

Response to Comments on the March 4, 2012 Proposed Changes to 18 AAC 50 Alaska Department of Environmental Conservation September 2012

This document provides the Alaska Department of Environmental Conservation's (Department's) reply to the comments received on the Department's March 4, 2012, proposal to change Title 18, Chapter 50 of the Alaska Administrative Code (18 AAC 50). The details regarding these proposed changes are described in the March 2, 2012, public notice.

The Department subsequently split the proposed changes into two regulation packages. The first package included proposed revisions to the State Air Quality Control Plan in 18 AAC 50.030. The Department received no comments regarding these changes and therefore promptly adopted the amendments to meet a federal deadline. The second package addressed all other aspects of the proposed changes, some of which were commented on. This response to comment document provides the Department's response to those comments.

Public Comment Process:

The Department issued public notice of the proposed regulations on March 4, 2012. Comments were due by April 10, 2012. The Department extended the comment period to April 24, 2012, in response to an April 5th request. The Department published notice of the extension on April 8, 2012.

The U.S. Environmental Protection Agency (EPA) requires states to hold a public hearing regarding program changes if a hearing is requested. The Department therefore tentatively scheduled a public hearing for April 5, 2012. The public notice provided information regarding the tentative hearing and stated the Department would need to receive a request by April 3, 2012, for the hearing to proceed. The Department received no such requests so the hearing was cancelled. Notice of the cancellation was posted on the State, Department, and Air Permits Programs public notice web pages on April 5, 2012.

Commenters:

The Department received written comments from the following:

- Kate Williams, Alaska Oil and Gas Association (AOGA); April 24, 2012; e-mail with comment letter and enclosures attached, signed by Kate Williams.
- Brad Thomas, ConocoPhillips Alaska Inc. (CPAI); April 22, 2012; e-mail with comment letter attached, signed by Brad Thomas. Mr. Thomas provided an editorial correction, in response to a Department request for clarification, on June 12, 2012.

Both entities provided generally similar recommendations on several issues, although both also provided comments not specifically raised by the other. The Department has summarized the key points raised by either organization. The actual comments, which provided additional depth and specifics, are provided as attachments to this response to comment document.

Comment Summary and Department Response:

Comment 1: (AOGA Only)

As part of implementing the 1-hour nitrogen dioxide (NO₂) ambient standard, the Department should modify 18 AAC 50.540(c)(2) to exempt minor sources from a 1-hour NO₂ compliance demonstration. The exemption should be kept until the tools and guidance used to demonstrate compliance with the 1-hour NO₂ standard mature to the point that these tools no longer lead to unreasonable over predictions of ambient air quality.

Response:

The Department agrees that additional information is needed prior to routinely imposing a compliance demonstration requirement in the minor permit program. The Department has incorporated the requested exemption by adding a new section, 18 AAC 50.540(l), that excludes the 1-hour NO₂ standard from the ambient demonstration required under 18 AAC 50.540(c)(2), unless the demonstration is specifically requested by the Department.

There are various approaches for managing air quality. The approaches include, but are not limited to, permit programs, emission limitations, operational restrictions, and air quality monitoring. Some approaches require air quality modeling to help inform a case-specific decision, others do not.

The Department has historically relied on air quality modeling assessments to provide case-specific information in many of its minor permit decisions. However, that doesn't mean that other options are not available for ensuring that public health is protected. Modeling assessments only provide estimates of the air quality impacts – they are not actual measurements. The level of accuracy is dependent on how well the model simulates plume dispersion for the given meteorological conditions and emission characteristics, as well as the accuracy of the data used to describe those conditions and characteristics. As stated in Section 2.1b of EPA's Guideline on Air Quality Models (40 CFR 51, Appendix W), "Air quality models have been applied with the most accuracy, or the least degree of uncertainty, to simulations of long term averages in areas with relatively simple topography." The preferred air quality models promulgated by EPA are still applicable for estimating 1-hour NO₂ impacts, but the short averaging period and typical need for simultaneously simulating atmospheric transformation of the oxides of nitrogen species during the dispersion process, pushes the current air quality models to the very limits of their design. In some cases, the results may be questionable. Uncertainty can be accommodated if the modeled impacts are well below the air quality standard, but the stringent nature of the 1-hour NO₂ standard leaves little margin for modeling errors. The Department therefore agrees that additional evaluation is needed in order to develop the best approach for managing the 1-hour NO₂ impacts from minor permit actions.

