sup> That version is outdated—the current EPA-approved version of AERMOD is v23132,<sup>107</sup> which must be used when the model is rerun for the proposed pellet mill. Notably, the current regulatory version of AERMOD will assist with evaluation of emissions from the marine vessels.<sup>108</sup>

Furthermore, the modeling protocol documents must be made available to the public. Much of the detailed information about the modeling analysis is not available to the public. For example, the Preliminary Determination notes that it is “ORCAA’s understanding” that the permit applicant “anticipates only two shutdowns of the furnace each year but assumed 10 for the air impacts analysis.”<sup>109</sup> It is unclear what was assumed as emission inputs in the modeling for these events, as the modeling protocol was not disclosed as part of the public comment materials.

## **B. Ambient Air Background Concentration Data Used Does Not Represent Current Conditions.**

The Clean Air Act and implementing regulations establish a program for PSD permit applicant collection and submission of twelve months of ambient air quality monitoring data, for the year preceding the date of permit application, showing pollutant concentrations at the site of the proposed facility and in areas that may be affected by emissions from that facility.<sup>110</sup> These data may then be used, in conjunction with other information, to demonstrate the proposed facility’s compliance with the NAAQS and PSD increments.<sup>111</sup> The permit applicant needs to collect ambient air quality measurements documenting baseline conditions representative of the current air quality at the project site, or otherwise demonstrate that it meets the applicable monitoring exemptions under the applicable regulations.<sup>112</sup> The permit applicant used ambient air quality estimations that fail to document current conditions.<sup>113</sup> The background concentration information was obtained from Idaho, which is described as “modeled and monitoring data from July 2014 through June 2017.”<sup>114</sup> That data contains estimated values, is between six and nine

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<sup>106</sup> Permit Application, Appendix F, Model Inputs and Outputs, at PDF 3. (Attachment FF). (“Permit Application, Appendix F”).

<sup>107</sup> EPA, Air Quality Dispersion Modeling - Preferred and Recommended Models, Memo on release of this version (Oct. 12, 2023), available at <https://www.epa.gov/scram/air-quality-dispersion-modeling-preferred-and-recommended-models>. (Attachment GG).

<sup>108</sup> *Id.* at 4. (“Perhaps the most substantial update to AERMET is the addition of the Coupled Ocean Atmosphere Response Experiment (COARE) air-sea flux procedure for processing meteorological data representative of a marine boundary layer needed for modeling offshore sources.”)

<sup>109</sup> Preliminary Determination at 10.

<sup>110</sup> 42 U.S.C. §7475(a)(7), (e); 40 C.F.R. § 52.21(m).

<sup>111</sup> See NSR Workshop Manual at C.16-21.

<sup>112</sup> 40 C.F.R. § 52.21(m)(1)(iv)(“In general, the continuous air quality monitoring data that is required shall have been gathered over a period of at least one year and shall represent at least the year preceding receipt of the application, except that, if the Administrator determines that a complete and adequate analysis can be accomplished with monitoring data gathered over a period shorter than one year (but not to be less than four months), the data that is required shall have been gathered over at least that shorter period.”)

<sup>113</sup> Permit Application at PDF 41.

<sup>114</sup> Permit Application at PDF 41 (“Background concentrations in Table 8 were obtained from NW-AIRQUEST. For each pollutant and averaging period, the concentration of the closest grid point to the proposed facility (coordinates 46.99, -123.89) was used.”), citing Idaho DEQ, Background Concentrations 2014-2017, available at <https://idahodeq.maps.arcgis.com/apps/MapSeries/index.html?appid=0c8a006e11fe4ec5939804b873098dfe>.

years old, and does not represent current background ambient monitoring conditions. A permit applicant cannot substitute ambient data unless it is deemed “sufficiently representative of air quality in the targeted area — in terms of the sufficiency of the monitoring locales selected and the quality and currentness of the monitoring data — to legitimately be substituted for site-specific data.”<sup>115</sup> The permit applicant has not complied with the baseline monitoring requirements because it has relied upon data which is out of date and no longer representative of baseline air quality conditions.

### C. The Permit Application Fails to Include Modeling Runs for the Range of Operating Conditions.

Ambient impacts were estimated based on continuous operation and maximum PTE for all pollutants evaluated,<sup>116</sup> but the proposed pellet mill does not plan to operate in that manner. Other foreseeable operating scenarios include “cold” startup,<sup>117</sup> planned shutdowns,<sup>118</sup> and idle mode.<sup>119</sup> Additionally, based on email correspondence – which were not included in the materials available for public review – the permit applicant also plans bypass events where emission control technology is not in use.<sup>120</sup> For example, for the drying line, the vendor information includes a heat energy system with an emergency exhaust stack for bypass events.<sup>121</sup> Documentation provided by the permit applicant via email of emission estimates during the range of foreseeable operating scenarios (including the bypass events) was not included in the materials made available during this public comment period.<sup>122</sup> Thus, there is no way for the public to assess assertions that maximum PTE for all pollutants were evaluated and modeled.

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<sup>115</sup> *In re Vulcan Materials, LP*, 15 E.A.D. 163, 176 (EAB 2011); *see also In re Northern Michigan University*, 14 E.A.D. 283, 325 (EAB 2009), *citing* NSR Workshop Manual at C.18-19; *see also, e.g., In re Knauf Fiber Glass, GMBH*, 8 E.A.D. 121, 145-48 (EAB 1999); *see also In re Haw. Elec. Light Co.*, 8 E.A.D. 66, 97-105 (EAB 1998); *see also In re Hibbing Taconite Co.*, 2 E.A.D. 838, 850-51 (EAB 1989).

