

August 17, 2022

Kathleen George, Chair
Oregon Environmental Quality Commission
700 NE Multnomah St, Suite 600
Portland, Oregon 97232

Re: Petition to Promulgate Dairy Air Emissions Regulatory Program

Dear Chair George:

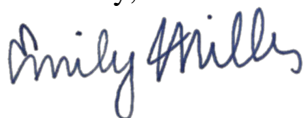
Air pollution from the State's growing number of exceedingly large mega-dairies threatens the public health and safety of Oregonians, as well as the environment. Yet the Oregon Department of Environmental Quality ("DEQ") neither monitors nor regulates this air pollution through its current Air Contaminant Discharge Permit ("ACDP") program. It is past time for Oregon to address air pollution from large dairy concentrated animal feeding operations ("CAFOs"). Pursuant to ORS § 183.390, OAR 137-001-0070, and OAR 340-011-0046, and on behalf of twenty-two advocacy organizations, we hereby submit this Petition to the Environmental Quality Commission ("EQC" or "Commission") to adopt a dairy air emissions program to quantify and regulate air emissions from large dairy CAFOs.

Led by members of the Stand Up to Factory Farms coalition, Petitioners represent a diverse array of environmental, public health, family farm, environmental justice, animal welfare, and community-based organizations concerned about the adverse impacts of mega-dairies and their air pollution. Collectively, Petitioners represent hundreds of thousands of members throughout the State.

As required by ORS § 183.390 and OAR 137-001-0070, accompanying this letter are a list of the names and addresses of Petitioners, the rule Petitioners request the Commission adopt, and the facts, arguments, and propositions of law in support of the proposed rule. Additionally, the sources cited throughout the petition are accessible through this [Google Drive link](#).

We deeply appreciate you considering this request, and the gravity of the situation.

Sincerely,



Emily Miller
Staff Attorney
Food & Water Watch
eamiller@fwwatch.org
On Behalf of Petitioners

BEFORE THE OREGON ENVIRONMENTAL QUALITY COMMISSION
Petition to Adopt a Dairy Air Emissions Program to Quantify and Regulate Large Dairy
CAFO Air Emissions

August 17, 2022

Pursuant to ORS 183.390, OAR 137-001-0070, and OAR 340-011-0046, and the following supporting facts and arguments, we petition the Oregon Environmental Quality Commission (“EQC” or “Commission”) to promulgate a new rule quantifying and regulating air emissions from large dairy concentrated animal feeding operations (“CAFOs”). Petitioner Food & Water Watch has signed on behalf of all co-petitioners.

As per OAR 137-001-0070(1), petitioners are:

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I. PROPOSED RULE LANGUAGE

As required by OAR 137-001-0070(1)(a), petitioners request that EQC adopt the proposed rule language below.¹

Section 1. Policy and Purpose

The Commission finds and declares Regulated Dairies to be air contamination sources as defined in ORS 468A.005. The Commission further finds and declares the regulation of dairy operations is necessary to comply with federal Clean Air Act requirements, achieve state greenhouse gas reduction goals, and implement the recommendations of the Dairy Air Quality Task Force.

Section 2. Jurisdiction

Nothing in this rule shall preclude a city, county, Regional Authority, or other political subdivision of this state from establishing additional permit conditions or requirements for Dairy Air Emission Permit applicants or permittees within its jurisdiction, so long as such permit conditions or requirements are no less stringent than those established in this rule.

Section 3. Definitions

- (1) “Air contaminant” or “air pollutant” has the same meaning as in OAR 340-200-0020(8), and means a dust, fume, gas, mist, odor, smoke, vapor, soot, carbon, acid, particulate matter, compound, regulated pollutant, or any combination thereof, which is emitted into or otherwise enters the ambient air.

¹ Petitioners request the Commission adopt the language of the rule as proposed. However, if the Commission has any concerns about the rule language as proposed herein, the Oregon Attorney General has instructed that it may nevertheless grant the petition, begin rulemaking, and amend the proposed rule during the course of rulemaking. See Hardy Myers, *Oregon Attorney General’s Administrative Law Manual and Uniform and Model Rules of Procedure under the Administrative Procedure Act*, OR. DEP’T JUST. 54 (Jan. 1, 2008).

- (2) “Air Impact Assessment” (AIA) means the calculation of emissions generated by the project and the emission reductions required by the provisions set forth in this rule. The AIA must be based solely on the information provided to the Department or Regional Authority having jurisdiction in the permit application, and must include all information listed in section 5(3) of this rule.
- (3) “Animal unit” has the same meaning as in OAR 141-110-0005, and means one mature cow of approximately 1,000 pounds and a calf up to weaning, usually 6 months of age, or their equivalent as determined by the Department. For example: one yearling is 0.7 of an animal unit; one bull is 1.35 of an animal unit; and one dry cow is 0.92 of an animal unit.
- (4) “Applicant” means an applicant for a Dairy Air Emissions Permit.
- (5) “Baseline emissions” means the unmitigated aggregate emissions of any regulated air pollutant, as calculated by the Department-approved model, produced by or projected to be produced by the activity and operations of a Regulated Dairy, including but not limited to emissions from animal housing, feed storage and handling, manure storage, handling and treatment, land application, and combustion-powered equipment.
- (6) “Best Management Practice” or “BMP” means a method, practice, activity, technology, or any combination thereof that is determined by the Department to be an effective means of preventing or reducing emissions of any regulated air pollutant.
- (7) “Clean Air Act permitting thresholds” means the annual emission rates triggering permitting requirements under the federal Title I Prevention of Significant Deterioration (“PSD”) and New Source Review (“NSR”) programs, as well as emission rates triggering permitting requirements under the Title V Operating Permit program.
- (8) “Certifying individual” has the same meaning as in OAR 340-200-0020(24), and means the responsible person or official authorized by the owner or operator of a Regulated Dairy who certifies the accuracy of the emission statement.
- (9) “Construction” means any physical change including, but not limited to, fabrication, erection, installation, demolition, or modification of a physical structure, including wastewater retention structures.
- (10) “Dairy Air Emissions Permit” means a written permit issued by the Department or Regional Authority having jurisdiction, which authorizes the permittee to commence construction, and/or commence or continue operations of a Regulated Dairy under conditions and schedules as specified in the permit.
- (11) “Department” means the Department of Environmental Quality.
- (12) “Department-approved model” means any process-based or statistical model that estimates emissions of any regulated air pollutant resulting from the activity and operations associated with a Regulated Dairy, using the most recent Department or United States Environmental Protection Agency (“EPA”)-approved version of relevant emissions models and emission factors. Department-approved models include the Dairy Gas Emission Model and the Integrated Farm Service Model developed and utilized by the

United States Department of Agriculture (“USDA”), as well as emission factors developed and utilized by the San Joaquin Valley Air Pollution Control District.

- (13) “Emission” has the same meaning as in OAR 340-200-0020(51), and means a release into the atmosphere of any regulated pollutant or any air contaminant.
- (14) “Fugitive Emission” has the same meaning as in 40 C.F.R. § 51.165(1)(1)(ix), and means those emissions which could not reasonably pass through a stack, chimney, vent, or other functionally equivalent opening. For Regulated Dairies, emissions from land application activities are considered fugitive.
- (15) “Hazardous Air Pollutant” or “HAP” has the same meaning as in OAR-340-200-0020(76), and means an air contaminant listed by EPA under section 112(b) of the federal Clean Air Act or determined by the Department to cause, or reasonably be anticipated to cause, adverse effects to human health or the environment.
- (16) “Liquid manure handling system” means a form of manure management in which water is used to flush manure from confinement buildings to a lagoon, pond, or some other liquid storage structure.
- (17) “Monitoring” means any form of collecting data on a routine basis to determine or otherwise assess compliance with emission limitations or standards. Monitoring may include record keeping if the records are used to determine or assess compliance with an emission limitation or standard such as records documenting compliance with best management practice requirements. Monitoring may also include one or more of the data collection techniques listed under OAR 340-200-0020(94).
- (18) “Non-fugitive emissions” means those emissions that could reasonably pass through a stack, chimney, vent, or other functionally equivalent opening. For Regulated Dairies, non-fugitive emissions include but are not limited to emissions from animal housing, milking parlors, feed storage and handling structures, and manure storage and treatment structures.
- (19) “Potential to emit” means the maximum capacity of a Regulated Dairy source to emit a pollutant under its physical and operational design. Any physical or operational limitation on the capacity of the source to emit a pollutant, including air pollution control equipment and restrictions on hours of operation or on the type or amount of material combusted, stored, or processed, shall be treated as part of its design if the limitation or the effect it would have on emissions is federally enforceable.
- (20) “Regional Authority” means a regional air quality control authority established under the provisions of ORS 468A.105.
- (21) “Regulated air pollutant” or “regulated pollutant” means:
 - a. Any criteria pollutant for which there is a National Ambient Air Quality Standard or any air contaminant for which an ambient air quality standard has been promulgated, including any precursors to such pollutants; and

- b. Any air contaminant, which the Department or EPA determined may reasonably be anticipated to endanger the public health or welfare of current or future generations, including hazardous air pollutants and greenhouse gases.
 - c. Air contaminants subject to regulation under this rule include but are not limited to ammonia, hydrogen sulfide, methane, methanol, nitrogen oxides, nitrous oxide, particulate matter (PM_{2.5} and PM₁₀), and volatile organic compounds.
- (22) “Regulated Dairy” means a Grade A dairy operation that (1) confines and feeds or maintains animals for a total of 45 days or more within a 12-month period; (2) does not sustain crops, vegetation, forage growth, or post-harvest residues in the normal growing season over any portion of the lot or facility; (3) is permitted to confine 700 or more mature dairy cows, whether milked or dry; and (4) has or will use a liquid manure handling system.²

Section 4. Sources Required to Have Dairy Air Emission Permits

This rule shall apply to all new and existing Grade A dairies that meet the definition of a Regulated Dairy, as defined in Section 3, subsection 22 of this rule.

- (1) **Existing Sources.** Existing Regulated Dairies to which this section is applicable shall apply for a Dairy Air Emission Permit within 365 days of the effective date of this rule.
- (2) **New or Expanding Sources.** New Regulated Dairies to which this section is applicable shall apply for and receive a Dairy Air Emission Permit prior to construction and/or operation of the facility. Existing facilities proposing to expand or modify operations such that they become Regulated Dairies must apply for and receive a Dairy Air Emission Permit reflecting the expected increase in air emissions before such expanded operations may begin.

Section 5. Dairy Air Emission Permit Application Process

- (1) **Fees.** Persons applying for a Dairy Air Emissions Permit shall at the time of application pay a permit fee established by the Commission.
- (2) **Application requirements.** An applicant for a Dairy Air Emissions Permit shall submit the following to the Department:
 - a. A completed Short Form Application;
 - b. A map showing the location and size of the site;
 - c. A description of the current, proposed, and/or prior use of the site, including number and type of animals and animal units;
 - d. A detailed description of current or expected air contaminant source activity at the site, including the location, number, size and type of manure and process wastewater storage lagoons, and the location, number, acreage, and irrigation methods for land application fields;

² This definition is based on the federal definition of a large concentrated animal feeding operation, as defined in 40 C.F.R. § 122.23.

- e. A completed air impact assessment, as specified in Section 5, subsection (3) of this rule.
- f. A completed list of emissions best management practices to be implemented, as specified in Section 5, subsection (4) of this rule;
- g. A completed Monitoring and Reporting Schedule, as specified in Section 5, subsection (5) of this rule;
- h. Such additional information as may be required when there is reasonable basis for concluding:
 - i. The Regulated Dairy may cause or contribute to a violation of the Clean Air Act Implementation Plan for Oregon;
 - ii. The Regulated Dairy may cause or contribute to a delay in the attainment of or a violation of any applicable ambient air quality standard, or may cause or contribute to the violation of any applicable increment; or
 - iii. The information is necessary to determine whether the Regulated Dairy may cause or contribute to any such delay or violation. The Department shall base such conclusion on any reliable information, including but not limited to application of a Department-approved model quantifying the Regulated Dairy's emissions, as well as ambient air monitoring, Regulated Dairy size, site design, or air quality projections based thereon.

(3) Air Impact Assessment. An applicant for a Dairy Air Emissions Permit must submit an Air Impact Assessment (AIA) with its Dairy Air Emissions Permit application. The AIA shall meet the following requirements:

- a. The applicant shall estimate and quantify all operational emissions of the following air pollutants: Ammonia (NH₃), Hydrogen Sulfide (H₂S), Methane (CH₄), Methanol, Nitrogen Oxides (NO_x), Nitrous Oxides (N₂O), Particulate Matter (PM_{2.5} and PM₁₀), and Volatile Organic Compounds (VOCs). The applicant's AIA shall include:
 - i. The estimated baseline emissions of every regulated pollutant that may reasonably be produced from operation of the Regulated Dairy; and
 - ii. The mitigated emissions of every regulated pollutant upon implementation of selected best management practices.
- b. Based on the results of the emissions analysis required by Section 5, subsection (3)(a), if the Regulated Dairy will be considered a federal major source, the AIA must also include an analysis of the visibility impacts of the source, including meteorological and topographical data, specific details of models used, and other information necessary to estimate air quality impacts.
- c. The AIA analysis required by Section 5, subsections (3)(a) and (3)(b) of this rule shall use a Department-approved model to calculate the estimated baseline emissions and mitigated emissions associated with the project.