Comment 2: (AOGA and CPAI in regards to 1-hour NO₂, AOGA only in regards to PM-2.5)

The Department should delay applicability of the 1-hour NO₂ and 24-hour PM-2.5 ambient standards to Portable Oil and Gas Operations (POGOs) until guidance can be developed to address the incompatibility between the multi-year probabilistic ambient standards and the portable nature of POGOs. This action is needed in order to avoid delays and uncertainty in permitting these types of sources.

Response:

The Department has already exempted all minor source applicants from demonstrating compliance with the 1-hour NO₂ standard, as described in the response to Comment 1. Therefore, the 1-hour NO₂ part of Comment 2 is moot.

In regards to PM-2.5, the Department is granting AOGA's request, but for a different reason. Modeling 24-hour PM-2.5 impacts does not push the existing air quality models to the edge of their design. The questionable results that can occur on an hourly basis are unlikely to occur for a continuous 24-hour period. The most detailed NO₂ modeling methods also require the use of atmospheric chemistry algorithms, which introduces a level of complexity that is not currently required in a PM-2.5 analysis. The Department therefore considered the 24-hour PM-2.5 issue apart from the 1-hour NO₂ issue.

The modeling of a multi-year average 24-hour PM-2.5 impact from a portable source may require novel approaches or greater levels of detail than what would be required for modeling a permanent source. However, the effort should not be insurmountable or excessively time consuming. The effort should also become more efficient with time as applicants and the Department gain experience on how best to model portable sources.

While not stated, AOGA's comments did raise questions as to whether the Department's Minor General Permit for Oil or Gas Drilling Rigs (MG-1) is consistent with the proposed PM-2.5 demonstration requirement. The Department is confident that the MG-1 provisions protect the annual average PM-2.5 air quality standard since it is not the typical limiting factor for a combustion-related source. The annual average NO₂ standard tends to be more restrictive than the annual average PM-2.5 standard. However, the Department needs additional time to assess the adequacy of the MG-1 provisions in regards to the 24-hour PM-2.5 air quality standard. The Department is therefore dropping the 24-hour PM-2.5 demonstration requirement at this time.

Comment 3: (AOGA and CPAI)

The Department should modify 18 AAC 50.215(b)(1) so that it does not impose the 40 CFR 51 Appendix W guidelines (EPA's *Guideline on Air Quality Models*) on POGOs and other portable sources. The guidelines provide rigid techniques designed for stationary and mobile sources. The exhaust characteristics of POGOs make these types of sources difficult to model but, given their portable nature, it seems impossible for these sources to violate the "new standard."

Response:

The Department denied this request. Applicants, the public, and the Department need some measure as to what constitutes an acceptable modeling analysis. Neither commenter provided a recommendation for meeting this need. Removing all criteria means every analysis could be subject to endless debate and challenge, which could jeopardize the Department's ability to issue minor permit decisions in a timely manner.

The Department also disagrees that the Appendix W guideline is "rigid" and non-applicable. While it's far from being open-ended, it does contain a range of options in numerous areas, includes numerous statements regarding the use of "professional judgment," and contains a

procedure for requesting use of alternative modeling techniques when the preferred methods are inappropriate. Appendix W provides reasonable bounds for an air quality modeling analysis submitted in support of a permit application. It is also the only known guidance for evaluating the adequacy of a modeling analysis for regulatory purposes. The Department is therefore keeping Appendix W as an applicable requirement.

Comment 4: (AOGA only)

While AOGA supports establishing a 1-hour NO₂ Significant Impact Level (SIL) equivalent to that recommended by EPA, the value recommended by EPA was not established through public comment and rulemaking. Therefore, the Department should be prepared to react quickly to revise this value as necessary once EPA establishes a 1-hour NO₂ SIL through public comment and rulemaking.

Response:

The Department will review and act on future federal rulemaking as its workload, resources, and priorities allow.

Comment 5: (CPAI only)

Prior to implementing the 1-hour NO₂ standard, the Department should continue the modeling workgroup convened by AOGA. This should be a technical working group focused on identifying and understanding the impact of the new standard on stationary and portable sources and achieving modeling solutions. It is only in this manner that a thoughtfully conceived program and regulation package can be developed.

Response:

The Department will implement the 1-hour NO₂ standard upon these rules becoming effective. The Department intends to continue participating in the modeling workgroup convened by AOGA.

Attachment A – AOGA Comments:

The Alaska Oil and Gas Association (AOGA) appreciates the opportunity to provide comments on the regulation changes proposed by the Alaska Department of Environmental Conservation (ADEC) in Title 18, Chapter 50 of the Alaska Administrative Code dealing with Air Quality Control, public noticed on March 5, 2012. AOGA is a business trade association that accounts for the majority of oil and gas exploration, development, production, transportation, refining, and marketing activities in the state.