<sup>116</sup> Preliminary Determination at 27, 29.

<sup>117</sup> Preliminary Determination at 14.

<sup>118</sup> Preliminary Determination at 9-10.

<sup>119</sup> Preliminary Determination at 10.

<sup>120</sup> Preliminary Determination at 8.

<sup>121</sup> Permit Application, Appendix D at PDF 36 (“**Emergency Abort Stack** To vent Dryer System gasses to atmosphere during upset operating conditions At times the Dryer System flue gas will need to be aborted to atmosphere during upset operating conditions; rather than sending these flue gasses to the Pollution Control Equipment or to the Heat Energy System. The Emergency Abort Stack provides the ability to vent gases to atmosphere during upset operating conditions. The control damper is air actuated and is fail safe; if there is a power outage or air failure the Emergency Abort Stack will automatically open.”); *see also id.* at PDF 39. (“Mounted on top of the Furnace and includes automatic hydraulic damper. The purpose of the Emergency Stack is to open at high temperature and/or high pressure in the system and at power failures. It is fabricated from mild steel and refractory-lined for the first 5 feet above the furnace roof. The remainder of the stack is made of stainless steel and includes one pneumatically operated damper on top as a stack cap. Stack cap is made of stainless steel and also has refractory lining.”); *see also id.* at PDF 27 (“Wet hammer mills feeding chain conveyor It receives the chips from the previous chain conveyor (pos 5.2.4). It includes two intermediate outlets to feech each of the wet hammer mills and a final outlet as emergency exit.”)

<sup>122</sup> *See e.g.* Preliminary Determination at 8-9.

## **VIII. The Draft Approval Order's Terms and Conditions are Insufficient to Ensure Compliance with the Clean Air Act.**

### **A. The Final Approval Order Must Contain When and How Often Stack Testing is Required.**

The recommended conditions of approval fail to specify when and how often the permit applicant must conduct the initial and periodic stack tests in order to demonstrate compliance with the emission limits for PM<sub>10</sub> (filterable and condensable), VOCs, CO, NO<sub>x</sub>, and HCl.<sup>123</sup> The recommended conditions fail to include testing for PM and PM<sub>2.5</sub>, which must also be added. The approval order must require simultaneous NO<sub>x</sub> and CO stack testing, otherwise the owner/operator can tune to reduce one and then the other.

Although we appreciate that ORCAA has specific test methods, the current compliance testing requirements are insufficient to ensure that the proposed pellet mill is in continuing compliance with its emission limits. In order to demonstrate continuous compliance, the conditions of approval must require both initial and periodic stack testing.<sup>124</sup> Emissions at wood pellet plants are highly variable, meaning that stack testing at a facility may indicate compliance one year and non-compliance the next. In fact, emissions from wood pellet plants have been shown to vary by more than 100% from one year to the next. For example, testing just a year apart on pellet coolers at a Georgia pellet plant produced an emission factor that was twice as high as the initial compliance testing, with no modification or other operating changes apparently responsible.<sup>125</sup> Additionally, where pellet plants have tested multiple identical units at the same time, those tests have shown a large variability in emissions. The Drax Amite wood pellet plant in Gloster, Mississippi, tested all six of its hammermills for VOC emissions,<sup>126</sup> and the results are below:

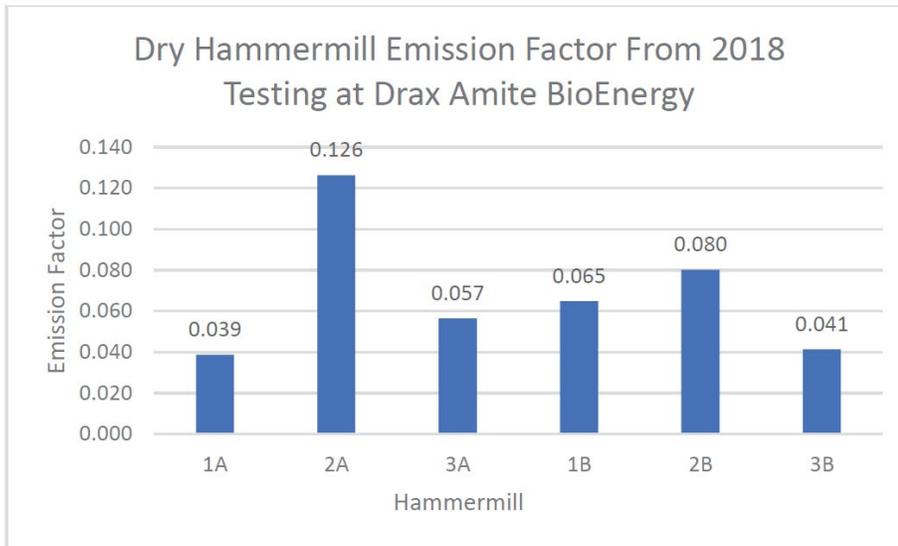
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<sup>123</sup> Preliminary Determination, at 35, (Recommended Conditions of Approval ¶ 5).

<sup>124</sup> See e.g., *supra* n.14 (State-BACT continuous requirement); see also *supra* n.15.

<sup>125</sup> Compare August 28, 2014, stack tests on the pellet coolers at Hazlehurst Wood Pellets in Georgia (producing an emission factor of 0.30 lb/ODT), with testing at the same plant conducted on December 16, 2015 (producing an emission factor of 0.62 lb/ODT) (test excerpts at Attachment HH).