- d. The applicant shall include in its application any other information and documentation that supports the baseline and mitigated emissions calculations specified in the AIA.
- (4) **Certification.** An applicant for a Dairy Air Emissions Permit shall sign and certify under penalty of perjury in its Dairy Air Emissions Permit application that the information contained therein is true and accurate. The certifying individual shall also attest that the source’s reported baseline emissions and mitigated emissions are the true and accurate results of the Department-approved emissions modeling process.
- (5) **Timing.**
- a. An applicant proposing to construct a Regulated Dairy, or modify or expand an existing dairy such that it becomes a Regulated Dairy, shall not commence construction of new or expanded operations until the Department has issued a Dairy Air Emissions Permit to the applicant.
 - b. An owner or operator of a Regulated Dairy that was engaged in operations on or before the date on which this rule went into effect shall apply for a Dairy Air Emissions Permit no later than 365 days following the effective date of this rule.
- (6) **Completeness.** An application shall not be considered complete until the required information is received by the Department or Regional Authority having jurisdiction. If no timely written request is made for additional information, the application shall be considered complete.

Section 6. Dairy Air Emission Permit Requirements

- (1) **Permit Content.** A Dairy Air Emissions Permit must include at least the following:
- a. A requirement to construct and/or operate according to approved plans;
 - b. A requirement to comply with the conditions of the permit;
 - c. Emission best management practices for aggregated dairy source activity and operations;
 - d. A Monitoring and Reporting Schedule, as specified in Section 6, subsection (3) of this rule;
 - e. Any specialized monitoring equipment (e.g. continuous monitoring systems) requirements, if applicable;
 - f. A permit expiration date of no more than five years.
- (2) **Emission Best Management Practices.** If the applicant’s Air Impact Assessment indicates that the project’s baseline emissions will or may exceed the applicable emissions limits specified in Section 6, subsection (2)(b) of this rule, the applicant must implement emissions best management practices capable of achieving emissions reductions from each of the following emissions sources within the Regulated Dairy:

animal housing; milking parlors; feed storage and handling; manure storage, handling and treatment; and land application.

- a. Selection of Emission Best Management Practices.** The Department will determine emission best management practices for each of the emissions sources listed in Section 6, subsection (2) of this rule, based on those practices identified as capable of achieving quantifiable emissions reductions by EPA and USDA in the “Agricultural Air Quality Conservation Measures: Reference Guide for Poultry and Livestock Production Systems;” The University of Idaho College of Agricultural and Life Sciences in “Dairy Ammonia Control Practices;” and the San Joaquin Valley Air Pollution Control District in “Phase II Rule 4570 Permit Application Form.”³
- b. Tiered System.** The Department will require the adoption and implementation of emission best management practices based on a two-tiered system, whereby Regulated Dairies with greater baseline emission estimates will be subject to more stringent best management practices for each emissions source, and Regulated Dairies with smaller baseline emission estimates will be subject to less stringent requirements. The tiered categories will be as follows:
 - i.** Regulated Dairies with a potential to emit any regulated pollutants in excess of any federal Clean Air Act permitting thresholds shall obtain the requisite federal Clean Air Act permit, and shall additionally implement all best management practices required of “Tier 1” sources, as determined by the Department to constitute Best Available Control Technology (BACT);
 - ii.** Regulated Dairies with a potential to emit any regulated pollutants at rates below all federal Clean Air Act permitting thresholds shall implement all best management practices required of “Tier 2” sources, as determined by the Department.
- c. Additional Requirements for Facilities that are or will emit Hazardous Air Pollutants exceeding federal permitting thresholds.** If any Regulated Dairy requires a Title V Operating permit for any hazardous air pollutant (HAP), the Department will promulgate and apply Maximum Achievable Control Technology (MACT) pursuant to OAR 340-244-0210(2).
- d. Enforceable Permit Conditions.** Adoption and implementation of best management practices must be fully enforceable through permit conditions.

(3) Monitoring and Reporting Schedule. A Dairy Air Emissions Permit shall include a Monitoring and Reporting Schedule (MRS) for the best management practices required by the permit. An MRS shall outline how the best management practices will be implemented and how compliance will be documented, and must include the following information:

³ See Appendix A for a representative list of best management practices.

- a. Standards for determining compliance with best management practices, such as record keeping, reporting, installation of monitoring devices, and/or contracting requirements;
- b. A monitoring schedule;
- c. A reporting schedule;
- d. A requirement to notify the Department of any permit violations within 24-hours of their occurrence; and
- e. Provisions for failure to comply.

Section 7. Issuance or Denial of Permits

- (1) Issuance of a Dairy Air Emissions Permit shall not relieve the permittee from compliance with other applicable provisions of the Clean Air Act Implementation Plan for Oregon.
- (2) After reviewing a complete Dairy Air Emissions Permit application, the Department or Regional Authority having jurisdiction shall act to either disapprove a permit application or approve it with possible conditions.
- (3) No permit may be issued unless the Department determines that:
 - a. The Regulated Dairy will not cause or contribute to a violation of the Clean Air Act Implementation Plan for Oregon;
 - b. The Regulated Dairy will not cause or contribute to a delay in the attainment of or cause or contribute to a violation of any National Ambient Air Quality Standard based on modeling performed consistent with 40 C.F.R. § 52.21 Appendix W;
 - c. The Regulated Dairy will not cause or contribute to air pollution in excess of any maximum allowable increase or maximum allowable concentration more than one time per year for any pollutant in any area to which such limits apply, nor will the Regulated Dairy cause or contribute to air pollution in excess of any annual increment based on modeling performed consistent with 40 C.F.R. § 52.21 Appendix W;
 - d. The Regulated Dairy will not cause air pollution in excess of workplace safety standards set by the U.S. Occupational Safety and Health Administration, as enforced under the Oregon Safe Employment Act;
 - e. In the Department's best professional judgement, the Regulated Dairy will not cause or contribute to a nuisance;
 - f. The Regulated Dairy has fully disclosed all relevant facts during the application and/or permit issuance process;
 - g. The Regulated Dairy has met all applicable requirements for a Dairy Air Emissions Permit application; and
 - h. In the Department's best professional judgment, the construction and/or operation of the Regulated Dairy is not contrary to the public interest and does not pose an undue threat to public health, environmental justice, or the environment.

- (4) Notice and opportunity for public participation.** The issuance or denial of a Dairy Air Emissions Permit is subject to the public participation requirements established under OAR 340-209-0030 for a Category III permit action. The public notice shall provide written copies of the following:
- a. The Department's draft approval or disapproval determination of the permit application;
 - b. The Air Impact Assessment submitted by the applicant; and
 - c. The emission best management practices that shall be implemented, as required by the permit.

After the 35-day written comment period has closed, the Department shall notify the applicant and public in writing of its proposed decision regarding the application.

Section 8. Permit Duration

- (1) A Dairy Air Emissions Permit issued by the Department or a Regional Authority having jurisdiction shall remain in effect until modified or revoked by the Department or such Regional Authority, or until the permit expires.
- (2) The Department or Regional Authority having jurisdiction may revoke the permit of any Dairy in violation of the construction, modification, or operating conditions set forth in the permit.
- (3) An approved Dairy Air Emissions Permit may be conditioned to expire if construction or modification is not commenced within 18 months after receipt of the approved permit. The Director may extend such time period upon a satisfactory showing by the permittee that an extension is justified.
- (4) A permit expiration date will be set for no more than five years from the permit's effective date.
- (5) Upon permit expiration, the applicant may seek renewal for another five-year term, and shall submit any and all information the Department deems necessary for reaching a renewal determination. A Regulated Dairy must submit a renewal application 180 days before its current permit expires. If the renewal application is timely submitted, and the Department does not reissue the permit prior to the existing permit's expiration date, the permit shall be administratively continued until such time that the renewal is issued.

Section 9. Compliance and Enforcement Actions

- (1) Any owner or operator of a Regulated Dairy operating without a permit required by this rule, or operating in violation of any of the conditions of an issued permit shall be subject to civil penalties, injunctions, and permit revocation.
- (2) Nothing in this rule shall preclude a city, county, Regional Authority, or other political subdivision of this state from establishing additional permit conditions or requirements for Dairy Air Emissions Permit applicants or permittees within its jurisdiction, so long as such permit conditions or requirements are no less stringent than those established in this rule.

- (3) If the Department denies, revokes, or modifies a Dairy Air Emissions Permit, it shall issue an order setting forth its reasons in essential detail.

II. FACTS AND ARGUMENTS

As required per OAR 137-001-0070(1)(b), Petitioners submit the following facts and arguments:

Over the last 20 years, Oregon has seen a sharp increase in large dairy operations in the state. These dairy concentrated animal feeding operations (“Dairy CAFOs”), the largest of which are sometimes referred to as factory farms, present serious threats to air and water quality, as well as to animal welfare and local quality of life.⁴ In recognition of the serious threat to water quality these operations present, DEQ requires large dairy CAFOs (those with over 700 cows) to obtain a permit in order to control the storage, handling, and disposal of vast quantities of manure generated by these operations, and prevent the harmful effect this waste has on the state’s waters.⁵ Yet, despite the direct and serious impact Dairy CAFOs also have on air quality, these operations are subject to virtually no requirements to control or mitigate the numerous toxic air pollutants they release.⁶ In other words, DEQ has utterly failed to address air quality concerns through its current CAFO regulations.⁷

This total absence of CAFO air regulations undermines state law and executive policies that have urged regulatory action to address the threat these operations present to air quality and the climate. In 2007, the Oregon State Legislature passed a bill to address air emissions from dairies, specifically directing DEQ to enter into a memorandum of understanding (“MOU”) with the Oregon Department of Agriculture (“ODA”) to address the administration and enforcement of air quality laws applicable to agricultural operations.⁸ The 2007 legislation also created a Dairy Air Quality Task Force (“Dairy Task Force”) comprised of government officials, Oregon State University faculty, members of the dairy industry, family farm organizations, and environmental and public health professionals, charged with studying the emissions from dairy operations,

⁴ This document’s use of the term “CAFO” refers to federally defined Large CAFOs, meaning dairies with at least 700 mature dairy cattle as defined by EPA, as opposed to the broader term “confined animal feeding operation” as defined under Oregon state regulations. Compare 40 C.F.R. § 122.23 with OR. ADMIN. R. 340-051-0010.

⁵ See OR. ADMIN. R. 603-074-0005. See also Wym Matthews, Ranei Nomura & Beth Moore, *State of Oregon Confined Animal Feeding Operation Permit Program*, OR. DEP’T OF AGRIC. (Mar. 31, 2016), <https://www.oregon.gov/oda/shared/Documents/Publications/NaturalResources/CAFONPDESPermitAndEvalFactSheet.pdf>.

⁶ See, e.g., George Plaven, *Boardman Mega-dairy Up for Further Review*, E. OREGONIAN (Dec. 13, 2018), https://www.eastoregonian.com/news/agriculture/boardman-mega-dairy-up-for-further-review/article_fbb55f5c-aa35-5187-b308-7e2a78503cfa.html. But see Or. Dep’t Env’t Quality, Or. Title V Operating Permit No. 25-0047-TV-01-WOF PNW Threemile Project, LLC (2019), https://www.deq.state.or.us/AQPermitsOnline/25-0047-TV-01_PM_2019_2.PDF (demonstrating that Oregon requires air quality permits for some methane digester facilities). See generally, CONG. RSCH. SERV., RL32948, AIR QUALITY ISSUES AND ANIMAL AGRICULTURE: A PRIMER (2016) (“Several states have recognized a need to regulate air emissions from agricultural operations, but many states have not yet adopted or enacted programs affecting AFO emissions.”).

⁷ See, e.g., Tracy Loew, *Proposed Mega-Dairy Draw Protests*, STATESMAN J. (Aug. 5, 2016) [hereinafter Loew, *Proposed Mega-Dairy*], <https://www.statesmanjournal.com/story/tech/science/environment/2016/08/05/proposed-mega-dairy-draws-protests/88308804>; Tracy Loew, *Oregon Approves Five Controversial Dairy Expansions*, STATESMAN J. (Jan. 7, 2016), <https://www.statesmanjournal.com/story/tech/science/environment/2016/01/07/oregon-approves-five-controversial-dairy-expansions/78379000>.

⁸ OR. REV. STAT. § 468A.790.

evaluating strategies for reducing emissions, and presenting findings and recommendations to DEQ and ODA to inform the regulatory process.⁹

The Dairy Task Force examined a wide body of scientific literature regarding major air pollutants emitted from large dairy farms, none of which Oregon currently regulates from livestock operations.¹⁰ These pollutants include ammonia, hydrogen sulfide, methane, methanol, volatile organic compounds, nitrogen oxides, particulate matter, and odors.¹¹ Based on a comprehensive analysis of the magnitude of CAFO air emissions, and the dangers posed by the air pollutants emitted, the Dairy Task Force “strongly” urged the agencies to initiate regulatory action to address the threat of Dairy CAFO air pollution.¹²

Despite the agencies’ clear statutory mandate, and the Dairy Task Force’s urgent recommendation to act, nearly fifteen years have passed, and DEQ and ODA have yet to establish how federal and state air quality laws apply to agriculture, nor have the agencies attempted to define the contours of a CAFO air regulatory program.¹³ In fact, it appears the agencies have simply shelved the prospect of regulating dairy air pollution altogether, having made little effort since 2008 to take up the issue.¹⁴ Meanwhile, Oregonians continue to suffer from the adverse effects of Dairy CAFO air pollution.