Our comments focus primarily on the proposed changes which would adopt the 1-hour NO₂ and 24-hour PM_{2.5} National Ambient Air Quality Standards (NAAQS) for the state's Minor Source Permitting Program and Portable Oil and Gas Operations (POGOs). Based on our understanding of the applicable statutory and regulatory requirements and the experience of our members as permittees, we strongly encourage ADEC to consider the issues discussed in the attached, detailed comments on the proposed changes.

We believe ADEC will find our comments useful and informative and request a meeting to discuss the issues we have raised. In the meantime, if you have any questions or need clarification regarding any of our comments, please do not hesitate to contact me.

Comments Regarding Proposed Changes to 18 AAC 50 Public Comment Draft March 2, 2012

The Alaska Department of Environmental Conservation (ADEC or Department), proposes to adopt regulation changes in Title 18, Chapter 50 of the Alaska Administrative Code, which are focused on establishing a 1-hour NO₂ ambient standard and PM_{2.5} allowable increases (increment), and integrating the PM_{2.5} ambient standard in the minor source permitting program. Among other things, these proposed changes include establishing a 1 hour NO₂ Significant Impact Level (SIL) and minor permit program significant emission rates for PM_{2.5}.

Similar regulation changes have occurred across the country with varying levels of success. However, the consistent message is that the existing tools used to demonstrate compliance with the new probabilistic standards are not adequate. Existing modeling evidence indicates that minor source permitting programs that place an over reliance on modeling will result in these outcomes:

- Project cancellations;
- The installation of unnecessary better-than-Best Available Control Technology (BACT) emission controls; and
- Operational restrictions that increase compliance risk with no related benefit.

AOGA has reviewed the 18 AAC 50 Public Comment Draft dated March 2, 2012 and has carefully considered the national evidence indicating that a measured approach should be used

when implementing the new 1-hour NO₂ and 24-hour PM_{2.5} ambient standards within state minor source permitting programs. Based on that analysis, the following comments are submitted by the Alaska Oil and Gas Association in response to the proposed changes to Alaska Air Quality Control Regulations under 18 AAC 50 issued for public comment March 2, 2012 by the ADEC.

1. AOGA requests that as part of implementing the 1-hour NO₂ ambient standard, the Department modify 18 AAC 50.540(c)(2) to exempt minor sources from a 1-hour NO₂ compliance demonstration until available tools and guidance used to demonstrate compliance with the 1-hour NO₂ standard mature to the point that these tools no longer lead to unreasonable over predictions of ambient impacts to air quality. We expect that implementing the 1-hour NO₂ ambient standard in the minor source air permitting program under the existing paradigm will lead to unnecessary better-than-BACT emissions controls and operational restrictions that increase compliance risk with no related benefit or will result in the unnecessary cancellation of projects based on the results of ambient air quality dispersion models known to predict unrepresentative high impacts.
2. AOGA requests that the Department delay applicability of the 1-hour NO₂ and 24-hour PM_{2.5} ambient standards to Portable Oil and Gas Operations (POGOs) until guidance can be developed to address the incompatibility between the multi-year probabilistic ambient standards and the portable nature of POGOs to avoid delays and uncertainty in permitting these types of sources. As it stands, modeling these operations under existing guidance is painting a very unrealistic picture.
3. AOGA requests that the Department modify 18 AAC 50.215(b)(1) so that it does not restrict ambient air quality impact analyses involving POGOs to rigid techniques designed for stationary and mobile sources (40 CFR 51 Appendix W guidelines). This change is necessary to allow for the rapid development of, and speed the approval of, more appropriate techniques for demonstrating compliance with the 1-hour NO₂ and 24-hour PM_{2.5} ambient standards for these portable sources.
4. While AOGA supports establishing a 1-hour NO₂ Significant Impact Level (SIL) equivalent to that recommended by the U.S. Environmental Protection Agency (EPA), the value recommended by EPA was not established through public comment and rulemaking. This value may change once a public process is undertaken. Therefore, we ask that ADEC be prepared to react quickly to revise this value as necessary once USEPA establishes a 1-hour NO₂ SIL through public comment and rulemaking. This rapid response is necessary to maintain consistency between 18 AAC 50 and the EPA Prevention of Significant Deterioration program.

The following points provide additional basis highlighting the need to address these issues with the March 2, 2012 proposed changes to 18 AAC 50.