<sup>126</sup> Letter from Keith W. Turner, legal counsel for Amite Bioenergy, to Tim Aultman, Environmental Compliance & Enforcement Division, MDEQ (Nov. 5, 2018) (Attachment II).



These results highlight the variability even between identical units tested simultaneously. For example, the test for hammermill 2A demonstrated VOC emissions that were vastly higher than emissions from hammermill 1A, with no design or operational distinction responsible. In the present context, this graph shows how two consecutive tests could readily show emissions that are significantly lower than worst case emissions when the reality is that outside of those two tests emissions are much higher on average.

In order to demonstrate continuing compliance with its emission limits, the conditions of approval must subject the proposed pellet mill to annual compliance testing, with the initial compliance test occurring no later than 180 days after the initial start-up after the facility’s construction and without the possibility of less frequent testing.<sup>127</sup> As a preliminary matter, ORCAA should incorporate a firm deadline for initial compliance testing into the conditions of approval as an enforceable condition, rather than setting such deadline at a later time, which would not be subject to public review and enforcement. ORCAA must also, at a minimum, amend the proposed conditions of approval to require annual source testing. North Carolina’s Department of Environmental Quality decided to require annual stack testing—without the possibility of less frequent testing—at three Enviva plants undergoing modifications.<sup>128</sup> There is no reason why ORCAA should not require the same from the permit applicant for the proposed pellet mill.

<sup>127</sup> See *supra* n.14; see also *supra* n.15.

<sup>128</sup> See North Carolina DEQ, Air Quality Permit No. 10365R03 for Enviva Pellets Hamlet, LLC, at Condition 2.2.A.2.d. at 12 (Jan. 14, 2019), available at <https://deq.nc.gov/about/divisions/air-quality/air-quality-permitting/wood-pellet-industry-permitting-actions-and#enviva-pellets-hamlet> (Attachment JJ); North Carolina DEQ, Air Quality Permit No. 10386R04 for Enviva Pellets Sampson, LLC, at Condition 2.2.A.1.e. at 14-15 (Oct. 2, 2019), available at <https://deq.nc.gov/about/divisions/air-quality/air-quality-permitting/wood-pellet-industry-permitting-actions-and#enviva-pellets-sampson> (Attachment KK); North Carolina DEQ, Air Quality Permit No. 10203R06 for Enviva Pellets Northampton, LLC, at Condition 2.2.A.3.f. at 15-16 (Oct. 30, 2019), available at [https://files.nc.gov/ncdeq/Air%20Quality/permits/2019\\_public\\_notice\\_documents/Enviva-Northampton---Final-Permit-Signed.pdf](https://files.nc.gov/ncdeq/Air%20Quality/permits/2019_public_notice_documents/Enviva-Northampton---Final-Permit-Signed.pdf) (Attachment LL).

Finally, ORCAA must include requirements to test not only the emission rate but the destruction efficiencies of the RTOs and RCOs. As discussed above, ORCAA must establish case-by-case MACT limits that are expressed as 95% VOC destruction for the dryer RTO, as well as 96% VOC destruction for the RCO. Merely testing the outlet of the RTO/RCO will not demonstrate whether the units are meeting the MACT limits. Instead, ORCAA must require the permit applicant to test both the inlets and outlets of these units in order to ensure compliance with the MACT limits.

## **B. The Approval Conditions Must Include Detailed Reporting Requirements.**

The proposed approval conditions require recording many data points directly related to emissions, such as pellet production, dryer and green hammermill throughputs, start-up, shut-down, and malfunction occurrences, and control device parameters. However, they only require the permit applicant to report a selective minimum of this data to ORCAA.<sup>129</sup> Complete reporting is crucial to effective public oversight. It is difficult or downright impossible for members of the public to access this information without a reporting requirement, and the lack of access to these records seriously hinders citizen enforcement, which is a key component of the Clean Air Act. Given the documented history in this industry of numerous, serious exceedances in recent years, public oversight is especially important.<sup>130</sup> Accordingly, ORCAA must amend the conditional approval conditions to require the permit applicant to report the data points in its semi-annual reports.

Moreover, there are several important data points, including the emissions calculations and the facility's actual emissions of relevant criteria pollutants and hazardous air pollutants, as well as the facility's wood feedstock mix, which are completely excluded from both the recordkeeping and reporting requirements. In order for the emission limits to be considered enforceable, they must be accompanied by monitoring, recordkeeping, and reporting sufficient to ensure and verify compliance at all times.<sup>131</sup>

Finally, ORCAA must specifically include a requirement to monitor and report the heat input of the facility's furnaces in order to ensure compliance with the facility's NO<sub>x</sub> emission limits. As discussed above, complying with the wood pellet production limit and related monitoring is insufficient to ensure NO<sub>x</sub> emissions are met. ORCAA must remedy this by requiring monitoring, recordkeeping, and reporting of the heat input values and correlated NO<sub>x</sub> emissions.

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<sup>129</sup> Preliminary Determination, at 40, (Recommended Conditions of Approval ¶ 16).

<sup>130</sup> Environmental Integrity Project, Dirty Deception: How the Wood Biomass Industry Skirts the Clean Air Act (April 26, 2018), <https://www.environmentalintegrity.org/wp-content/uploads/2017/02/Biomass-Report.pdf>. (Attachment MM).

<sup>131</sup> U.S. EPA, Guidance Limiting Potential to Emit in New Source Permitting, at 17 (June 13, 1989), *available at* [https://www3.epa.gov/airtoxics/pte/june13\\_89.pdf](https://www3.epa.gov/airtoxics/pte/june13_89.pdf) ("Specific test methods, compliance monitoring and recordkeeping and reporting requirements are necessary to make permit limitations enforceable as a practical matter."). (Attachment NN).