When it comes to CAFOs, DEQ and ODA have also ignored more recent directives from the Governor to address the climate impacts of this industry. Governor Brown’s recent Climate Executive Order No. 20-04 directed both ODA and DEQ to take action and use “any and all discretion vested in them by law” to reduce and regulate Greenhouse Gas (“GHG”) emissions. Under EO 20-04, the agencies are subject to both general and specific directives set forth to accomplish a state-wide strategy for reducing GHG emissions (1) at least 45% below 1990 emissions levels by 2035 and (2) at least 80% below 1990 emissions levels by 2050.

Despite the fact that the CAFO sector contributes significantly to climate change in Oregon and nationwide, DEQ entirely omits CAFO-related methane and nitrous oxide emissions from its proposed Climate Protection Program (“CPP”) rule.¹⁵ This latest example of agency inaction illustrates yet another missed opportunity to finally begin holding this industry accountable for the negative impact its air pollution has on Oregon.

By focusing only on the largest of dairy operations, the proposed rule is designed to have a broad impact on CAFO air pollution without unduly burdening the industry. As proposed, the permitting program would regulate a minority of the State’s Dairy CAFOs, but address the vast majority of

⁹ OR. DAIRY AIR QUALITY TASK FORCE, FINAL REPORT TO THE DEPARTMENT OF ENVIRONMENTAL QUALITY & DEPARTMENT OF AGRICULTURE 3 (2008) [hereinafter DAQTF Report].

¹⁰ See *id.* at 7; OR. DAIRY AIR QUALITY TASK FORCE, TECHNICAL SUPPORT DOCUMENT FOR DAIRY AIR QUALITY TASK FORCE REPORT 31 (2008) [hereinafter DAQTF Technical Support]; see also Loew, *Proposed Mega-Dairy*, *supra* note 7.

¹¹ DAQTF Technical Support, *supra* note 10, at 32–38.

¹² *Id.* at 4, 8; Tracy Loew, *Second Mega-Dairy Proposed for Oregon*, STATESMAN J. (July 25, 2016), <https://www.statesmanjournal.com/story/tech/science/environment/2016/07/25/second-mega-dairy-proposed-oregon/86951016>.

¹³ DEQ email to petitioner NEDC (Apr. 29, 2021) (confirming that “ODA and DEQ did not develop or finalize a CAFO air program MOU.”).

¹⁴ DEQ open records request response and production (Apr. 29, 2021).

¹⁵ See generally *Notice of Proposed Rulemaking: Greenhouse Gas Emissions Program 2021, Rulemaking Climate Protection Program*, OR. DEP’T ENV’T QUALITY (Aug. 5, 2021), <https://www.oregon.gov/deq/Regulations/rulemaking/RuleDocuments/GHGCR2021Notice.pdf>.

the industry’s emissions. Petitioners estimate the rule would only apply to 39 percent of Oregon’s Grade A Dairy operations—approximately 91 facilities—yet control emissions from 84 percent of the states’ dairy cows.¹⁶

Without sufficient air emissions regulation, Oregon CAFOs present unjustifiable risks to public health—particularly for environmental justice communities—the environment, animal welfare, and the economic livelihoods of more sustainable family farms. By freely emitting toxic pollutants into the air, these operations disproportionately harm the public health of Oregon’s low-income communities and communities of color who live nearby, threatening already vulnerable populations with increasing rates of respiratory illness and death, and lower quality of life. The environmental impact is also significant, as these emissions exacerbate climate change and threaten natural resources and wildlife habitat. Furthermore, unchecked and unregulated air pollution worsens the already often inhumane conditions for the workers and animals within these facilities. Finally, refusing to regulate Dairy CAFO air emissions is contributing to the economic imbalances disadvantaging family farmers by allowing these operations to continue circumventing accountability for their pollution.

A. Failing to Immediately Regulate Dairy CAFO Air Emissions Threatens Public Health

Dairy CAFO air pollution poses a direct threat to public health, particularly for the dairy workers that work in, and communities that live near these operations. Not only can exposure to CAFO emissions cause acute poisoning and asphyxiation, this toxic pollution also causes serious chronic illness leading to thousands of deaths in the United States every year.

According to the U.S. Government Accountability Office, storing large quantities of livestock manure on factory farms can cause emissions of “unsafe quantities” of ammonia, hydrogen sulfide and particulate matter.¹⁷ Ammonia is a “strong respiratory irritant” that causes chemical burns to the respiratory tract, skin, and eyes, severe coughing, and chronic lung disease.¹⁸ Recent peer-reviewed research found that nationwide, ammonia emissions from industrial livestock production claim 12,400 lives each year – more deaths than are caused by coal-fired power plants.¹⁹ Hydrogen sulfide is also acutely dangerous, causing “inflammation of the moist membranes” in the eyes and respiratory tract as well as olfactory neuron loss, pulmonary edema, and even death.²⁰ Likewise, particulate matter exposure can lead to “chronic bronchitis, chronic obstructive airways disease . . . [and] declines in lung function,” as well as “organic dust toxic syndrome.”²¹

¹⁶ See ODA, List of Oregon Dairy Operations (Aug. 12, 2022) (obtained via public records request).

¹⁷ U.S. GOV’T ACCOUNTABILITY OFF., GAO-08-944, CONCENTRATED ANIMAL FEEDING OPERATIONS 7 (2008) (“[CAFOs] can potentially degrade air quality because large amounts of manure may emit unsafe quantities of ammonia, hydrogen sulfide, and particulate matter.”).

¹⁸ *Concentrated Animal Feedlot Operations (CAFOs) Chemicals Associated with Air Emissions*, CAFO SUBCOMM. MICH. DEP’T ENV’T QUALITY & TOXICS STEERING GRP. 4 (May 10, 2006) [hereinafter Michigan CAFO Subcommittee], https://www.michigan.gov/-/media/Project/Websites/mdhhs/Folder1/Folder50/CAFOs-Chemicals_Associated_with_Air_Emissions_5-10-06.pdf; Carrie Hribar, *Understanding Concentrated Animal Feeding Operations and Their Impact on Communities*, NAT’L ASS’N LOC. BDS. HEALTH 6 (2010).

¹⁹ Nina G. G. Domingo et al., *Air Quality-Related Health Damages of Food*, 118 PNAS e2013637118, 2 (2021), <https://www.pnas.org/doi/pdf/10.1073/pnas.2013637118>.

²⁰ Michigan CAFO Subcommittee, *supra* note 18, at 6.

²¹ *Id.* at 9–10.

Figure 1, Typical Pollutants Found in Air Surrounding CAFOs²²

CAFO Emissions	Source	Traits	Health Risks
Ammonia	Formed when microbes decompose undigested organic nitrogen compounds in manure	Colorless, sharp pungent odor	Respiratory irritant, chemical burns to respiratory tract, skin, and eyes, severe cough, chronic lung disease
Hydrogen Sulfide	Anaerobic bacterial decomposition of protein and other sulfur containing organic matter	Odor of rotten eggs	Inflammation of the moist membranes of eye and respiratory tract, olfactory neuron loss, death
Particulate Matter	Feed, bedding materials, dry manure, unpaved soil surfaces, animal dander	Comprised of fecal matter, feed materials, pollen, bacteria, fungi, skin cells, silicates	Chronic bronchitis, chronic respiratory symptoms, declines in lung function, organic dust toxic syndrome

Indeed, CAFO emissions are so potent that it can be dangerous even to approach a waste lagoon, particularly in hot summer months and when waste is agitated prior to being pumped out.²³ Workers in these facilities experience high levels of asthma-like symptoms, bronchitis and other respiratory diseases.²⁴ What’s worse, “the oxygen-deficient, toxic, and/or explosive atmosphere which can develop in a manure pit has claimed many lives.”²⁵ There are multiple incidents of farm workers approaching lagoons to make repairs and succumbing to the emissions; some died from hydrogen sulfide poisoning, while others asphyxiated in the oxygen-starved air.²⁶ Still others have died after collapsing during rescue attempts.²⁷

But it is not necessary to be near a lagoon to suffer grave health effects from the emissions. Dairy CAFOs also have the potential to threaten entire communities. For instance, one 1,500-cow dairy in Minnesota released so much hydrogen sulfide gas in 2008 that the state evacuated nearby

²² Hribar, *supra* note 18, at 6.

²³ Robbin Marks, *Cesspools of Shame: How Factory Farm Lagoons and Sprayfields Threaten Environmental and Public Health*, NRDC 26 (July 2001), <https://www.nrdc.org/sites/default/files/cesspools.pdf>; *Iowa Concentrated Animal Feeding Operations Air Quality Study: Final Report*, IOWA STATE UNIV. & UNIV. IOWA STUDY GRP. 118, 124 (Feb. 2002).

²⁴ Kelley J. Donham et al., *Community Health and Socioeconomic Issues Surrounding Concentrated Animal Feeding Operations*, 115 ENV’T HEALTH PERSP. 317, 318 (2007) (“It is clear that at least 25% of confinement workers suffer from respiratory diseases including bronchitis, mucus membrane irritation, asthmalike syndrome, and acute respiratory distress syndrome.”); Hribar, *supra* note 18, at 6–7.

²⁵ *NIOSH Warns: Manure Pits Continue to Claim Lives*, CTRS. DISEASE CONTROL & PREVENTION (July 6, 1993), <https://www.cdc.gov/niosh/updates/93-114.html>.

²⁶ Marks, *supra* note 23, at 19; *see also Manure Pit Fatalities Spur Awareness*, DAIRY BUS. (Aug. 24, 2021), <https://www.dairybusiness.com/manure-pit-fatalities-spur-awareness> (reporting the death of three brothers caused by toxic fumes released from a manure pit on their family’s farm); Rachael Rettner, *3 Men Die in Manure Pit: Here’s Why it’s a ‘Death Trap’*, LIVE SCIENCE (Aug. 12, 2021), <https://www.livescience.com/brothers-die-manure-pit-fumes-toxic.html>; *Gas from Manure Pit Kills 5 on Dairy Farm*, CBS NEWS (July 3, 2007), <https://www.cbsnews.com/news/gas-from-manure-pit-kills-5-on-dairy-farm> (describing the deaths of five people overcome by deadly methane gas emanating from a dairy farm’s manure pit).

²⁷ *See* Marks, *supra* note 23, at 26.

residents and declared the dairy a public health hazard.²⁸ Residents had complained about odors from the dairy for years before the state began monitoring hydrogen sulfide emissions in the area, which soon revealed dangerously high emissions.²⁹ Moreover, studies show that people in CAFO-occupied communities suffer disproportionate levels of tension, anger, confusion, fatigue, depression, upper respiratory symptoms, and gastrointestinal ailments than neighbors of other types of farms and non-livestock areas.³⁰ There is also consistent evidence demonstrating that CAFOs increase asthma in neighboring communities. The risk is especially great for children, who take in 20–50 percent more air than adults, making them more susceptible to lung disease and other health effects.³¹

In addition to respiratory illnesses, CAFOs also spawn new viruses.³² When the U.S. Centers for Disease Control and Prevention (CDC) sequenced the DNA of the swine flu that killed thousands of Americans in 2009, they traced its origin to a single North Carolina pig CAFO.³³ The CDC estimates that the 2009 swine flu pandemic sickened 60.8 million Americans, hospitalized 274,304, and killed 12,469, including more than a thousand children.³⁴ Similarly, the novel coronavirus, which has killed over 6 million people across the world, very likely originated in animal markets, with the full consequences of the coronavirus yet to be seen.³⁵

B. Failing to Immediately Regulate Dairy CAFO Air Emissions Exacerbates Environmental Injustices Across the State

CAFOs in general are disproportionately sited in low-income communities and communities of color,³⁶ most of which lack the political power to successfully oppose their construction.³⁷

²⁸ See *Residents Living Near Northwestern Minn. Feedlot Evacuate*, PIONEER PRESS (June 10, 2008), <https://www.twincities.com/2008/06/10/residents-living-near-northwestern-minn-feedlot-evacuate/amp>.

²⁹ Tom Meersman, *Dairy Odors Drive Out Families, But Attract Lawsuit*, Minn. Star Trib., June 20, 2008; Tom Meersman, *Thief River Falls Feedlot Declared Public Health Hazard*, Minn. Star Trib., Oct. 7, 2008.

³⁰ Hribar, *supra* note 18, at 5; Sarah C. Wilson, Comment, *Hogwash! Why Industrial Animal Agriculture is Not Beyond the Scope of Clean Air Act Regulation*, 24 PACE ENV'T L. REV. 439, 441, 445 n.45 (2007).

³¹ Hribar, *supra* note 18, at 6–7.

³² *Id.* at 10 (“These viruses generate through mutation or recombinant events that can result in more efficient human-to-human transmission.”).

³³ Felicity Lawrence, *The Pig’s Revenge*, GUARDIAN (May 1, 2009), <https://theguardian.com/world/2009/may/02/swine-flu-pandemic-mexico-pig-farming> (“At CDC the head of virology had completed the genetic fingerprinting of the swine flu and was able to say that it has arisen from a strain first identified on industrial pig units in North Carolina in the late 1990s.”); see also Gavin J. D. Smith et al., *Origins and Evolutionary Genomics of the 2009 Swine-origin H1N1 Influenza of Epidemic*, 459 NATURE 1122 (2009); Bernice Wuethrich, *Chasing the Fickle Swine Flu*, 299 SCIENCE 1502 (2003).

³⁴ Sundar S. Shrestha et al., *Estimating the Burden of 2009 Pandemic Influenza of (H1N1) in the United States (April 2009–April 2010)*, 52 CLINICAL INFECTIOUS DISEASES S75–82 (2011).