Basis for Comment 1: The Department proposes to amend 18 AAC 50.010(5) to include a one-hour average NO₂ concentration of 188 µg/m³, making this standard part of the minor permit program ambient air quality compliance demonstration requirement. Because existing tools that

have been shown to perform poorly when predicting 1-hour NO₂ impacts and insufficient guidance, the resulting compliance demonstrations will almost certainly lead to unnecessary better-than-BACT emission controls and operational restrictions that increase compliance risk with no related benefit or will result in the cancellation of projects based on the results of ambient air quality dispersion models known to predict unrepresentative high impacts.

Demonstrating compliance with the 1-hour NO₂ standard is considerably different in terms of the level of performance required from the air quality model. Evidence shows that existing models and techniques will severely over predict 1-hour NO₂ impacts for many source types. While these model performance issues have always existed, the effect has been hidden because the most restrictive standards have historically involved 24-hour or longer averaging periods. Having a minor permit program that places an over reliance on a model with questionable performance for some source types and under certain meteorological conditions will lead to one of two things: 1) projects that cannot be permitted, or 2) projects that can be permitted only through the implementation of unnecessary “better-than-BACT” emission controls, elevated stacks, or permit limitations that carry a high compliance risk. In all cases, these outcomes are dictated by a model that the Department has previously admitted does not work well for some sources that could require a minor source permit¹. Therefore, AOGA requests that the Department exempt projects affected by the minor source program from a 1-hour NO₂ compliance demonstration until the existing tools and guidance mature to the point that the tools do not unreasonably over predict 1-hour ambient concentrations for all sources types. Alternatively, ADEC could focus modeling based compliance demonstrations only on those sources which the existing tools can simulate well or that can be reasonably expected to have compliance problems based on existing evidence.

Several issues raised at the EPA 10th modeling conference indicated no lack of model performance issues that make demonstrating compliance with the 1-hour NO₂ standard more challenging than existing monitoring data would indicate. Specific examples include:

- AERMOD Low Wind Speed Evaluation Study – This study, which was presented at the 10th modeling conference² and previously to EPA^{3, 4}, showed that some of the most restrictive dispersion conditions and the highest model predictions occur under low wind speed conditions. However, very little model evaluation has been conducted for these conditions and evaluation of specific AERMOD algorithms indicates performance issues. Recommended model enhancements exist but EPA has been unresponsive.

¹ State of Alaska Department of Environmental Conservation Policy and Procedure Policy Number 04.02.105. Intermittently Used Oilfield Support Equipment. November 20, 2006. <http://dec.alaska.gov/air/ap/policy.htm>.

² AERMOD Low Wind Speed Evaluation Study. A presentation given on March 13, 2012 by Bob Paine, AECOM Environment at the 10th Modeling Conference. (<http://www.epa.gov/ttn/scram/10thmodconfpres.htm>).

³ AERMOD Low Wind Speed Evaluation Study Results. Prepared for: American Petroleum Institute and Utility Air Regulatory Group Washington, DC. Prepared by: AECOM Environment Westford, MA March 22, 2010.

⁴ AERMOD Low Wind Speed Evaluation Study: Results and Implementation. Paper 2010-A-631-AWMA written by Robert J. Paine, Jeffrey A. Connors, and Carlos D. Szembek, AECOM Environment, 2 Technology Park Drive, Westford, MA 01886.

- NO₂ Chemical Transformation – Presentations given at the 2010 USEPA Regional/State/Local Modelers Workshop⁵ and at the 10th modeling conference⁶ have indicated that AERMOD likely over predicts NO₂ concentrations due to simplifying and conservative assumptions related to chemical reaction rates and the rate at which ambient air is entrained into plumes (mixing rates). This over prediction is likely most pronounced in the near-field where impacts controlling design concentrations are typically predicted.
- AERMOD Building Downwash Simulation Issues – Evidence suggests AERMOD predicts concentrations well above theoretical limits for long buildings (buildings W/H <4.4)⁷, and that AERMOD predicts ambient impacts due to extreme building downwash under conditions that should lead to the opposite results (i.e., AERMOD leads to predictions of high impacts for buoyant point sources due to building downwash in stable, nearly calm conditions)⁸.

These results are clear indicators that implementing the 1-hour NO₂ standard within the minor source program without considering model performance will lead to permitting decisions based on incorrect and unsupported modeling results.