### **C. ORCAA Must Remove the Provisions that Provide for Director’s Discretion.**

Several provisions in the Recommended Conditions of Approval give ORCAA the authority to approve alternate or equivalent test methods that are not EPA-approved test methods.<sup>132</sup> ORCAA’s proposal does not explain what criteria and process it would use to approve all the alternative methods allowed under the proposed conditions. ORCAA’s alteration or elimination of EPA-required test methods can have no effect for purposes of federal law unless and until EPA ratifies those alternatives, including provisions for public notice and comment. Moreover, Section 113 of the Act allows EPA to enforce against “any requirement or prohibition of an applicable implementation plan or permit” and any “requirement or prohibition of any rule, order, waiver or permit promulgated, issued, or approved under [the Act].”<sup>133</sup> It is unclear whether an ORCAA approved alternative method using the proposed provisions would allow for EPA enforcement. Similar concerns are present for citizen suits under section 304.<sup>134</sup> ORCAA must remove these provisions.

### **D. ORCAA Must Require Implementation of Source-Specific Fugitive Dust Requirements.**

Wood pellet plants generate a lot of fugitive dust, *i.e.*, airborne particulate matter. In fact, one of the most common air pollution complaints raised by residents of communities where wood pellet plants are located is the large amount of fugitive dust that escapes into surrounding neighborhoods.<sup>135</sup> For example, in 2017 Mississippi’s Department of Environmental Quality issued a Notice of Violation to the Enviva plant in Amory, describing “multiple complaints over the past year pertaining to sawdust and smoke leaving the [Enviva Amory] facility impacting neighboring properties and vehicles.”<sup>136</sup> A local alderman described the impacts on residents of his ward, who said “are wheezing, coughing and constantly washing dust of their vehicles generated by the Enviva pellet plant.”<sup>137</sup> Additionally, residents living near Enviva’s Northampton, North Carolina plant expressed frustration over dust, with one resident who lives across the street from the plant complaining about dust coating his car and house: “I have to wash [my house] every two to three months, my vehicle every two to three days.”<sup>138</sup> Considering

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<sup>132</sup> See *e.g.* Preliminary Determination, at 36, (Recommended Conditions of Approval ¶ 6(e), which would allow for equivalent methods for testing PM10 and equivalent methods for testing formaldehyde and methanol).

<sup>133</sup> 42 U.S.C. §§ 7413(a)(1), (a)(3), (b)(1), (b)(2).

<sup>134</sup> See 42 U.S.C. § 7604(f) (defining the scope of citizen suit actions).

<sup>135</sup> For example, in 2014, residents of West Monroe, Louisiana publicized their ongoing concerns regarding large amounts of fugitive dust released from the Bayou Wood Pellet Plant. See Zach Parker, Homeowners Seek EPA’s Help with Pollution Complaints, *The Ouachita Citizen* (Nov. 5, 2014), [http://www.hannapub.com/ouachitacitizen/news/local\\_state\\_headlines/homeowners-seek-epa-s-help-with-pollution-complaints/article\\_5d11a19e-650b-11e4-8331-001a4bcf6878.html](http://www.hannapub.com/ouachitacitizen/news/local_state_headlines/homeowners-seek-epa-s-help-with-pollution-complaints/article_5d11a19e-650b-11e4-8331-001a4bcf6878.html) (Attachment OO).

<sup>136</sup> Mississippi Department of Environmental Quality, Notice of Violation for Enviva Pellets Amory at 1 (May 23, 2017) (Attachment PP).

<sup>137</sup> Monroe Journal, Amory Board of Alderman Discusses Deficit, Dust Complaints and a Tank at PDF 4 (Oct. 13, 2016) (Attachment QQ).

<sup>138</sup> North Carolina DEQ, Enviva Northampton Public Hearing Audio, at 29:04 (dust complaint by Anthony Robinson) (Aug. 20, 2019), available at <https://deq.nc.gov/about/divisions/air-quality/air-quality-permitting/wood->

the fact that the owner/operator of the proposed pellet mill does not have a track record in this industry, ORCAA should take a proactive stance to protect those living nearby from fugitive dust, those working and attending school at the three schools nearby the proposed pellet mill, as well as the airshed of the nearby airport.

Major sources of fugitive dust at wood pellet plants include wood handling, wood storage piles, conveyor transfer points, yard dust, haul road dust, and engine exhaust.<sup>139</sup> Health problems associated with exposure to particulate matter pollution primarily involve damage to the lungs and respiratory system due to inhalation. Specifically, the inhalation of dust particles can irritate the eyes, nose, and throat; cause respiratory distress, including coughing, difficulty breathing, and chest tightness; increase the severity of bronchitis, asthma, and emphysema; cause heart attacks and aggravate heart disease; and lead to premature death in individuals with serious lung or heart disease.<sup>140</sup> When exposed repeatedly over a longer time period, fugitive dust exposure can lead to severe illness such as cancer.<sup>141</sup> In addition to affecting human health, fugitive dust reduces visibility, affects surface water, reduces plant growth, and can be a nuisance.

The proposed conditional approval merely includes a provision requiring the permit applicant to have a “dust prevention plan,” which is one of the eight plans required in the draft approval order.<sup>142</sup> Thus, there are no conditions for the public to review and comment on or enforce that will resolve the fugitive dust issues that come from operation of a wood pellet plant. To address these concerns and provide for the protection of nearby communities, ORCAA must amend the proposed conditional approval conditions to include actual stringent requirements tailored to wood pellet operations in order to prevent fugitive dust emissions from becoming airborne. These include requiring windbreaks or enclosed structures for storage piles, minimizing drop heights and transfer points, and watering or coverings where necessary.