³⁵ Aylin Woodward, *Both the New Coronavirus and SARS Outbreaks Likely Started in Chinese Wet Markets*, BUS. INSIDER (Feb. 26, 2020), <https://www.businessinsider.com/wuhan-coronavirus-chinese-wet-market-photos-2020-1> (discussing the potential for zoonotic diseases to jump from animals to humans); Carl Zimmer & Benjamin Mueller, *New Research Points to Wuhan Market as Pandemic Origin*, N.Y. TIMES (Feb. 27, 2022), <https://www.nytimes.com/interactive/2022/02/26/science/covid-virus-wuhan-origins.html> (detailing newly released studies concluding the coronavirus very likely originated in live mammals sold at the Wuhan Market).

³⁶ See Letter from EPA External C.R. Compliance Off. to N.C. Dep’t Env’t Quality, EPA File No. 11R-14-R4 (Jan. 12, 2017), [https://www.epa.gov/sites/production/files/2018-](https://www.epa.gov/sites/production/files/2018-05/documents/letter_of_concern_to_william_g_ross_nc_deq_re_admin_complaint_11r-14-r4_.pdf)

05/documents/letter_of_concern_to_william_g_ross_nc_deq_re_admin_complaint_11r-14-r4_.pdf (describing discriminatory health and quality of life impacts from pig and poultry CAFOs); Donham, *supra* note 24; Steve Wing, Dana Cole & Gary Grant, *Environmental Injustice in North Carolina’s Hog Industry*, 108 ENV’T HEALTH PERSPS. 225 (2000) (studying the disproportionate impact of pollution and offensive odors on poor and nonwhite communities).

³⁷ See Steve Wing et al., *Air Pollution from Industrial Swine Operations and Blood Pressure of Neighboring Residents*, 121 ENV’T HEALTH PERSPS. 92, 96 (2013) (noting that marginalized communities lack the political power necessary to prevent CAFO

Accordingly, these populations disproportionately bear the consequences of Dairy CAFOs’ externalities, including public health harms, diminished quality of life,³⁸ and plummeting property values.³⁹

Nowhere are these health disparities more apparent than in Morrow and Umatilla Counties. The Boardman and Hermiston areas are home to the State’s largest Dairy CAFOs, which collectively confine over 100,000 cows.⁴⁰ The surrounding communities are significantly overburdened by air and water pollution, as well as other socioeconomic factors that exacerbate the CAFO health risk. According to EPA’s Environmental Justice Screening and Mapping Tool, which considers the combined impact of environmental and demographic indicators to characterize an area’s overall environmental justice index, these communities shoulder some of the states’ highest pollution burdens, consistently ranking in the 80–90th percentiles⁴¹ for numerous environmental hazards as compared to the rest of the State.

Figure 2, Boardman Area Environmental Justice Indexes⁴²

Environmental Justice Index	State Percentile
Particulate Matter 2.5	88
Ozone	89
2017 Diesel Particulate Matter	83
2017 Air Toxics Cancer Risk	87
2017 Air Toxics Respiratory Hazard Index	88
Superfund Proximity	90
Risk Management Plan (RMP) Facility Proximity	92
Hazardous Waste Proximity	81
Underground Storage Tanks	83
Wastewater Discharge	88

facility operations); Steve Wing & Jill Johnston, *Industrial Hog Operations in North Carolina Disproportionately Impact African-Americans, Hispanics and American Indians*, N.C. POL’Y WATCH 3 (2014), <http://www.ncpolicywatch.com/wp-content/uploads/2014/09/UNC-Report.pdf> (concluding that the “disproportionate location in communities of color represented an environmental injustice”); Wendee Nicole, *CAFOs and Environmental Justice: The Case of North Carolina*, 121 ENV’T HEALTH PERSPS. A182, A183–89 (2013).

³⁸ Hribar, *supra* note 18, at 7–8 (noting odors and insect vectors that plague CAFO-occupied communities).

³⁹ *Id.* at 11 (noting that “property value declines can range from a decrease of 6.6% within a 3-mile radius of a CAFO to an 88% decrease within 1/10 of a mile from a CAFO”).

⁴⁰ List of Oregon Dairy Operations, *supra* note 16.

⁴¹ According to EPA, the state percentile “tells you what percent of the [state] population has an equal or lower value, meaning less potential for exposure/risk/proximity to certain facilities, or a lower percent minority.” See *How to Interpret a Standard Report in EJScreen*, EPA (Feb. 18, 2022), <https://www.epa.gov/ejscreen/how-interpret-standard-report-ejscreen>.

⁴² EJScreenReport (Version 2.3) for User Specified Area: Boardman Area, EPA 1 (last accessed Aug. 1, 2022) [hereinafter Boardman EJScreen Report].

Figure 3, Hermiston Area Environmental Justice Indexes⁴³

Environmental Justice Index	State Percentile
Particulate Matter 2.5	86
Ozone	86
2017 Diesel Particulate Matter	83
2017 Air Toxics Cancer Risk	85
2017 Air Toxics Respiratory Hazard Index	84
Superfund Proximity	88
Risk Management Plan (RMP) Facility Proximity	92
Hazardous Waste Proximity	80
Underground Storage Tanks	85
Wastewater Discharge	87

As compared with the rest of Oregon, these communities are also populated by a high percentage of low-income residents and people of color, who struggle with higher rates of unemployment and linguistic isolation than the rest of the State.

Figure 4, Boardman/Hermiston Demographic Indicators⁴⁴

Demographic Index	Value	Stage Average	State Percentile
<i>Boardman Area</i>			
People of Color	45%	28%	87
Low Income	46%	24%	88
Unemployment Rate	5%	5%	56
Linguistically Isolated	7%	2%	88
Less Than High School Education	28%	9%	95
Under Age 5	8%	6%	76
<i>Hermiston Area</i>			
People of Color	42%	28%	84
Low Income	43%	24%	83
Unemployment Rate	8%	5%	77
Linguistically Isolated	7%	2%	87
Less Than High School Education	23%	9%	91
Under Age 5	8%	6%	76

To make matters worse, on top of the CAFO air quality threat and other environmental and socioeconomic stressors the region’s residents face, these communities are also dealing with a groundwater contamination emergency that is jeopardizing their drinking water supplies. In June of 2022, the Morrow County Commission declared a local state of emergency over groundwater

⁴³ EJSscreen Report (Version 2.0) for User Specified Area: Hermiston Area, EPA 1 (last accessed Aug. 1, 2022) [hereinafter Hermiston EJSscreen Report].

⁴⁴ Boardman EJSscreen Report, *supra* note 42, at 3; Hermiston EJSscreen Report, *supra* note 43, at 3.

nitrate pollution that has compromised drinking water for as many as 1,300 homes throughout the region.⁴⁵ Though the State has been aware of the groundwater crisis for over three decades, little has been done to curb the pollution responsible for the contamination, including the Dairy CAFOs that are contributing to the problem by overapplying manure to farmland throughout the area.⁴⁶ The cumulative impact this industry is having on the health and wellbeing of these Oregonians is undeniable, and DEQ should immediately take action to safeguard these vulnerable populations from any further harm.

Indeed, DEQ has a legal duty to consider Dairy CAFOs' impacts on environmental justice communities. ORS § 182.545(1), "Duties of Natural Resource Agencies," states: In order to provide greater public participation and to ensure that all persons affected by decisions of the natural resource agencies have a voice in those decisions, each natural resource agency shall:

1. In making a determination whether and how to act, consider the effects of the action on environmental justice issues.
2. Hold hearings at times and in locations that are convenient for people in communities that will be affected by the decisions stemming from those hearings.
3. Engage in public outreach activities in the communities that will be affected by decisions of the agency.
4. Create a citizen advocate position that is responsible for (a) Encouraging public participation; (b) Ensuring that the agency considers environmental justice issues; and (c) Informing the agency of the effect of its decisions on communities traditionally underrepresented in public processes.

DEQ is a "Natural Resource Agency" under ORS § 182.535. Accordingly, DEQ must consider, and work to redress, the clear environmental injustices associated with its failure to regulate Dairy CAFO air pollution. This proposed rulemaking presents the agency with the opportunity to do so.

C. Failing to Immediately Regulate Dairy CAFO Air Emissions Poses a Direct and Serious Threat to Oregon's Environment

For years, unchecked Dairy CAFO air pollution has been degrading Oregon's environment and natural resources. Not only do these facilities emit substantial quantities of climate-altering pollutants that intensify the negative impacts of climate change, but they are contributing significantly to the State's regional haze problems.

Mega-dairies are a significant source of methane emissions, a potent anthropogenic GHG.⁴⁷ Methane comes directly from cows (enteric emissions) and off-gases from the enormous manure lagoons where waste anaerobically rots. According to the U.S. Environmental Protection Agency ("EPA"), livestock production is the dominant source of methane in the United States, and manure

⁴⁵ Alex Baumhardt, *Morrow County Declares Emergency Over Groundwater Nitrate Pollution*, OR. CAP. CHRON. (June 9, 2022), <https://oregoncapitalchronicle.com/2022/06/09/morrow-county-declares-emergency-over-groundwater-nitrate-pollution>.

⁴⁶ *Id.*; see also Food & Water Watch et al., Petition to EPA for Emergency Action Pursuant to the Safe Drinking Water Act § 1431, 42 U.S.C. § 300i, to Protect Citizens of the Lower Umatilla Basin in Oregon from Imminent and Substantial Endangerment to Public Health Caused by Nitrate Contamination of Public Water Systems and Underground Sources of Drinking Water (Jan. 16, 2020).

⁴⁷ *Overview of Greenhouse Gases*, EPA (May 16, 2022), <https://www.epa.gov/ghgemissions/overview-greenhouse-gases> ("The Agriculture sector is the largest source of CH₄ emissions in the United States.").

management is the fastest growing major source of methane, with total emissions increasing by more than 62 percent between 1990 and 2020.⁴⁸ Dairy operations *specifically* are a large part of these increases in manure methane emissions, with overall dairy emissions increasing 122 percent within that same timeframe.⁴⁹ In Oregon, agriculture is the *leading source* of methane emissions,⁵⁰ and animal agriculture (enteric fermentation and manure management) is responsible for over 3 million metric tons of carbon dioxide (“CO₂”) equivalent each year.⁵¹

These GHG emissions contribute to rising global temperatures and the serious public health and welfare problems associated with climate change. EPA recognized the significance of these climate impacts in 2009, when the agency found that methane and five other anthropogenic GHGs “endanger both the public health and the public welfare of current and future generations by causing or contributing to climate change.”⁵² As the recent Intergovernmental Panel on Climate Change (“IPCC”) reports concluded, rapidly restricting methane is crucial, given that its potency far outstrips CO₂ in the short term.⁵³ Climate change also threatens the viability of agriculture as a whole, including the dairy industry.

In addition to these serious climate impacts, Dairy CAFOs also harm Oregon’s natural resources and wildlife through their ammonia emissions. CAFOs produce nearly 75 percent of all ammonia pollution in the United States,⁵⁴ and a single CAFO is capable of emitting millions of pounds of ammonia each year.⁵⁵ Ammonia emissions are particularly high for CAFOs that rely on land application for manure management, which volatilizes the ammonia in the manure and further increases emissions.⁵⁶ This is especially true for dairy operations that use anaerobic digesters to generate methane from livestock manure, as studies have shown that the process increases the ammonia content of resulting waste.⁵⁷ Oregon dairies in particular have some of the highest ammonia emissions in the country. For instance, when operating with just over 50,000 cows in 2005, Threemile Canyon Farms reported ammonia emissions that ranked among the highest in the

⁴⁸ *Id.*; see also *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2020*, EPA (July 13, 2022), <https://www.epa.gov/ghgemissions/inventory-us-greenhouse-gas-emissions-and-sinks-1990-2020>.

⁴⁹ *Id.* at 2-20.

⁵⁰ See *The Urgent Case for a Moratorium on Mega-Dairies in Oregon*, FOOD & WATER WATCH, (Nov. 2020), https://www.foodandwaterwatch.org/wp-content/uploads/2021/03/fs_2011_ormegadairies-fin.pdf (citing *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990- 2018*, EPA (2018) at ES-16, ES-22, 2-20).

⁵¹ See *Oregon Greenhouse Gas Sector-Based Inventory Data*, OR. DEP’T ENV’T QUALITY, <https://www.oregon.gov/deq/aq/programs/Pages/GHG-Inventory.aspx> (last visited Aug. 4, 2022).

⁵² Endangerment & Cause or Contribute Findings from GHGs Ender Section 202(a) of the Clean Air Act, 74 Fed. Reg. 66,496 (Dec. 15, 2009) (final rule).

⁵³ See generally *Climate Change 2021: The Physical Science Basis*, IPCC (2021), <https://www.ipcc.ch/report/ar6/wg1> (describing how human influence, specifically greenhouse gas emission, has unequivocally warmed the atmosphere, ocean, and land); *Climate Change 2022: Impacts, Adaptation and Vulnerability*, IPCC (2022), <https://www.ipcc.ch/report/ar6/wg2> (detailing the degradation and loss of ecosystems due to greenhouse gas emissions).

⁵⁴ *CAFOs Ordered to Report Hazardous Pollution*, WATERKEEPER ALL. (Apr. 11, 2017), <http://waterkeeper.org/cafos-ordered-to-report-hazardous-pollution>.

⁵⁵ Michele M. Merkel, Speech at Albany Law School: The Use of CERCLA to Address Agricultural Pollution 1 (Sept. 15, 2006), http://www.environmentalintegrity.org/pdf/publications/The_Use_Cercla.pdf.

⁵⁶ Hribar, *supra* note 18, at 5.