Further evidence of the manner in which the current modeling paradigm systematically misrepresents the 1-hour NO₂ standard is found by comparing the results of a recent EPA study for a hypothetical source operating in Alaska to monitoring conducted in the near-field of a much larger Alaskan North Slope source. ADEC staff recently participated in a study undertaken by the AERMOD Implementation Workgroup (AIWG). The purpose of the workgroup was to provide insight into the potential challenges to modeling compliance under the new standards by working with 14 real world examples. Specifically, this group looked at a hypothetical natural gas processing plant located in an area that could be characterized with meteorological data collected at Point Barrow. AIWG found that hypothetically set uncontrolled NO_x emissions of 3,190 TPY from this facility resulted in impacts 7.7 times the standard using approvable modeling assumptions. Only the implementation of emission controls designed to reduce facility emissions to 330 tons per year (tpy) of NO_x and doubling the stack heights to 17 meters could enable this facility demonstrate compliance by reducing modeled impacts to a design value of 85 µg/m³ without background added. This result is in contrast to monitoring data collected on the Alaskan North Slope at an ADEC-approved maximum impact location in the near-field of a stationary source with potential NO_x emissions of 14,000 tpy. The monitoring at this location reported a 1-hour NO₂ design value of 152 µg/m³ (81 ppb) based on 2008 through 2010

⁵ Review of Plume Volume Molar Ratio Method (PVMRM) and Ozone Limiting Method (OLM) for Predicting Short-term NO₂ Impacts. A presentation given on June 9, 2011 by Cathe Kalisz, American Petroleum Institute at the 2010 EPA Regional/State/Local Modelers Workshop. (<http://www.cleanairinfo.com/regionalstatelocalmodelingworkshop/archive/2011/agenda.htm>).

⁶ Issues Associated With NO₂ Model Evaluation. A presentation given on March 15, 2012 by Dana Wood on behalf of Doug Blewitt, CCM AQRM, at the 10th Modeling Conference. (<http://www.epa.gov/ttn/scram/10thmodconfpres.htm>).

⁷ Building Downwash Modeling with AERMOD. A presentation given on March 15, 2012 by Lloyd L. Schulman and Joseph S. Scire Exponent, Inc., at the 10th Modeling Conference. (<http://www.epa.gov/ttn/scram/10thmodconfpres.htm>).

⁸ Issues with AERMOD Modeling of Severe Building Downwash Effects with Nearly Calm Winds. A presentation given on March 15, 2012 by Bob Paine, AECOM Environment, at the 10th Modeling Conference. (<http://www.epa.gov/ttn/scram/10thmodconfpres.htm>).

measurements⁹. Though some differences exist between the source modeled by AIWG and the source primarily responsible for the monitored concentrations, these differences are unlikely to explain the reasons the modeled hypothetical facility results in predicted impacts similar to those actually measured near a facility with 40 times the modeled NO_x emissions. Though the AIWG model input/output files are not available for review, recent experience indicates that the cause of the apparent over prediction is likely the low wind speed conditions and extreme downwash under both low wind speeds and low level temperature inversions, both of which have been shown to lead to gross over predictions. The clear over prediction in this case shows that model performance is questionable with respect to the new 1-hour NO₂ ambient standard and demonstrates the reason minor sources should be exempt from a 1-hour NO₂ compliance demonstration until adequate tools and guidance are available to demonstrate compliance.

Basis for Comment 2: The multi-year probabilistic 1-hour NO₂ ambient standard and 24-hour PM_{2.5} standards are incompatible with the portable nature of POGOs. This incompatibility highlights the need to delay applicability of these standards to POGOs until guidance can be developed to address the incompatibility and avoid delays and uncertainty in permitting these types of sources.

As a result of the proposed changes to 50 AAC 18, the 1-hour NO₂ and 24-hour PM_{2.5} ambient standards, which are both probabilistic standards based on 3-years of measurements, will be applicable to POGOs which are portable and unlikely to remain in one place longer than a few months. The incompatibility of the 3-year form of the ambient standards and the short-term operation of a POGO results in confusion regarding the nature of the compliance demonstration and in many cases will require unique modeling approaches. For example, should a portable source which does not impact a given receptor continuously for three years be required to demonstrate compliance with a standard which relies on a multi-year design value based on continuous operation? If yes, what methodology should be employed to avoid grossly overstating ambient impacts? An example of the confusion that generates this type of question and the delay associated with finding an answer is highlighted in comments and proposed modeling approaches for POGOs prepared by the Independent Oil and Gas Association of New York (IOGA of NY) and submitted to the Commissioner of the New York State Department of Environmental Conservation¹⁰ for consideration and the subsequent resolution. To bring clarity to modeling issues and assure consistency, resolution of this issue involved the generation of an official question from a state to the region who then asked for concurrence from the EPA Office of Air Quality Planning and Standards (OAQPS)¹¹, which was then followed by a decision from

⁹ Quality Assurance Project Plan for the: Prudhoe Bay Unit Facilities Ambient Air and Meteorological Monitoring Project Prudhoe Bay, Alaska Revision 1.1. Prepared by SLR International for BP Exploration (Alaska), Inc. February 2011. Approved by ADEC April 2011.