#### **E. The Opacity Monitoring is Not Effective to Detect and Remedy Excess Emissions.**

The proposed approval conditions contain one method to monitor visible emissions in order to detect excess particulate matter emissions: the facility is required to conduct Method 9 tests for the drying line and pellet mill.

The requirement fails to specify when and how frequently testing must be conducted, so the provisions are vague and unenforceable. Additionally, testing requirements must be periodic because merely requiring initial compliance testing, and no Method 9 observation on any of the other units, would be insufficient to ensure compliance with the opacity limits. Visible emissions

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pellet-industry-permitting-actions-and; *see id.* at 2:02:19 (dust complaint by Sybaleen Auston) (discussing her family’s history of COPD, asthma, and allergies, and stating that “[w]e deal with enough—the air we’re breathing, the traffic from the trucks, the grit, dirt on the cars, homes”), 2:35:23 (dust complaint by Richard Harding) (discussing his health issues and stating, “I cannot deal with dust [from the plant]”).

<sup>139</sup> British Columbia, Ministry of the Environment, Air Emissions Fact Sheet: Wood Pellet Manufacturing Facilities (July 2011) (Attachment RR).

<sup>140</sup> New Hampshire Department of Environmental Services, Environmental Fact Sheet, Fugitive Dust, *available at* <https://www.des.nh.gov/land/roads/fugitive-dust> (Attachment SS); *see also* Stelte, *supra* n.40, at 6.

<sup>141</sup> Stelte, *supra* n.40, at 6.

<sup>142</sup> Preliminary Determination, at 39-40, (Recommended Conditions of Approval ¶ 13).

are generally caused by malfunctions and poor operating practices; these issues are least likely to occur when the facility has been aware of the date of stack testing and been able to optimize operations in advance. Finally, nothing in the proposed approval order requires any Method 9 observations at any time for any unit other than the RTO and RCO.

In short, nothing in the proposed approval order requires this facility to take any specific measures to determine the degree of opacity and compliance with the 20% opacity limits. Merely requiring vague compliance by including the test method is not an effective or enforceable way to limit visible emissions and comply with the opacity standards.

ORCAA must require visible emissions monitoring that at least requires daily monitoring consistent with Method 9 that determines the degree of opacity and whether or not the facility is complying with the opacity limits. In particular, we encourage ORCAA to follow the method established by Georgia in the permit condition for a wood pellet mill set out below:<sup>143</sup>

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<sup>143</sup> Georgia EPD, Draft Part 70 Operating Permit No. 2499-161-0023-V-02-4 for Hazlehurst Wood Pellets, at Condition 5.2.8 at 12-13 (Sept. 2019) (Attachment TT).

5.2.8 The Permittee shall perform daily checks of visible emissions from Log Storage/Handling, Debarking/Screening, Chipper, and Chip Piles (WOOD); Green Hammermills (GHM1&2); Furnace/Dryer RTO stack (S1), and the Dry Hammermill/Press/Cooler RCO stack (S2) while the underlying process equipment is operating at the normal, expected operating rate using the procedures below, except when atmospheric conditions or sun positioning prevent any opportunity to perform a VE check. The Permittee shall retain a record in a daily visible emissions (VE) log suitable for inspection or submittal.

[391-3-1-.02(6)(b)1]

- a. Determine, in accordance with the procedures specified in paragraph d of this condition, if visible emissions are present at the discharge point to the atmosphere and record the results in the daily VE log. For sources that exhibit visible emissions, the Permittee shall comply with paragraph b of this condition.
- b. For each check where a stack is determined to be emitting visible emissions, a qualified observer shall determine whether the emissions equal or exceed a 20% opacity action level, using the procedure specified in paragraph d of this condition. For the purposes of this condition a qualified observer is one that has met the certification requirements of EPA Method 9 – *Visual Determination of the Opacity of Emissions from Stationary Sources*. Also, this determination shall cover a period of six minutes. The results shall be recorded in the daily VE log. For sources that exhibit visible emissions of greater than or equal to the opacity action level of 20%, the Permittee shall comply with paragraph c of this condition.
- c. For each occurrence that requires action in accordance with paragraph b of this condition, the Permittee shall determine the cause of the visible emissions and correct the problem in the most expedient manner possible. The Permittee shall note the cause of the visible emissions, raw material feed rate, and any other pertinent operating parameters as well as the corrective action taken, in the maintenance log.
- d. The person performing the determination shall stand at a distance of at least three stack heights, which is sufficient to provide a clear view of the plume against a contrasting background with the sun in the 140 degree sector at his/her back. Consistent with this requirement, the determination shall be made from a position such that the line of vision is approximately perpendicular to the plume direction. Only one plume shall be in the line of sight at any time when multiple stacks are in proximity to each other.

**F. The Proposed Approval Conditions Are Utterly Devoid of a Mechanism to Monitor Facility-Wide Emissions and Compliance with PTE Limits.**

The proposed approval conditions contain conditions that include facility-wide annual limits.<sup>144</sup> Nothing in the draft approval order, however, explicitly requires the permit applicant to monitor its emissions or explain how the company shall do so. For instance, the conditions are silent on what emission factors the permit applicant shall use and which sources must be included in the plantwide calculation. In order to be enforceable, PTE limits such as those in the proposed approval conditions must be accompanied by appropriate monitoring, recordkeeping, and reporting such that compliance can be ascertained at any time.<sup>145</sup> While source testing and parametric monitoring are necessary aspects of such monitoring, they do nothing to monitor emissions on a rolling basis.