⁵⁷ Michael A. Holly et al., *Greenhouse Gas and Ammonia Emissions from Digested and Separated Dairy Manure During Storage and After Land Application*, 239 AGRIC., ECOSYSTEMS, & ENV’T 410, 413 (2017); *Conservation Practice Standard: Anaerobic Digester*, USDA (Oct. 2017), https://www.nrcs.usda.gov/wps/PA_NRCSCConsumption/download?cid=nrcseprd1335265&ext=pdf; see also *Agricultural Air Quality Conservation Measures: Reference Guide for Poultry and Livestock Production Systems*, EPA & USDA, Appendix A.1 (Sep. 2017), https://www.epa.gov/sites/default/files/2017-01/documents/web_placeholder.pdf (estimating anaerobic digesters increase on-farm ammonia emissions by 30-50%).

nation.⁵⁸ If operated at its current permitted capacity of 90,667 dairy cows, it would emit a dangerous 27,000 pounds of ammonia a day, or 4,972.5 tons per year.⁵⁹

This ammonia pollution is wreaking havoc on the Columbia River Gorge Scenic Area, Crater Lake National Park, and Oregon's other natural treasures. Not only do these emissions degrade overall ambient air quality,⁶⁰ DEQ reports that livestock manure management, including field application of manure, is “by far the most significant source of ammonia” contributing to regional haze and harming iconic natural features of the Oregon landscape.⁶¹ They also contribute to acid rain, which threatens ecosystems and Native American rock paintings.⁶²

There are also serious water quality implications related to a CAFO's ammonia emissions. When ammonia is released into the air, it rapidly settles to surfaces, leading to significant deposition—up to 20 percent—to nearby land and waterways.⁶³ Ammonia is often found in surface waters surrounding CAFOs, and causes oxygen depletion from water, which itself can kill aquatic life.⁶⁴ Ammonia also converts to nitrates, and can therefore deposit increased loads of nitrogen into water bodies, which harm sensitive ecosystems like coastal estuaries by accelerating vegetative growth and toxic algae blooms, leading to oxygen depletion and reduced fish and shellfish populations.⁶⁵

D. Failing to Immediately Regulate Dairy CAFO Air Emissions Exacerbates Inhumane Living Conditions for Farmed Animals

Dairy CAFOs force farmed animals into intense confinement in factory-like conditions that inhibit their ability to carry out natural behaviors and increase their susceptibility to injury, illness, and disease.⁶⁶ Most cows living on Dairy CAFOs are kept indoors, either allowed to move around the barn freely in what are known as “free stall” systems, or tethered in place in “tie stall” systems where they are unable to leave their small individual stalls. Dairy CAFO flooring is typically concrete, which can cause cows to develop painful pressure lesions on their hooves, along with laminitis and even lameness.⁶⁷ CAFOs often force dairy cows to stand in their own manure, which

⁵⁸ Lindley, Tom. Perkins Cole, *Letter to EPA Regional Office. Re: CR-ENS Number 754198* (Apr. 5, 2005); FWW analysis of EPA, *Toxic Release Inventory, 2005, Ammonia* (accessed Feb. 10, 2017), available at https://iaspub.epa.gov/triexplorer/tri_release.chemical and on file at FWW; FWW analysis of U.S. Coast Guard, *National Response Center: 2005 Data* (accessed Feb. 10, 2017), available at <http://nrc.uscg.mil> and on file at FWW.

⁵⁹ See DAQTF Report, *supra* note 9, Appendix I at 6.

⁶⁰ Hribar, *supra* note 18, at 7.

⁶¹ *Oregon Regional Haze Plan: 5-Year Progress Report and Update*, OR. DEP'T ENV'T QUALITY I, 21 (Feb. 2016), <http://www.deq.state.or.us/aq/haze/docs/2016ORRegHazeUpdate.pdf>; see also Mark Green, Marc Pitchford & Chris Emery, *The Columbia River Gorge Air Quality and Visibility Study*, EM 21, 24 (2008) (concluding that CAFO emissions are a significant source of haze in the Gorge).

⁶² See DAQTF Report, *supra* note 9, at 6–7; DAQTF Technical Support, *supra* note 10, at 41–42.

⁶³ Shabtai Bittman and Robert Mikkelsen, *Ammonia Emissions from Agricultural Operations: Livestock*, Better Crops/Vol. 93, 29 (2009).

⁶⁴ Hribar, *supra* note 18, at 4.

⁶⁵ Hribar, *supra* note 18, at 4–5; DAQTF Technical Support, *supra* note 10, at 40–41.

⁶⁶ See, e.g., *The Critical Relationship Between Farm Animal Health and Welfare*, ANIMAL WELFARE INST. (2018), <https://awionline.org/sites/default/files/uploads/documents/FA-AWI-Animal-Health-Welfare-Report-04022018.pdf>.

⁶⁷ S. Platz et al., *What Happens with Cow Behavior When Replacing Concrete Slatted Floor by Rubber Coating: A Case Study*, 91 J. DAIRY SCI. 999, 999 (2008).

causes those wounds to become infected—Lost Valley Farm, for example, confined dairy cows to barns overflowing with manure, leaving them to stand or lie all day and night in their own waste.⁶⁸

Like humans and other mammals, cows only produce milk as a result of pregnancy and birth. Accordingly, cows on Dairy CAFOs are repeatedly impregnated and their offspring taken away, generally within the first 24 hours after birth, so that all of their milk can be collected and none of it is “lost” to nursing. Dairy cows are bred for unnaturally high milk production and as a result often develop mastitis, which is a painful inflammation of the mammary gland that results from physical trauma or microorganism infection.⁶⁹ Dairy cows exist in these inhumane systems until their milk production slows below desired levels or they become too crippled or ill to stay on farms, at which point they are considered “spent” and are sent to slaughter. A dairy cow’s utility on a Dairy CAFO generally only lasts between two and five years, which is in stark contrast to a cow’s natural life span, which can be upwards of 20 years.⁷⁰ The demanding nature of the dairy industry is most evident at the end of cows’ lives—an estimated 75% of downed animals who arrive at slaughterhouses unable to stand are dairy cows.⁷¹

Unregulated Dairy CAFO air emissions are making conditions even worse for farmed animals by exposing the animals themselves to high levels of ammonia, particulates, and other pollutants of concern. As discussed above, failure to regulate Dairy CAFOs also fuels the climate crisis, and the resulting increasing temperatures and extreme weather events further harm farmed animals’ health and well-being.⁷² Specifically, farmed animals are “greatly affected by resulting heat stress, metabolic disorder, oxidative stress, and immune suppression,” which cause them to experience increased rates of disease and death.⁷³ They also experience other health impacts from the advancing climate crisis, including those associated with the “multiplication and distribution of parasites, reproduction, virulence, and transmission of infectious pathogens and/or their vectors.”⁷⁴

E. Failing to Immediately Regulate Dairy CAFO Air Emissions Jeopardizes the Economic Livelihoods of Oregon’s Few Remaining Small and Mid-sized Dairy Farms

Lastly, the rise of Dairy CAFOs across the state is driving small and mid-sized dairy farms, which are historically the backbone of Oregon’s rural economy, to extinction. The “catastrophic decline” in small and mid-sized dairy farms is a powerful illustration of this trajectory.⁷⁵ The total number of dairy farms has fallen from 1,900 in 1992 to fewer than 230 today,⁷⁶ and the number of mid-

⁶⁸ Leah Douglas, *Lost Valley Debacle Leads to Effort to Limit Mega-Dairies in Oregon*, OR. LIVE (Apr. 5, 2019), <https://www.oregonlive.com/business/2019/04/lost-valley-debacle-leads-to-effort-to-limit-mega-dairies-in-oregon.html> (featuring a photo of a dairy cow forced to stand in manure up to her ankles).

⁶⁹ Wei Nee Cheng & Sung Gu Han, *Bovine Mastitis: Risk Factors, Therapeutic Strategies, and Alternative Treatments — A Review*, 33 ASIAN-AUSTRALASIAN J. ANIMAL SCI. 1699, 1699 (2020).

⁷⁰ A. De Vries & M.I. Marcondes, *Review: Overview of Factors Affecting Productive Lifespan of Dairy Cows*, 14 ANIMAL S155, s159 (2020).

⁷¹ *An HSUS Report: The Welfare of Cows in the Dairy Industry*, HUMANE SOC’Y U.S. 8 (2009), <https://www.humanesociety.org/sites/default/files/docs/hsus-report-animal-welfare-cow-dairy-industry.pdf>.

⁷² Md Zulfeqar Ali et al., *Impact of Global Climate Change on Livestock Health: Bangladesh Perspective*, 10 OPEN VETERINARY J. 178, 178 (2020).

⁷³ *Id.*

⁷⁴ *Id.*

⁷⁵ George Plaven, *Groups Call for “Mega-Dairy” Moratorium*, CAP. PRESS (Dec. 13, 2018), https://www.capitalpress.com/ag_sectors/dairy/groups-call-for-mega-dairy-moratorium/article_a7a01e2a-fcb5-11e8-bc5c-1f802a55fc28.html.

⁷⁶ See Douglas, *supra* note 68.

sized dairies in Oregon dropped by a third just between 2007 and 2012.⁷⁷ Meanwhile, the number of dairy cows in the state more than tripled between 1997 and 2012 as the number of mega-dairies spiked.⁷⁸ In 1997, Oregon had 8 dairies with over 1,000 cows, and as of 2012 it had 25 such facilities.⁷⁹ As of August 2022, there are 68 such facilities.⁸⁰ Oregon’s family farms cannot—and will not—survive CAFOs, especially when Dairy CAFOs need not account for the true cost of their pollution and other negative impacts.⁸¹

III. PROPOSITIONS OF LAW

As required under OAR 137-001-0070(1)(c), petitioners submit the following propositions of federal and state law that support EQC’s authority and obligation to regulate emissions from Dairy CAFOs to protect air quality in Oregon.

A. EQC Has Broad Authority to Regulate State Air Quality

The Oregon Legislature has established both broad policy and specific direction to DEQ and EQC with regard to the control of air pollution in Oregon. The Legislature’s overriding policy for Oregon, as stated in ORS 468A.010, is “[t]o restore and maintain the quality of the air resources of the state in a condition as free from air pollution as practicable, consistent with the overall public welfare of the state.” EQC’s expansive authority to regulate Oregon air pollution also extends to the regulation of GHG emissions.⁸²

To carry out this policy, EQC is authorized to set standards for air purity in Oregon, to set emissions limitations on air contamination sources, and then to regulate air contaminant emissions in order to meet those standards.⁸³ Specifically, and in relevant part, the State Legislature has empowered the Commission to: (1) set statewide emissions standards;⁸⁴ (2) adopt mandatory pollution control equipment and technology requirements;⁸⁵ (3) require sources of air contaminants to obtain permits;⁸⁶ (4) impose registration and reporting requirements on air contaminant

⁷⁷ Food & Water Watch analysis of USDA National Agriculture Statistics Service 2012 Census of Agriculture State Data – Oregon. A mid-sized dairy is one with between 50 and 199 cows. *See 2012 Census of Agriculture: Oregon State and County Data*, USDA, Table 12. Cattle and Calves – Inventory: 2012 and 2007 (May 2014), <https://agcensus.library.cornell.edu/wp-content/uploads/2012-Oregon-orv1-1.pdf>.

⁷⁸ Food & Water Watch calculations based on U.S. Department of Agriculture (USDA) Census of Agriculture 1997 and 2012.

⁷⁹ Food & Water Watch calculation of USDA National Agriculture Statistics Service. 2002 Census of Agriculture State Data – Oregon. *See 2002 Census of Agriculture: Oregon State and County Data*, USDA, Table 12. Cattle and Calves – Inventory: 2002 and 1997 (June 2004), <https://agcensus.library.cornell.edu/wp-content/uploads/2002-Oregon-01-full.pdf>; *see also* 2012 Oregon Census of Agriculture, *supra* note 77 and accompanying text.

⁸⁰ *See* List of Dairy Operations, *supra* note 16.

⁸¹ *See* Douglas, *supra* note 68.

⁸² *See Program Options to Cap and Reduce Greenhouse Gas Emissions: Final Report*, OR. DEP’T ENV’T QUALITY 5–7 (June 2020) [hereinafter DEQ GHG Report], https://www.oregon.gov/gov/Documents/2020%20DEQ%20CapandReduce_FinalReport.pdf (detailing EQC’s legal authority to regulate greenhouse gas emissions).

⁸³ *See* OR. REV. STAT. § 468.025; OR. REV. STAT. § 468A.040; and OR. REV. STAT. § 468A.045.

⁸⁴ OR. REV. STAT. § 468A.025(3) (authorizing EQC to “set forth the maximum amount of air pollution permissible” and to distinguish between air contaminants and air contamination sources when setting such standards).

⁸⁵ OR. REV. STAT. § 468A.025(4) (authorizing EQC to “require specific permit conditions for the operation and maintenance of pollution control equipment,” and “technology” necessary to protect public health and achieve ambient air quality standards and federal requirements).

⁸⁶ OR. REV. STAT. § 468A.040(1) (authorizing EQC to require air permits for air contamination sources classified by types of air contaminants or source).

sources;⁸⁷ (5) mandate pre-construction requirements on proposed sources;⁸⁸ and (6) require emission monitoring and testing.⁸⁹

B. EQC Has Express Authority to Adopt Air Quality Rules Applicable to Agricultural Sources

Although “agricultural operations” are generally exempt from State air quality laws, the Legislature has authorized EQC to regulate air contaminant emissions from agricultural operations, and specifically dairies, to the extent “necessary to implement the federal Clean Air Act,” and as “necessary for the [EQC], in the commission’s discretion, to implement a recommendation of the Task Force on Dairy Air Quality created under section 3, chapter 799, Oregon Laws 2007, for the regulation of dairy air contaminant emissions.”⁹⁰

In other words, EQC *must* regulate Dairy CAFO emissions that trigger federal Clean Air Act requirements. In fact, state law has explicitly directed DEQ and ODA to enter a MOU to address the administration and enforcement of federal and state air quality laws applicable to agricultural operations, but the agencies have to date failed to do so.⁹¹ This proposed rulemaking requests that the agencies fulfill this statutory mandate.