¹⁰ Letter from the Independent Oil and Gas Association of New York (IOGA of NY) to Mr. Joe Martens, Commissioner New York State Department of Environmental Conservation. Regarding: Preliminary Revised Draft Supplemental Generic Environmental Impact Statement Economic Impediments to Shale Gas Development. Submitted September 2, 2011.

¹¹ Memorandum from Raymond Werner, Chief Air Programs Branch EPA Region 2 Office to Tyler Fox, Air Quality Modeling Group, Office of Air Quality Planning and Standards. Regarding Modeling Intermittent Emissions due to Horizontal Drilling and High-Volume Hydraulic Fracturing of the Marcellus Shale in New York State. Issued November 3, 2011.

OAQPS¹². This exchange adds multiple steps to the process and results in delay that could be avoided if existing guidance were in place. Though not involving minor source permitting, this example serves to highlight the delays and uncertainty that could result from making the 1-hour NO₂ and 24-hour PM_{2.5} ambient standards applicable to POGOs without having appropriate guidance and tools in place prior to implementation.

Basis for Comment 3: The Department should reconsider its current stance pertaining to the modeling of POGOs using guidance intended for stationary sources (40 CFR 51 Appendix W) to allow for development of protocols better suited to the portable nature of POGOs.

Currently, ambient air quality impact analyses supporting minor source permitting must adhere to guidelines presented in 40 CFR 51 Appendix W. These existing guidelines are focused on large stationary sources and highly mobile sources associated with roadways. Appendix W does not address probabilistic standards or predicting impacts from portable sources like POGOs; and obstructs development and acceptance of techniques for addressing these types of unique situations. Therefore, AOGA recommends that ADEC modify 18 AAC.215(b)(1) so that the regulation does not restrict ambient air quality impact analyses involving POGOs to 40 CFR 51 Appendix W guidelines. This change will enable the rapid development of, and speed the approval of more appropriate modeling protocols for these unique source types.

The Department has historically recognized the need to implement unique approaches for demonstrating compliance with ambient standards without relying solely on modeling following 40 CFR 51 Appendix W recommendations. The Department should retain that flexibility particularly for the types of sources associated with POGOs. The Department recognized in ADEC Policy and Procedure Policy 04.02.105¹³ that characterizing some of the types of sources associated with POGOs (i.e., small sources with low-level releases) can be difficult and the modeling results can be questionable. Given this historical determination based on demonstrating compliance with averaging periods of 24-hours or more and knowing that the difficulty associated with characterizing these sources increases and the results become more questionable with a 1-hour standard, the Department should recognize that increasing the flexibility in the rules by decreasing reliance on modeling using 40 CFR 51 Appendix W is important. In this manner, compliance demonstrations can focus on modeling those POGOs and associated sources which the model that can simulate pollutant dispersion accurately and less on those which existing monitoring evidence shows will be compliant with the ambient standards.

Existing evidence clearly indicates that simulating ambient air quality impacts from POGOs using 40 CFR 51 Appendix W will result in over predictions of ambient impacts. This evidence highlights the need for the Department to rely less on modeling and 40 CFR 51 Appendix W and more on alternative techniques for a POGO compliance demonstration. Because of the low releases and high emissions modeled in the base case, the AIWG modeling discussed previously provides a useful surrogate for demonstrating the potential performance issues associated with

¹² Memorandum from Tyler Fox, Air Quality Modeling Group, Office of Air Quality Planning and Standards to Raymond Werner, Chief Air Programs Branch EPA Region 2 Office. Regarding: Concurrence with Region 2's Assessment of the Appropriate Method for Compliance Demonstration Modeling of Emissions Associated with Horizontal Drilling and High-Volume Hydraulic Fracturing of the Marcellus Shale in New York State. Issued February 29, 2012.