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<sup>144</sup> Preliminary Determination, at 36, (Recommended Conditions of Approval ¶ 7).

<sup>145</sup> *In the Matter of Orange Recycling & Ethanol Prod. Facility, Pencor-Masada Oxydol, LLC*, Order on Petition No. II-2001-05 (April 8, 2002), at 7, available at [https://www.epa.gov/sites/production/files/2015-08/documents/masada-2\\_decision2001.pdf](https://www.epa.gov/sites/production/files/2015-08/documents/masada-2_decision2001.pdf).

EPA has explained the underlying principle behind the monitoring that must accompany practically enforceable PTE limits:

In order to be considered practically enforceable, an emissions limit must be accompanied by terms and conditions that require a source to effectively constrain its operations so as to not exceed the relevant emissions threshold. These terms and conditions must also be sufficient to enable regulators and citizens to determine whether the limit has been exceeded and, if so, to take appropriate enforcement action.<sup>146</sup>

Without including an enumeration of the specific algorithms and emission factors the permit applicant shall use to monitor its emissions in between stack tests, the proposed conditions do not “enable regulators and citizens to determine whether” the facility is complying with the emission limits. Specifically, it is not clear whether the permit applicant will include emissions from insignificant activities (as is required by law<sup>147</sup>), or how the permit applicant must quantify emissions from sources like the handling and storage operations, for which there is no requirement to track throughput or emissions.

## **IX. ORCAA Cannot Rely on the Project’s Invalid Determination of Non-Significance to Meet its SEPA Obligations.**

On July 25, 2023, the City of Hoquiam issued a Determination of Non-Significance (“DNS”) for PNWRE’s proposal to build its industrial wood pellet facility, a decision that exempted the proposal from full review under the State Environmental Policy Act (“SEPA”), RCW 43.21C. The PNWRE DNS review was limited to the immediate environmental impacts of constructing and operating the facility; it is deeply flawed in at least two major respects: (1) it contains serious errors even in its limited calculations with respect to air pollution emissions at the facility, including greenhouse gases, VOCs, and HAPs, and (2) it fails to conduct a lifecycle greenhouse gas analysis of the direct and indirect greenhouse gas impacts of producing, transporting, and burning the wood pellets.

### **A. Legal Requirements.**

SEPA “sets forth a state policy of protection, restoration and enhancement of the environment.” *Polygon Corp. v. City of Seattle*, 90 Wn.2d 59, 63 (1978); RCW 43.21C.010. SEPA’s policies and goals overlay and add to existing authorizations of all branches of government. RCW 43.21C.060. The purpose of an Environmental Impact Statement (“EIS”) is to ensure that SEPA’s policies are an integral part of the actions of state and local government such that the EIS is actually used by, and informs the decision of, those government agencies. WAC 197-11-400. “The primary function of an EIS is to identify adverse impacts to enable the

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<sup>146</sup> *Id.* (emphasis added); see also *In re Piedmont Green Power, LLC*, Order on Petition No. IV-2015-2, at 14 (Dec. 13, 2016), available at [https://www.epa.gov/sites/production/files/2016-12/documents/piedmont\\_response2015.pdf](https://www.epa.gov/sites/production/files/2016-12/documents/piedmont_response2015.pdf).

<sup>147</sup> The definition of PTE does not make any exceptions for emissions deemed insignificant. 40 C.F.R. § 52.21(b)(4). In determining compliance with PTE limits, sources such as the proposed pellet mill must include all non-fugitive emissions.

decision-maker to ascertain whether they require either mitigation or denial of the proposal.” *Victoria Tower P’ship v. City of Seattle*, 59 Wn. App. 592, 601 (1990).

SEPA and its implementing regulations explicitly require consideration of direct and indirect climate impacts. *See* RCW 43.21C.030(f) (directing agencies to “recognize the world-wide and long-range character of environmental problems”). Under SEPA, an agency must consider both the direct and “indirect” impacts of its decision. WAC 197-11-060(4)(d) (“Impacts include those effects resulting from growth caused by a proposal, as well as the likelihood that the present proposal will serve as a precedent for future actions.”). “In assessing the significance of an impact, a lead agency shall not limit its consideration of a proposal’s impacts only to those aspects within its jurisdiction, including local or state boundaries.” WAC 197-11-060(4)(b); *Cheney v. City of Mountlake Terrace*, 87 Wn.2d 338, 344 (1976) (“Implicit in the statute is the requirement that the decision makers consider more than what might be the narrow, limited environmental impact of the immediate pending action. The agency cannot close its eyes to the ultimate probable environmental consequences of its current action.”) For projects involving the transportation or use of fuels like wood pellets, SEPA (like its federal counterpart, NEPA) must consider the lifecycle impacts of producing, transporting, and using such fuels.<sup>148</sup> *Columbia Riverkeeper v. Cowlitz Cty.*, 2017 WL 10573749, at \*7-10 (SHB Sept. 15, 2017) (EIS for methanol project invalid for failing to consider lifecycle GHG emissions); WAC 197-11-444(1)(b)(iii) (listing “climate” among elements of environment to be considered in SEPA).

### **B. The DNS Air Emission Calculations Are Wrong.**

As discussed throughout these comments, the air emission calculations in the Application are wrong in numerous and significant ways. These same calculation errors and omissions are reflected in the DNS, leading to a major under-calculation of air emissions. These errors render the DNS invalid, and ORCAA must undertake a new and full environmental review before it considers the requested construction permit.