Additionally, EQC may regulate Dairy CAFO emissions beyond federal Clean Air Act requirements, by adopting the recommendations made by the Dairy Task Force in 2008. The law gives EQC discretion with respect to the adoption of Dairy Task Force recommendations, and we urge the Commission to exercise this discretion as to all air contaminants identified by the Task Force as pollutants of concern. Importantly, with regard to GHG emissions, Governor Brown’s Climate Change directive eliminated EQC’s discretion, requiring the agency to use its authority fully—in this case, to regulate dairy methane and nitrous oxides.⁹²

1. EQC Must Regulate Dairy CAFO Emissions that Trigger Clean Air Act Permitting Requirements

As recognized by the Dairy Task Force, the federal Clean Air Act applies to dairy operations that emit federally regulated air pollutants at sufficient quantities to trigger air quality permitting requirements.⁹³ These air pollutants include Hydrogen Sulfide, Nitrogen Oxides, Particulate Matter, and VOCs (collectively, “CAA pollutants”).⁹⁴ Additionally, DEQ has long acknowledged

⁸⁷ OR. REV. STAT. § 468A.050(1) (authorizing EQC to classify air contamination sources according to levels and types of emissions, and other characteristics which contributed to air pollution and require registration and/or reporting for any such class).

⁸⁸ OR. REV. STAT. §§ 468A.055(1)-(2) (authorizing EQC to require notice prior to construction of new air contamination sources, and as a condition precedent to approval, the submission of plans and specifications, and the adoption of corrections and revisions to those plans).

⁸⁹ OR. REV. STAT. §§ 468A.070(1)-(2) (authorizing EQC to require sampling and testing of contamination sources necessary to determine the nature, extent, quantity, and degree of air contaminants emitted from the source).

⁹⁰ OR. REV. STAT. §§ 468A.020(2)(b)-(c).

⁹¹ OR. REV. STAT. § 468A.790.

⁹² See Or. Exec. Order No. 20-04 (Mar. 10, 2020) [hereinafter Oregon EO], <https://www.oregon.gov/bcd/Pages/energy-eo.aspx> (requiring EQC to “use *any and all* discretion vested in them by law” to help achieve the state’s greenhouse gas reduction goals).

⁹³ DAQTF Technical Support, *supra* note 10, at 42–43.

⁹⁴ *Id.* at 44.

that should agricultural sources require federal permits, then such sources, including Dairy CAFOs, would also need to comply with State air quality requirements.⁹⁵

EPA also recognizes the applicability of the Clean Air Act to CAFOs. Not only has the federal agency historically taken a series of legal actions designed to bring delinquent CAFOs into the Clean Air Act permitting program,⁹⁶ it has also explicitly confirmed that when such operations emit CAA pollutants in quantities that exceed regulatory thresholds, EPA “can and will require [animal feeding operations] to comply with all applicable [Clean Air Act] requirements.”⁹⁷ While EPA acknowledges that the Clean Air Act applies to CAFOs generally, it has also entered into an agreement with a subset of CAFO operators, which provides safe harbor from federal enforcement of the Clean Air Act until EPA has developed new emissions modeling tools for the industry.⁹⁸ Though this agreement remains in place, it does *not* exempt the industry at large from Clean Air Act requirements, nor does it prevent Oregon from regulating Dairy CAFOs under the Clean Air Act and other applicable state law.⁹⁹

California’s regulation of Dairy CAFOs under the Clean Air Act for the past two decades underscores this point. Much like Oregon,¹⁰⁰ California state law used to exempt agricultural sources from Clean Air Act regulation, until EPA ruled in 2003 that doing so clearly violated federal law and exposed the State to sanctions, including the loss of billions of dollars of federal highway funds.¹⁰¹ Removing the blanket exemption for agriculture propelled the State to create a comprehensive Clean Air Act permitting program for agricultural sources, and issue CAFO-specific regulations in recognition of the industry’s outsized impact on air quality.¹⁰²

Though Oregon has similarly repealed its blanket exemption for agricultural source emissions, as instructed by EPA,¹⁰³ DEQ has failed to drive Clean Air Act implementation for the sector. Unlike California regulators, who developed their Dairy CAFO permitting program amidst a dearth of scientific research on CAFO air emissions, now there are several tools available to DEQ that can

⁹⁵ In updating DEQ rules to conform with the 2007 revisions to ORS 468A.020, DEQ acknowledged that “if agricultural source types are required to obtain a federally required permit because of the revisions to ORS 468A.020, then they will need to comply with the existing testing, monitoring, recordkeeping and reporting requirements under Divisions 216 (ACDP), 218 (Title V) or 224 (major New Source Review).” *Chapter 340 Proposed Rulemaking Statement of Need and Fiscal and Economic Impact*, OR. DEP’T ENV’T QUALITY 2 (Oct. 26, 2007).

⁹⁶ See, e.g., Press Release, DEP’T OF JUSTICE, *Ohio’s Largest Egg Producer Agrees to Dramatic Air Pollution Reductions from Three Giant Facilities* (Feb. 23, 2004), available at https://www.justice.gov/archive/opa/pr/2004/February/04_enrd_105.htm; Press Release, DEP’T OF JUSTICE, *Government Reaches Settlements with Seaboard Foods and PIC USA* (Sep. 15, 2006), available at https://www.justice.gov/archive/opa/pr/2006/September/06_crm_625.html; Press Release, DEP’T OF JUSTICE, *Nation’s Second Largest Hog Producer Reaches Settlement With U.S. & Citizen’s Group* (Nov. 1, 2001), available at https://www.justice.gov/archive/opa/pr/2001/November/01_enrd_604.htm.

⁹⁷ 70 Fed. Reg. 4957, 4959 (Mar. 2, 2005).

⁹⁸ *Id.*

⁹⁹ *Id.*

¹⁰⁰ Oregon fell under similar EPA scrutiny in 2007 for its blanket exemption of agricultural sources from air quality regulation, prompting the state legislature to clarify that DEQ was empowered to regulate such sources under the Clean Air Act. S.B. 235, 74th Leg. Assemb., Reg. Sess. (Or. 2007).

¹⁰¹ EPA, *California New Source Review: Call for Revisions to California State Law*, Region 9 Air Programs, available at <https://19january2017snapshot.epa.gov/www3/region9/air/ca/nsr/index.html>. See also Senate Committee on Env’tl Quality, SB 700 Bill Analysis, 2003-2004 Sess., at 4 (Cal. 2003), <https://leginfo.legislature.ca.gov/faces/billAnalysisClient.xhtml>.

¹⁰² See, e.g., San Joaquin Valley Air Pollution Control District Rule 4570 (Adopted June 15, 2006) (aimed at reducing VOC and ammonia emissions by requiring best available mitigation measures).

¹⁰³ See Senate Committee on Env’tl and Nat. Resources, S.B. 235 Staff Measure Summary, 2007 Reg. Sess., at 1 (Or. 2007), <https://olis.oregonlegislature.gov/liz/2007R1/Downloads/MeasureAnalysisDocument/4951>.

quantify Dairy CAFO emissions and determine whether these stationary sources exceed Clean Air Act permitting thresholds. The California Air Resource Board has developed and refined a suite of emissions factors over the past sixteen years in partnership with UC Davis agricultural researchers to estimate Dairy CAFO VOC and PM emissions for the purpose of federal Title I and Title V permitting.¹⁰⁴ Additionally, the USDA has created two high-quality, process-based models to assess Dairy CAFO air emissions, both of which take into account the particular structural and management characteristics of CAFOs.¹⁰⁵ These include the Integrated Farm Systems Model, which models ammonia and GHG emissions released from an array of on-farm sources and activities,¹⁰⁶ and the Dairy Gas Emissions Model, which projects ammonia, hydrogen sulfide, and greenhouse gas emissions.¹⁰⁷ EPA currently uses these models in its National Emissions Inventory,¹⁰⁸ and also anticipates releasing additional statistical modeling tools to quantify Dairy CAFO air emissions by late 2023.¹⁰⁹

In other words, DEQ and CAFO operators have resources at their disposal to accurately determine which Oregon Dairy CAFOs exceed Clean Air Act permitting thresholds. The Clean Air Act has two types of permit programs that apply to all major stationary sources of air pollution: Title I permits for construction approval, and Title V operating permits. As detailed below, both of these programs are applicable to Oregon’s largest dairy operations.

a. A Dairy CAFO is a “stationary source” within the meaning of the Clean Air Act

Clean Air Act permitting programs only apply to “stationary sources,” which the Act broadly defines as “any source of an air pollutant” excluding internal combustion engines for transportation and certain nonroad engines.¹¹⁰ EPA regulations further refine the meaning of this term, defining a “stationary source” as “any building, structure, facility, or installation which emits or may emit a regulated [New Source Review] pollutant.”¹¹¹ “Building, structure, facility or installation” means “all of the pollutant-emitting activities which belong to the same industrial grouping, are located on one or more contiguous or adjacent properties, and are under the control of the same person (or persons under common control) except the activities of any vessel.”¹¹²

¹⁰⁴ See *Air Pollution Control Officer’s Revision of the Dairy VOC Emission Factors*, SAN JOAQUIN VALLEY AIR POLLUTION CONTROL DIST. 5 (Feb. 23, 2012) [hereinafter *VOC Emission Factors*],

[https://www.valleyair.org/busind/pto/emission_factors/2012-Final-Dairy-EE-Report/FinalDairyEFReport\(2-23-12\).pdf](https://www.valleyair.org/busind/pto/emission_factors/2012-Final-Dairy-EE-Report/FinalDairyEFReport(2-23-12).pdf); SJVAPCD, *Dairy and Feedlot PM₁₀ Emission Factors* (Oct. 14, 2017), http://www.valleyair.org/busind/pto/dpag/FYI-Dairy_Feedlot_PM10_Emission_Factors_Revised_10-24-2017.pdf.

¹⁰⁵ C. Alan Rotz et. al., *Ammonia Emission Model for Whole Farm Evaluation of Dairy Production Systems*, 43 J. Env’tl Qual. 1143, 1145 (2014).

¹⁰⁶ *Id.*, See also USDA Agricultural Research Service, *Integrated Farm System Model*, (last modified Mar 3, 2020), <https://www.ars.usda.gov/northeast-area/up-pa/pswmru/docs/integrated-farm-system-model/>.

¹⁰⁷ USDA Agricultural Research Service, *Dairy Gas Emission Model* (last modified Mar. 20, 2020), <https://www.ars.usda.gov/northeast-area/up-pa/pswmru/docs/dairy-gas-emissions-model/>.

¹⁰⁸ EPA, 2017 NATIONAL EMISSIONS INVENTORY: JANUARY 2021 UPDATED RELEASE, TECHNICAL SUPPORT DOCUMENT 4-61 (2021); A. McQuilling & P. Adams, *Semi-Empirical Process-Based Models For Ammonia Emissions From Beef, Swine, & Poultry Operations In The United States*, 120 ATMOS. ENVTL. 127 (Nov. 2015).

¹⁰⁹ See EPA, *Draft Air Emission Models for Dairy Animal Feeding Operations* (June 2022), available at https://www.epa.gov/system/files/documents/2022-07/Dairy_PreliminaryDraft_report.pdf; EPA *National Air Emissions Monitoring Study* (last updated July 14, 2022), <https://www.epa.gov/afos-air/national-air-emissions-monitoring-study#naems-status> (outlining timeline for finalization and publication of emission estimating methodologies).

¹¹⁰ 42 U.S.C. § 7602

¹¹¹ 40 C.F.R. § 51.165(a)(1)(I).

¹¹² *Id.* at § 51.165(a)(1)(ii).

A Dairy CAFO is made up of a combination of “buildings” and “structures” that house cows, manure, and/or feed, all of which emit CAA pollutants. These pollutant-emitting buildings and structures include, but are not limited to freestall barns, manure storage lagoons, open corrals with flushed alleys, milking barns, and feed storage facilities. Together, these components comprise the dairy facility and are collectively a stationary source within the meaning of the Clean Air Act.¹¹³

b. Large Dairy CAFOs must be permitted under the Title I Prevention of Significant Deterioration Program

Title I of the Clean Air Act focuses on the construction phase, and requires construction approval and the implementation of pollution control technology for all new major sources and existing major sources proposing major modifications.¹¹⁴ The severity of the air pollution in a given air basin determines a certain tons per year emissions threshold, above which a stationary source must obtain a Title I permit.

In air quality attainment areas, where air quality complies with National Ambient Air Quality Standards (“NAAQS”), the source is permitted under the Prevention of Significant Deterioration (“PSD”) program, whereas in nonattainment areas, where the concentration of a pollutant exceeds NAAQS, the source is permitted under the Nonattainment New Source Review (“NNSR”) program. In Oregon, both the NNSR and PSD programs are implemented through the state’s Air Contaminant Discharge Permit (“ACDP”) program.¹¹⁵

Most Oregon Dairy CAFOs operate in attainment areas.¹¹⁶ Therefore, to be considered a “Major Source” triggering PSD permit requirements, a new operation must have the potential to emit at least 250 tons per year of any CAA pollutant.¹¹⁷ An existing major source proposing modifications would trigger PSD permitting requirements if the modification would result in significant emissions increases known as “significant emission rates,” as detailed below.