¹³ Ibid. 1

relying solely on modeling for a POGO. The AIWG modeling has applicability to POGOs because the base case modeling of the natural gas processing plant modeling consisted of 15 emission units that are characteristic of a large POGO (i.e., NO_x emissions of 1,440 tpy, stack heights ranging from 6 to 8 meters, stack diameters from 0.2 to 1 meters, and stack exhaust temperatures from 530 to 840 °K). As discussed earlier, that modeling indicated impacts as much as 7.7 times the 1-hour NO₂ ambient standard with exceedances shown well beyond 10 kilometers from the source. This result decreased to impacts 1.8 times the 1-hour NO₂ ambient standard with exceedances beyond 700 meters from the source when emissions were decreased to 330 tpy. These two sets of modeling results show the range of impacts that could be expected from modeling conducted for a variety of POGOs and would indicate that exceedances should be observed in data sets collected on the Alaskan North Slope in the near field of POGOs, which has not been the case. Specifically, three data sets have been collected in the near-field of POGOs, one at the PBU Well Pad A and two by ConocoPhillips Alaska, Inc.¹⁴. As will be discussed below, none of the monitoring shows measured impacts close to the 1-hour NO₂ ambient standard, which is in sharp contrast to the AIWG modeling results. This result demonstrates that model performance is challenged under the existing paradigm which relies too heavily on modeling based compliance demonstrations involving 40 CFR Appendix W techniques. The result also provides evidence that, before implementing the 1-hour NO₂ standard in the minor source program, the Department should adjust 18 AAC 50 to allow for the flexibility to focus modeling based compliance demonstrations only for those POGOs and associated sources which can be reasonably expected to have compliance problems based on existing evidence and avoid relying too heavily on a model that has clear performance inaccuracies.

Rather than relying on inaccurate modeling and modeling techniques, the Department should consider following an historical approach, which should be applicable in this case. This approach would indicate that most POGOs would not need to be modeled to demonstrate that the facilities will be compliant with the ambient standards based on existing evidence. In establishing ADEC Policy and Procedure Policy 04.02.105, which exempts certain sources from modeling, ADEC reviewed a multi-year record of ambient data from the PBU Well Pad A monitoring station. These data lead the Department to conclude that certain types of units could be exempted from modeling because the record indicated these units did not degrade air quality to a measureable extent. Knowing that POGOs visit PBU Well Pad A, and that measurements collected at the pad from 2006, 2007, 2008, 2009 and 2010 result in 1-hour NO₂ design values calculated from single years of data of 130, 86, 81, 84, and 67 µg/m³, respectively, would lead to a conclusion that POGOs do not degrade air quality and modeling of these sources to demonstrate compliance with the 1-hour NO₂ standard should not be required based on a reasonable inquiry of the existing PBU Well Pad A monitoring evidence. A similar conclusion can be drawn from historical monitoring conducted by ConocoPhillips Alaska, Inc. at Kuparuk River Unit Drill Site 1F which was also visited by POGOs during the monitoring program. That monitoring program reported a 1-hour NO₂ design value of 62 µg/m³. The case that POGOs do not degrade air quality is made even stronger by the recent data collected by ConocoPhillips Alaska, Inc. in the near-

¹⁴ ConocoPhillips, Alaska, Inc. Ambient monitoring within the Alpine and Kuparuk fields In support of drill rig stationary source permitting. A letter from Brad Thomas (ConocoPhillips Alaska, Inc) to Jim Baumgartner (Alaska Department of Environmental Conservation) sent December 9, 2011. This document indicates the highest measured NO₂ concentration was 87 ppb. Knowing that this specific operation is complete, and that calculation of the design value is based on 3 years of data collection, the design value could be as low as 29 ppb (i.e., 87 ppb divided by 3).

field of a large POGO¹⁵. While this monitoring did indicate elevated NO₂ measurements as a result of the activity, the design value calculated for this POGO was comfortably below the 1-hour NO₂ ambient standard assuming long-term stationary operations and significantly below the 1-hour NO₂ standard factoring the actual portable nature of the source (i.e., the rig was at the location for only 3 months). Close examination of this study, the PBU Well Pad A data and the Kuparuk River Unit Drill Site 1F data provides compelling evidence and demonstrates a reasonable inquiry that POGOs of a certain size and duration do not cause a violation of the 1-hour NO₂ ambient standard. This demonstration should be used to exempt POGOs from modeling. Given the poor fit between POGOs, probabilistic standards, and 40 CFR 51 Appendix W, the Department must have the important ability to consider alternative techniques, such as those discussed above, to demonstrate compliance with new multi-year and probabilistic standards. This ability is available only if POGOs are given more flexibility to propose alternative compliance demonstration approaches by not being tied to 40 CFR Appendix W methods.