### **C. The DNS Did Not Disclose and Consider All Climate Impacts From Greenhouse Gas Emissions.**

PNWRE failed to review all direct and indirect greenhouse gas emissions in its SEPA Checklist. NOC Application, Appendix A. The SEPA Checklist arrives at a total greenhouse gas emission estimate of 163,592 tons CO<sub>2e</sub> annually. NOC Application Table 1. The calculations do not include truck emissions to and from wood sources, marine vessel transportation emissions to and from ports in Japan and Asia, and the ultimate burning of the fuel in industrial power plants.

This failure to calculate and consider the full lifecycle greenhouse gas emissions violates SEPA, and ORCAA cannot validly rely on such a flawed analysis. Because the DNS fails to account for the total expected greenhouse gas emissions caused by the PNWRE proposal, and because those emissions will have a significant and detrimental environmental impact, the DNS is invalid, and ORCCA cannot rely on it to issue the requested Notice of Construction Application.

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<sup>148</sup> NEPA and its implementing case law are used in Washington to discern the meaning of SEPA. *Kucer v. State Dep’t of Transp.*, 140 Wn.2d 200, 215-16 (2000).

#### **D. ORCAA Must Deny the NOC Application and Undertake Its Own Full SEPA Review of the Project's Air Emissions.**

ORCAA cannot rely on this invalid DNR to meet its own SEPA obligations. Instead, ORCAA must deny the NOC Application and conduct its own SEPA review in an EIS that validly reviews the significant air pollution caused by this project, including all VOCs, HAPs, and greenhouse gas lifecycle emissions.

This would not be the first time that a Washington Clean Air Agency has needed to undertake its own analysis to comply with SEPA. Recently, the Puget Sound Clean Air Agency ("PSCAA") initiated and completed its own supplemental environmental review for a proposed liquefied natural gas terminal in Tacoma because the final EIS for that project did not consider lifecycle greenhouse gas emissions. *See* <https://pscleanair.gov/636/PSE---LNG-Facility-Tacoma>. PSCAA used the supplemental EIS in its review of the NOC Application. ORCAA must take similar steps here to comply with SEPA.

#### **Conclusion**

In short, ORCAA cannot validly finalize the proposed Approval Order. To issue an Approval Order with the recommended conditions of approval as proposed would not only be unlawful under the authority granted under the EPA-approved SIP and the federal Clean Air Act, but would conflict with the State's requirements for assessment and control of hazardous air pollutants. As discussed in these comments, the permit application is materially incomplete because the following are missing: the required PSD applicability determination for classification as a fuel conversion plant; and accounting for VOC and CO emissions from the five wood pellet storage silos. The permit application also includes a woefully inadequate estimate for HAPs, which must be revised, and a case-by-case MACT determination conducted. Furthermore, there are numerous emission units and emission sources missing from the permit application. The permit application fails to address the Act's regional haze requirements. Critically, the permit application's State-BACT determinations are flawed and incomplete. Those flawed determinations do not reflect State-BACT requirements.

Moreover, when the facility-wide potential to emit calculations are corrected and the missing units are added, the proposed pellet mill triggers major source PSD for several pollutants (at both the 100 TPY and 250 TPY thresholds). Based on the revised facility-wide potential to emit estimates and additional comments, the proposed pellet mill would be:

- A major source of HAPs (and required to conduct a case-by-case Maximum Achievable Control Technology analysis and determination)
- Trigger PSD major source requirements for CO emissions (at both the 100 TPY and 250 TPY thresholds)
- Trigger PSD major source requirements for VOCs (at the 100 TPY threshold)
- Trigger PSD major source requirements for NO<sub>x</sub> (at the 100 tpy threshold)
- Trigger PSD major source requirements for PM (at the 100 tpy threshold)

Since the proposed pellet mill appears to be a major stationary source and subject to the requirements of the PSD permit program, ORCAA's issuance of the proposed approval order would be contrary to the Congressional purposes of the PSD program to:

- Protect health and welfare;
- Preserve and protect the air quality in Washington's national parks;
- Insure that economic growth will occur in a manner consistent with the preservation of existing clean air resources; and
- Assure that any decision to permit increased air pollution is made only after careful evaluation of all the consequences of such a decision.

Therefore, ORCAA must either deny the request for construction and withdraw its proposed Approval Order or require that the permit applicant submit a full and complete application addressing the myriad defects providing all required analysis and documentation. Should ORCAA (or Washington Department of Ecology) repropose an approval order, it must disclose all of the underlying information to the public.

Sincerely,

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**Attachments to NPCA, Earthjustice, and Olympic Park Advocates Comments on  
ORCAA, New Source Preliminary Determination to Approve, Wood Pellet Manufacturing  
Facility, Pacific Northwest Renewable Energy, LLC**