Figure 5, Significant Emission Rates¹¹⁸

Total Particulate (PM)	25 tons/year
Particulate 10 microns and less in size (PM ₁₀)	15 tons/year
Nitrogen Oxides (NO _x)	40 tons/year
Volatile Organic Compounds (VOCs)	40 tons/year
Hydrogen Sulfide (H ₂ S)	10 tons/year

When an air pollution source is subject to the PSD program, it must install Best Available Control Technology (“BACT”), which imposes emission limits on a facility based on the “maximum

¹¹³ See *Ass’n of Irrigated Residents v. Fred Schakel Dairy*, CIV F 05-00707, 2005 U.S. LEXIS 36769, *29-31 (E.D. Cal. Dec. 2, 2005) (holding that a dairy was sufficiently alleged to be a stationary source); *Idaho Conservation League v. Boer*, 362 F. Supp. 2d 1211, 1214-1215 (D. Idaho 2004) (same). See also, 70 Fed. Reg. at 4959 (EPA noting that CAFOs emit several pollutants regulated under the Clean Air Act “from many different areas at AFOs, including animal housing structures (e.g. barns, covered feed lots) and manure storage areas (e.g. lagoons, covered manure piles).”)

¹¹⁴ 40 C.F.R. § 52.21(j) (2021).

¹¹⁵ OR. ADMIN. R. 340-216-0010 *et seq.*; see also DAQTF Technical Support, *supra* note 10, at 50.

¹¹⁶ DAQTF Technical Support, *supra* note 10, at 49-52.

¹¹⁷ 40 C.F.R. §§ 51.166(a)(7), (b)(1); OR. ADMIN. R. 340-224-0010.

¹¹⁸ See OR. ADMIN. R. 340-200-0020 Table 2.

degree of reduction achievable.”¹¹⁹ Per EPA guidance, BACT is considered the highest level of control achieved for a similar source in any state, unless the source demonstrates that implementation of such controls would result in unusually high energy, environmental, or economic impacts. The PSD program also requires sources to conduct an analysis of impacts on NAAQS, air quality degradation, and visibility, the results of which could lead to requirements for further controls or design changes.¹²⁰

Based on the Dairy Task Force’s scientific review of dairy air emissions, very large dairy operations emit significant quantities of VOCs, sufficient to trigger these PSD permit requirements. The Task Force considered a range of representative emission factors, assembled by DEQ to quantify dairy air emissions.¹²¹ Depending on the emission factor, a Dairy CAFO ranging in size from 13,110 cows to 25,920 cows will trigger PSD permitting requirements for VOCs:

Figure 6, Dairy Operation VOC Emissions Triggering Title I (2008 estimate)¹²²

VOC Emission Factor	Herd Size	VOC Emissions (kg/yr)	In Tons/Year
8.75 kg/head-yr	25,920 cows	226,800	250.004
17.3 kg/head-yr	13,110 cows	226,803	250.007

VOC emissions factors developed after the Task Force issued its report and currently utilized by California regulators further refines this estimate.¹²³ This updated scientific research suggests that a dairy operation consisting of 16,515 cows or more emits sufficient VOCs to trigger PSD permitting. At the time of petition filing, there are currently two Oregon dairies that exceed this threshold.

¹¹⁹ DAQTF Technical Support, *supra* note 10, at 53.

¹²⁰ *Id.*

¹²¹ *Id.* at 70; Appendix W. The chosen emission factors were based on EPA’s “best scientific judgment from university reports and the EPA using the following criteria: emission factors used by EPA (if available); emissions factors from studies conducted in geographic areas with climates similar to Oregon, [and] emissions factors utilized in other countries with climates similar to Oregon.” According to the Task Force, the variability in the range of emission factors selected is attributable to “the fact that some research only accounted for a portion of an operation’s emissions, while other research captured a more complete accounting of total emissions” *Id.* at 69–70.

¹²² Petitioners have compiled a spreadsheet entitled “EmissionsCalculationsFigs.6-12” detailing the emissions calculations for Figures 6–12 of the Petition. This document is saved in the Google Drive Link referenced above.

¹²³ *See* VOC Emission Factors, *supra* note 104.

Figure 7, Dairy Operation VOC Emissions Triggering Title I (2021 estimate)

Herd Size	Non-Feed Related VOC Emissions ¹²⁴ (lb/yr)	Silage Pile VOC Emissions ¹²⁵ (lb/yr)			Total Mixed Ration Emissions ¹²⁶ (lb/yr)	Total VOC Emissions (lbs/yr)
		Corn Silage	Alfalfa Silage	Wheat Silage		
16,515 cows	297,435.15	1,001.85	505.84	1,267.05	199,818.329	500,028.22 [= 250 tons/yr]

c. Very large Dairy CAFOs also require Title V Operating Permits

Title V of the Clean Air Act requires all major sources to have an operating permit. Except in areas with severe air pollution, Title V applies to major sources that have the potential to emit 100 tons per year or more of CAA pollutants.¹²⁷ The purpose of a Title V permit is to ensure compliance with all air quality requirements that otherwise apply to a permitted source. Therefore, while an operating permit generally does not, by itself, impose any additional requirements for emission reductions on sources, it does include monitoring conditions for each existing requirement, and also mandates that permitted sources certify compliance every six months.¹²⁸

However, when a major source also emits a legally significant amount of a hazardous air pollutant (“HAP”), operating permits do impose stringent substantive requirements to control and reduce those HAP emissions. HAPs are a special class of toxic air pollutants that EPA or DEQ has found cause serious health effects, including cancer.¹²⁹ A source need only emit 10 tons per year of any listed HAP in order to trigger Title V permit requirements, which include application of National Emission Standards for Hazardous Air Pollutants (“NESHAPs”) based on the Maximum Achievable Control Technology (“MACT”) for the relevant source category.¹³⁰ If, for any reason, EPA has not yet promulgated NESHAPs for particular HAPs or source categories, DEQ must determine state MACT and establish state HAP emission limitations for that source category.¹³¹

Based on the VOC emission factors detailed in Section III.B.1.a and Figures 6 and 7, the following dairy operations likely require Title V operating permits for VOCs.

¹²⁴ Applying an 18.01 emissions factor, which excludes fugitive emissions related to manure application to land. *See id.* at 5; *see also Association of Irrigated Residents v. Fred Schakel Dairy*, 460 F. Supp. 2d 1185, 1189 (E.D. Cal. 2006) (explaining that “the enteric emissions from cows in the freestall barns and the milking barn, emissions from decomposing feed, and emissions from decomposing manure in the manure lagoons and compost piles are non-fugitive emissions in that they can reasonably pass through a stack, chimney, vent, or other functionally equivalent opening.”).

¹²⁵ Assuming the facility has one of each type of silage pile, which are all covered except for one open face of 25 m².

¹²⁶ Based on average feed lane area of 0.8 m² per cow.

¹²⁷ 42 U.S.C. § 7661(2)(A); 42 U.S.C. § 7602(j).

¹²⁸ DAQTF Technical Support, *supra* note 10, at 53.

¹²⁹ *See* 42 U.S.C. § 7412; DAQTF Technical Support, *supra* note 10, at 45, 53–54.

¹³⁰ DAQTF Technical Support, *supra* note 10, at 50; *see also* OR. ADMIN. R. 340-244-0030(16) (defining “MACT” to mean the “maximum degree of reduction in emissions deemed achievable for either new or existing sources”).

¹³¹ OR. ADMIN. R. 340-244-0120(2).

Figure 8, Dairy Operation VOC Emissions Triggering Title V (2008 estimate)

VOC Emission Factor	Herd Size	VOC Emissions (kg/yr)	In Tons/Year
8.75 kg/head-yr	10,368 cows	90,720	100.001
17.3 kg/head-yr	5,244 cows	90,721	100.003

Figure 9, Dairy Operation VOC Emissions Triggering Title V (2021 estimate)

Herd Size	Non-Feed Related VOC Emissions ¹³² (lb/yr)	Silage Pile VOC Emissions ¹³³ (lb/yr)			Total Mixed Ration Emissions ¹³⁴ (lb/yr)	Total VOC Emissions (lbs/yr)
		Corn Silage	Alfalfa Silage	Wheat Silage		
6,575 cows	118,415.75	1,001.85	505.84	1,267.05	79,459.86	200,650.35 [= 100 tons/yr]

Additionally, the Task Force concluded that Dairy CAFOs emit significant quantities of the HAP methanol, which “may be large enough to require an air quality permit.”¹³⁵ A review of the most current scientific literature identifying dairy-related methanol sources and quantifying emissions confirms the Task Force’s finding. For instance, a University of California, Davis study reported directly to the California Air Resources Board documents enteric methanol emissions—emitted directly from the animals—as well as emissions from fresh manure.¹³⁶ The study found that cow and waste emissions averaged 3.09 and 11.12 pounds/year-head for dry cows and milk cows, respectively.¹³⁷ This means that a dairy operation consisting of 1,800 milk cows would surpass the HAP regulatory threshold based on cow and waste emissions alone. There are currently 33 Oregon dairies that exceed this threshold.

Figure 10, Cow and Waste Methanol Emissions Triggering Title V

Herd Type	Herd Size	Emission Factor	Estimated Cow & Waste Emissions (tons/year)
Milk Cows	1,799	11.12 lb/year-head	10.00
Dry Cows	6,473	3.09 lb/year-head	10.00

Studies commissioned by the California Air Resources Board also show that the storage and handling of dairy cattle feed, in particular the corn silage component of total mixed rations (TMR),

¹³² Applying an 18.01 emissions factor, which excludes fugitive emissions related to manure application to land. See VOC Emission Factors, *supra* note 124, at 5.

¹³³ Assuming the facility has one of each type of silage pile, which are all covered except for one open face of 25 m².

¹³⁴ Based on average feed lane area of 0.8 m² per cow.

¹³⁵ DAQTF Report, *supra* note 9, at 6.

¹³⁶ See Frank Mitloehner, *Volatile Fatty Acid, Amine, Phenol, and Alcohol Emissions from Dairy Cows and Fresh Waste*, U.C. DAVIS (May 31, 2006); Huawei Sun et al., *Alcohol, Volatile Fatty Acid, Phenol, and Methane Emissions from Dairy Cows and Fresh Manure*, 37 J. Env’t Quality 615–622 (2008).

¹³⁷ Mitloehner, *supra* note 136, at 31–32.

emit high levels of methanol.¹³⁸ Considering cow, waste, and feed-related emissions together, a 981 milk cow-dairy would surpass the HAP regulatory threshold for methanol. Based on currently permitted herd capacities, there are 69 Oregon dairies that exceed this threshold.

Figure 11, Cow, Waste and Feed Methanol Emissions Triggering Title V

Herd Type	Herd Size	Estimated Cow/Waste Emissions (tons/yr)	Estimated Feed Emissions (tons/yr)			Total Estimated Methanol Emissions (tons/yr)
			Silage Pile (Disturbed Face) ¹³⁹	Silage Pile (Undisturbed Face) ¹⁴⁰	Total Mixed Rations ¹⁴¹	
Milk Cows	981	5.45	0.009	0.006	4.53	10.00
Dry Cows	1,620	2.5	0.009	0.006	7.48	10.00

d. Dairy CAFOs subject to Title I or V permitting are also subject to regulation for Greenhouse Gas Emissions

Because very large Dairy CAFOs are subject to Clean Air Act requirements for regulated air pollutants including VOCs and Methanol, the facilities’ GHG emissions are also subject to federal regulation. Under the Clean Air Act and EPA’s “tailoring rule,” where a new major stationary source for a regulated pollutant also has the potential to emit 75,000 tons per year or more of CO₂ equivalent, those GHG emissions are also subject to regulation.¹⁴² The same is true for an existing major stationary source that will have an emissions increase of a regulated pollutant, as well as a GHG emissions increase of 75,000 tons per year of CO₂e or more.¹⁴³ In other words, when a CAFO would otherwise be subject to Clean Air Act permitting requirements (a so-called “anyway” source), its GHG emissions are also subject to the Clean Air Act when they surpass the specified threshold.

Very large Dairy CAFOs in Oregon are subject to this GHG tailoring rule. Per EPA regulations, the CO₂ equivalent of GHGs like nitrous oxide and methane can be calculated by multiplying the mass amount of emissions for each GHG pollutant by the gas’s associated global warming potential.¹⁴⁴ Applying the emission’s factors considered by the Task Force for these pollutants to the herd sizes referenced above demonstrates this rule applies to Oregon’s largest CAFOs:

¹³⁸ Charles Krauter & Donald Blake, *Dairy Operations: An Evaluation and Comparison of Baseline and Potential Mitigation Practices for Emissions Reductions in the San Joaquin Valley*, CAL. AIR RESOURCES BD. 22–34 (May 1, 2009).

¹³⁹ Based on an average methanol flux rate of 632 µg/m²/min, and a disturbed silage pile area of 25 m². Per the Krauter study, estimated methanol emission = 632 µg/m²/min x 25 m² x 1,440 min/day x 365 days/yr = .009 tons/yr. *Id.* at 29 & 34.

¹⁴⁰ Based on an average methanol flux rate of 416 µg/m²/min, and an undisturbed silage pile face of 250 m². Per the Krauter study, estimated methanol emission = 416 µg/m²/min x 250 m² x 1,440 min/day x 365 days/yr = .006 tons/yr. *Id.*

¹⁴¹ Based on an average methanol flux rate of 996.75 µg/m²/min and an average feed lane area of 0.8 m² per cow. *Id.* at 22 & 34.