Basis for Comment 4: ADEC proposes to establish a 1-hour NO₂ Significant Impact Level (SIL) based on a value that was not established through public comment and rulemaking and that may change. The introductory language of 18 AAC 50.215(d) and Table 5 are proposed to be amended to include instructions on demonstrating compliance with a proposed 1-hour NO₂ Significant Impact Level (SIL) of 8 µg/m³. The 1-hour NO₂ SIL proposed by ADEC is based on interim guidance from EPA¹⁶. The SIL proposed in that interim guidance was established without public comment and is based on a procedure used to establish SILs for pollutants with longer averaging periods and deterministic rather than probabilistic design values. Therefore, this procedure may not be applicable to the 1-hour NO₂ ambient standard. EPA indicates that establishing this value deserves further consideration saying that “EPA will consider other possible alternatives for developing a 1-hour NO₂ SIL in a future rulemaking that will provide an opportunity for public participation in the development of a SIL as part of the PSD regulations.”. Therefore, the value EPA has selected, and the Department proposes, requires further evaluation and may change. While AOGA would prefer that ADEC rely on a SIL which has been established through a more rigorous process, we understand the need to establish a value and concur with the value selected until one is established by EPA through public comment and rulemaking.

¹⁵ Ibid.

¹⁶ Memorandum - Guidance Concerning the Implementation of the 1-hour NO₂ NAAQS for the Prevention of Significant Deterioration Program. From Stephen Page, Director OAQPS to Regional Air Division Directors. June 29, 2010.

Attachment B – CPAI Comments:

Please accept these as ConocoPhillips Alaska Incorporated's (CPAI) comments on the proposed changes to 18 AAC 50 – specifically on the proposed adoption of the 1-hour nitrogen dioxide (NO₂) standard.

In summary, it is premature to adopt the 1-hour NO₂ standard since everything we, and presumably ADEC, know about it points to it being a substantial obstacle to the permitting of minor sources – though actually measured air quality data in Alaska and in the rest of the United States strongly indicate the problem is one with modeling. It does not make sense to move forward with a new standard that all know will be hugely difficult to meet when using existing – and known to be deficient – tools. The tools and paradigms must be properly aligned first so that reality is the basis used for permitting.

We thus believe it is imperative that the minor source permit program requirements as they relate to modeling be adjusted before imposing the new 1-hour NO₂ standard as a matter of state-level permitting. Unfortunately, EPA did not act on such foresight and, as a result, considerable effort and resources are being expended nationwide to scramble for solutions so that larger development or expansion projects can move forward. In the case of drill rigs, the problem extends to the simple renewal of heretofore (and, we believe, still) acceptable permits.

To emphasize two specifics if the standard is adopted now:

- Given the shortcomings with existing modeling tools and modeling requirements, many existing Alaska sources seeking minor permits may not be able to demonstrate, via modeling, compliance with this new standard and, therefore, may not be able to obtain the permits for expansion of existing facilities or for new projects. We believe this is unnecessary since monitoring data shows no difficulty in attaining the standard and since more realistic modeling will, we believe, show that individual sources cannot also achieve the standard;
- Given the shortcomings with existing modeling tools and modeling requirements, many existing or proposed new Alaska facilities, if they can demonstrate compliance with this new standard via modeling, may be subject to unnecessary minor permit conditions and, thus, unreasonable compliance burden and risk;

In order to avoid these outcomes, we request the following:

1. Prior to implementing the 1-hour NO₂ ambient standard, 18 AAC 50.540(c)(2) be modified to not require minor sources and Portable Oil and Gas Operations (POGOs) to model compliance with the 1-hour NO₂ standard until such time as ADEC has in place the proper modeling tools, guidance, or other means for demonstrating compliance with the new standard. Industry has shared with ADEC generic, but representative, modeling output that shows how much of a problem this could prove to be.

2. Prior to implementing the 1-hour NO₂ standard, in order to address probabilistic standards and impacts from portable sources like POGOs not currently addressed by 40 CFR 51 Appendix W, ADEC should modify 18 AAC 50.215(b)(1) so that it does not impose the Appendix W guidelines on POGOs and other portable sources. Exhaust characteristics make these types of sources difficult to model but, given their portable nature, it seems impossible for these to violate the new standard.
3. Prior to implementing the 1-hour NO₂ standard, ADEC should continue the modeling workgroup originally convened by AOGA ensuring it includes expertise from all affected industry. This should be a technical working group focused on identifying and understanding the impact of the new standard on stationary and portable sources and achieving modeling solutions. It is only in this manner that a thoughtfully conceived program and regulation package can be developed. We believe this can be accomplished over a period of several months.