- A ORCAA, New Source Preliminary Determination to Approve, Wood Pellet Manufacturing Facility, Pacific Northwest Renewable Energy, LLC, No. 23NOC1606 (Nov. 30, 2023).
- B National Park Service, Olympic National Park, Environmental Factors.
- C National Park Service, Mount Rainier National Park, Air Quality.
- D Port of Grays Harbor Wood Pellet Plant, Notice of Construction Permit Application (July 2023).
- E Excerpt from EPA-approved SIP rules for ORCAA, 40 C.F.R. part 52.2470(c) Table 8 – Additional Regulations Approved for the Southwest Clean Air Agency (SWCAA) Jurisdiction.
- F EPA Approved Regulations in the Washington SIP.
- G Permit Application, Appendix A, NOC Application Forms and SEPA Documentation.
- H EPA Memorandum from Edward J. Lillis, Chief Permits Programs Branch, AQMD, to George T. Czerniak, Chief Air Enforcement Branch, Region V, Applicability of Prevention of Significant Deterioration (PSD) and New Source Performance Standards (NSPS) to the Cleveland Electric, Incorporated, Plant in Willoughby, Ohio (May 26, 1992).
- I EPA Letter from C.J. Sheehan, Office of Regional Counsel, EPA Region 6 to M. Cathey, Managing Director, El Paso Energy Bridge Gulf of Mexico (Oct. 28, 2003).
- J EPA Memorandum from Kent Berry, Director Policy Analysis Staff, U.S. EPA, to Asa B. Foster, Jr., Director, Air and Hazardous Materials Division, U.S. EPA Region IV, "Clarification of Sources Subject to Prevention of Significant Deterioration (PSD) Review" (Jan 20, 1976).
- K EPA Memorandum from Racqueline Shelton, Group Leader, Integrated Implementation Group, to Guy Donaldson, Acting Chief, Air Permits Section, EPA Region 6, Request for Guidance on the Definition of Fuel Conversion Plants for Purposes of Prevention of Significant Deterioration (PSD) (July 31, 2003).
- L EPA Letter from Gregg M. Worley, Chief Air Permits Section, EPA Region 4, to E.A. Veronica Barringer, Bureau of Air Quality, South Carolina Department of Health and Environmental Services (June 4, 2007).

- M EPA Letter from Donald Dossett, P.E., Manager Stationary Source Unit, EPA Region 10, to Claudia Davis, Western Region Air Quality Manager, Oregon Department of Environmental Quality (Sept. 26, 2017).
- N Georgia EPD Memorandum re: Emission Factors for Wood Pellet Manufacturing (Jan. 29, 2013).
- O Georgia EPD, SIP Construction Permit and Title V Significant Modification Application Review for Hazlehurst Wood Pellets (Sept. 2019).
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- R Lydia Soto-Garcia, *et al.*, *Exposures to Carbon Monoxide from Off-Gassing of Bulk Stored Wood Pellets*, Center for Air Resources Engineering and Science, Clarkson University (2014).
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- T Jaya Shankar Tumuluru, *et al.*, *Analysis on Storage Off-Gas Emissions From Woody, Herbaceous, and Torrefied Biomass*, 8 *Energies* 1745, 1751 (March 2, 2015).
- U Xingya Kuang, *et al.*, *Rate and Peak Concentrations of Off-Gas Emissions in Stored Wood Pellets—Sensitivities to Temperature, Relative Humidity, and Headspace*, 53 *Ann. Occup. Hyg.*, No. 8, 789 (2009).
- V Wolfgang Stelte, Danish Technological Institute, *Guideline: Storage and Handling of Wood Pellets* (Dec. 2012).
- W New York State Department of Health, Carbon Monoxide (CO) Hazards from Wood Pellet Storage.
- X Letter from Patrick J. Anderson, Southern Environmental Center, Heather Hillaker, Southern Environmental Law Center, to Lauren Whybrew, ORCAA, “Hazardous Air Pollutant (HAP) Deficiencies in Preliminary Determination for Pacific Northwest Renewable Energy LLC (PNWRE),” (Jan. 8, 2024).
- Y Enviva Pellets Wiggins, LLC, Air Emission Test Report (Oct. 31, 2013).
- Z Enviva Pellets Amory, LLC, Air Emission Test Report (Oct. 31, 2013).

- AA Letter from Jennifer Pohlman, Senior Consultant, Trinity Consultants, to Danny Phipps, Air Quality Engineer 1, Southwest Clean Air Agency, Completeness Determination for ADP Application CO-1057 dated August 25, 2022 (March 29, 2023).
- BB Air Control Techniques, Air Emissions Test Report for Enviva Pellets Greenwood (April 4, 2019).
- CC Permit Application, Appendix D, Vendor Information.
- DD ORCAA, Instructions for Form 6, Best Available Control Technology (BACT).
- EE Enviva Pellets Lucedale, Application for Initial State Permit to Construct, at 3.7.2 and 3.7.3. (Sept. 2018).
- FF Permit Application, Appendix F, Model Inputs and Outputs.
- GG EPA, Air Quality Dispersion Modeling - Preferred and Recommended Models, Memo on release of this version (Oct. 12, 2023).
- HH Hazlehurst Wood Pellets in Georgia.
- II Letter from Keith W. Turner, legal counsel for Amite Bioenergy, to Tim Aultman, Environmental Compliance & Enforcement Division, MDEQ (Nov. 5, 2018).
- JJ North Carolina DEQ, Air Quality Permit No. 10365R03 for Enviva Pellets Hamlet, LLC (Jan. 14, 2019).
- KK North Carolina DEQ, Air Quality Permit No. 10386R04 for Enviva Pellets Sampson, LLC (Oct. 2, 2019).
- LL North Carolina DEQ, Air Quality Permit No. 10203R06 for Enviva Pellets Northampton, LLC (Oct. 30, 2019).
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- OO Zach Parker, Homeowners Seek EPA's Help with Pollution Complaints, The Ouachita Citizen (Nov. 5, 2014).
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- UU Sami Yassa and Nathanael Greene (2021), *A Bad Bet for Biomass: Why the Leading Approach to Biomass Energy with Carbon Capture and Storage Isn't Carbon Negative*, available at <https://www.nrdc.org/sites/default/files/bad-biomass-bet-beccs-ib.pdf>.
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