¹⁴² 40 C.F.R. § 51.166(b)(48)(iv). *See also Util. Air Regulatory Group v. EPA*, 573 U.S. 302, 332 (2014) (upholding this aspect of the rule); 40 C.F.R. § 52.21(b)(49) (defining “subject to regulation” to mean that the pollutant is subject to either a provision in the Clean Air Act, or a nationally-applicable regulation codified by the Administrator in subchapter C of this chapter, that requires actual control of the quantity of emissions of that pollutant”).

¹⁴³ 40 C.F.R. § 51.166(b)(48)(iv).

¹⁴⁴ 40 C.F.R. § 51.166(b)(48)(ii)(a).

Figure 12, CO₂e Emissions Subject to Regulation

Herd Size	N₂O Emissions <i>(tons/year)</i>	CH₄ Emissions <i>(tons/year)</i>	Total CO₂e Emissions ¹⁴⁵ <i>(tons/year)</i>
13,110 cows	2.02 – 40.46	1800.63 – 2,375.79	45,619 – 71,453
16,515 cows	2.55 – 50.97	2,268.30 – 2,992.85	57,467 – 90,011
25,920 cows	4.00 – 80.00	3,560.06 – 4,697.22	90,194 – 141,271

2. EQC Should Regulate Dairy CAFO Emissions Beyond Federal Requirements Per Dairy Task Force Recommendations, and *Must Do So* with Regard to GHG Emissions

In addition to the authority granted to EQC to regulate Dairy CAFOs pursuant to the federal Clean Air Act, EQC is also authorized to adopt rules when necessary, in the Commission’s discretion, to implement a recommendation of the Dairy Task Force for the regulation of dairy air contaminants.¹⁴⁶ Task Force recommendations may go above and beyond current requirements under federal law, and “may include, but need not be limited to” findings and recommendations for technical studies, voluntary actions, regulation, and proposed legislation.¹⁴⁷

In 2008, the Dairy Task Force found that Oregon Dairy operations emit numerous pollutants of concern, including a “notable portion of the state’s ammonia and methane emissions.”¹⁴⁸ Of particular concern to the task force was the “key role” that ammonia plays in haze pollution, visibility problems, acidic deposition, and ecosystem degradation, and the fact that methane is a “potent greenhouse gas” contributing to climate change.¹⁴⁹

As a result of its environmental and health impact analysis, the Task Force specifically and “strongly” recommended that EQC adopt rules to implement an “Oregon Dairy Air Emissions Program” that:

- i. Applies to all existing Grade A dairies in Oregon that have or need a CAFO permit;
- ii. Initially focuses on ammonia, methanol and odors;
- iii. Makes technical decisions based on a review of the available science;
- iv. Is modeled after Oregon’s CAFO Program to prevent water pollution, which ultimately phased into a mandatory regulatory program;
- v. Is based on a best management practice approach that (1) uses California and Idaho programs as points of reference, (2) requires structural and management practices to reduce air emissions, (3) establishes clearly defined BMP targets, and creates tiers of required BMPs based on dairy size (and thus potential to emit).¹⁵⁰

The rule Petitioners propose would accomplish exactly that. The program would require Oregon Dairy CAFOs to obtain air emission permits that address all pollutants of concern identified by the Task Force through the application of science-based best management practices tiered to a CAFO’s

¹⁴⁵ Multiplying N₂O emissions by a 298 global warming potential and CH₄ emissions by a 25 global warming potential. See 40 C.F.R. § 98 Table A-1 to Subpart A-Global Warming Potentials.

¹⁴⁶ OR. REV. STAT. § 468A.020(2)(c).

¹⁴⁷ DAQTF Technical Support, *supra* note 10, at 8.

¹⁴⁸ DAQTF Report, *supra* note 9, at 10.

¹⁴⁹ *Id.* at 9.

¹⁵⁰ *Id.* at 8–10.

projected air quality impact, just as the Task Force envisioned. For this reason, insofar as the federal Clean Air Act does not provide the legal authority for any one aspect of the proposed permitting system, the Dairy Task Force recommendations provide the necessary legal grounding.

While state law vests EQC with the discretion to implement these recommendations, the Governor has made clear that EQC *must* “use any and all discretion vested in them by law” in order to help achieve the state’s GHG reduction goals of 45 percent below 1990 emissions levels by 2035; and at least 80 percent below 1990 emissions levels by 2050.¹⁵¹ Additionally, the governor directed DEQ to “take actions necessary to cap and reduce GHG emissions from large stationary sources of GHG emissions.”¹⁵² Because implementing the Task Force recommendations would address a “notable portion” of the state’s methane emissions, per Governor Brown’s directive, EQC *must* use its discretion to do so.¹⁵³

IV. CONCLUSION

Dairy CAFO emissions currently pose significant threats to human health, the environment, and animal welfare in Oregon, and are preventing the State from achieving its greenhouse gas reduction targets. The proposed Dairy Air Emissions rule would work to reduce harmful emissions associated with these polluting operations, thereby improving air quality and advancing Oregon’s climate goals. The rule would also uphold DEQ’s statutory obligation to advance environmental justice, and result in meaningful benefits for Oregonians who have too long shouldered the burden of exposure to Dairy CAFO air pollution. We therefore strongly urge EQC to exercise its rulemaking authority and adopt the Dairy Air Emissions rule proposed by this petition.

Respectfully submitted,

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¹⁵¹ Oregon EO, *supra* note 92.

¹⁵² *Id.*

¹⁵³ In DEQ’s Final Report to Governor Brown, in response to the cap and reduce directive, the agency states that because the legislature has exempted “most agricultural operations” from air quality regulation, “any greenhouse gas regulations EQC adopts” should not regulate these exempted activities. *See* DEQ GHG Report, *supra* note 82, at 7–8. For the reasons explained above, dairy operations are *not* exempt from the proposed regulation. Based on the Task Force recommendations, EQC has clear authority to create a comprehensive dairy air emissions regulatory program that includes mandatory caps and reductions of GHG emissions.

APPENDIX A

Representative List of Best Management Practices

Emissions Source	Best Management Practice Description	Emissions Targeted for Reduction
<i>Feed Management, Storage, and Handling</i>		
Feed Management	Implement phase feeding. ¹	NH ₃ , Odors
	Feed in accordance with NRCS Guidelines. ²	NH ₃ , VOCs
Feed Storage	Store grain in weather-proof structure or under a weather-proof covering. ³	NH ₃ , Methanol, VOCs
	Cover surface of silage piles, except for the area where feed is being removed from the pile, with a plastic tarp at least 5 mm thick (.005 in) within twenty-four (24) hours of delivery of material to the pile. ⁴	NH ₃ , Methanol, VOCs
Feed Handling	Push feed so that it is within three (3) feet of feedlane fence within two hours of putting out the feed or use a feed trough or other feeding structure designed to maintain feed within reach of cows. ⁵	NH ₃ , Methanol, VOCs
	Begin feeding total mixed rations within two (2) hours of grinding and mixing rations and remove uneaten feed from feed bunks within twenty-four (24) hours. ⁶	NH ₃ , Methanol, VOCs
<i>Animal Housing and Milking Parlors</i>		
Freestall Barns	Scrape freestall flush lanes at least two (2) times per day. ⁷	NH ₃ , GHGs, VOCs
	Separate solids in house via a floor design that allows fecal material to remain in place while urine is removed. ⁸	H ₂ S, GHGs, NH ₃
	For fully enclosed/mechanically ventilated barns, channel exhaust through biofilters, and for naturally ventilated barns, install reception pit fans and channel exhaust through biofilters. ⁹	H ₂ S, GHGs, NH ₃ , Odors, PM, VOCs
Milking Parlors	Flush or hose milk parlor immediately prior to, immediately after, or during each milking. ¹⁰	VOCs
	Vent enclosed/mechanically ventilated milk parlors to a biofilter. ¹¹	H ₂ S, GHGs, NH ₃ , Odors, PM, VOCs

¹ See EPA/USDA, *Agricultural Air Quality Conservation Measures Reference Guide for Poultry and Livestock Production Systems* (“EPA BMP Guide”), 10 (Sep. 2017); Ron E. Sheffield and Bruce Louks, *Dairy Ammonia Control Practices* (“Idaho Ammonia BMPs”), University of Idaho Extension, 5 & 11 (Apr. 2007).

² See EPA BMP Guide at 10; Idaho Ammonia BMPs at 5 & 11; San Joaquin Valley Air Pollution Control District, *Phase II Rule 4570 Permit Application Form: Dairy CAFO Mitigation Measures* (“CA BMP Worksheet”), 2 (July 1, 2019).

³ See EPA BMP Guide at 16; CA BMP Worksheet at 2.

⁴ See EPA BMP Guide at 16; CA BMP Worksheet at 3.

⁵ See EPA BMP Guide at 16; CA BMP Worksheet at 2.

⁶ *Id.*

⁷ CA AAMPs at 2; CA BMP Worksheet at 4; Idaho Ammonia BMPs, at 5 & 9.

⁸ Idaho Ammonia BMPs, at 5 & 7; CDFA, *List of Manure Management Practices Incentivized Through the Alternative Manure Management Program* (“CA AAMPs”), 1 (Aug. 2021).

⁹ EPA BMP Guide at 24–26; Idaho Ammonia BMPs, at 5 & 10.

¹⁰ CA BMP Worksheet at 3; EPA BMP Guide at 39.

¹¹ EPA BMP Guide at 24–26; Idaho Ammonia BMPs, at 5 & 10.

Corrals	Clean manure from corrals at least four (4) times per year, and manage corrals such that manure depth in the corral does not exceed twelve (12) inches at any point in time. ¹²	NH ₃ , VOCs, PM
	Maintain corrals to ensure proper drainage preventing water from standing for more than forty-eight (48) hours. ¹³	PM, VOCs
<i>Manure Storage, Handling and Treatment</i>		
Liquid Manure ¹⁴	Cap lagoon structures with a synthetic/impermeable or geotextile cover and treat vented air using a biofilter. ¹⁵	H ₂ S, GHGs, NH ₃ , Odors, PM, VOCs
	Remove solids from the waste system with a solid separator system prior to the waste entering the lagoon. ¹⁶	H ₂ S, GHGs, NH ₃ , VOCs
Solid Manure	Compost solid manure using static pile composting, forced aeration composting with biofilter or another method of composting with comparable emission reductions. ¹⁷	NH ₃ , GHGs, Odors
	Cover solid and separated solid manure/compost piles. ¹⁸	NH ₃ , GHGs, Odors, PM, VOCs
<i>Land Application</i>		
Incorporation	Incorporate all manure as soon as possible, and no later than within twenty-four (24) hours of land application. ¹⁹	H ₂ S, NH ₃ , VOCs
Low Pressure Application	Apply liquid/slurry manure via low pressure application system, or another method of application with comparable reductions in H ₂ S, NH ₃ and VOCs. ²⁰	H ₂ S, NH ₃ , Odors, VOCs
<i>General Practices</i>		
Windbreaks and Shelterbelts	Establish vegetative or wooded buffers around production area, lagoon structures, and unpaved roadways. ²¹	NH ₃ , Odors, PM

¹² CA BMP Worksheet at 4; EPA BMP Guide at 30; Idaho Ammonia BMPs, at 5 & 10.

¹³ CA BMP Worksheet at 4; EPA BMP Guide at 30.

¹⁴ Note that Petitioners have not included anaerobic methane digesters as a recommended best management practice for liquid manure management, nor should the Agency consider digesters as a viable BMP option. Studies have shown that using digester technology to capture methane from manure lagoons increases the ammonia content of the resulting digestate, which when land applied can lead to substantially higher ammonia emissions. *See* Michael A. Holly et. al., *Greenhouse gas and ammonia emissions from digested and separated dairy manure during storage and after land application*, 239 *Agric., Ecosystems & Env't* 410, 418 (Feb. 15, 2017); NRCS Conservation Practice Standard 366, 6 (Jun. 2017). *See also* EPA BMP Guide at 73 (estimating anaerobic digesters increase on-farm ammonia emissions by 30-50%); Idaho Ammonia BMPs at 8 (excluding digesters from its ammonia BMP list due to increased ammonia content of waste). Because the Dairy Task Force was particularly concerned with ammonia impacts, and thus recommended prioritizing BMPs that would *reduce* ammonia emissions, *see* DAQTF Final Report at 8–9, the Agency should not adopt a practice that yields the opposite effect. Moreover, studies have also shown that digestate emits so much nitrous oxide that it cancels out the purported climate benefits of methane capture. *See* Holly at 418.

¹⁵ EPA BMP Guide at 24–26 & 36–39; Idaho Ammonia BMPs at 5–6.

¹⁶ CA AAMPs at 1–2; CA BMP Worksheet at 5; EPA BMP Guide at 35; Idaho Ammonia BMPs at 5–7.

¹⁷ CA AAMPs at 2; EPA BMP Guide at 44; Idaho Ammonia BMPs at 5 & 11–13.

¹⁸ EPA BMP Guide at 37 & 44; CA BMP Worksheet at 5.

¹⁹ CA BMP Worksheet at 5; EPA BMP Guide at 49 & 53–54; Idaho Ammonia BMPs at 5 & 13.

²⁰ CA BMP Worksheet at 5; EPA BMP Guide at 56; Idaho Ammonia BMPs at 5 & 14.

²¹ EPA BMP Guide at 28–29 & 68; Idaho Ammonia BMPs at 5 & 9.