DEPARTMENT : POLLUTION CONTROL AGENCY

STATE OF MINNESOTA

Office Memorandum

DATE : January 26, 2011

TO : MPCA Air Quality Programs and NACAA Membership

FROM : Jim Sullivan, MPCA

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SUBJECT : State Benchmarking Project to Evaluate the Implementation Status of the new NAAQS.

Overview of the Issue

The Minnesota Pollution Control Agency (MPCA) is responsible for the implementation of the new National Ambient Air Quality Standards (NAAQS) for NO_2, SO_2 and $PM_{2.5.}$ The EPA has staggered the implementation of the new NAAQS. Important administrative features of the new NAAQS such as modeling guidance are still emerging. The lack of guidance has created uncertainty in the implementation of the new NAAQS in Minnesota, especially in permitting activities including environmental review. The MPCA recognizes that the state is not alone in this quandary. It is unclear what other states are doing during this "information gap" period of NAAQS implementation. As part of developing a state-level approach to implementing the new NAAQS, the MPCA is reviewing the practice of other state and local programs to inform the agency's implementation efforts.

Objectives and Process

The first step in the benchmarking process was the identification of problem areas within our current NAAQS implementation approach. The key areas of concern included the lack of guidance and direction from the EPA to administer the new NAAQS. This was a particular concern for the issuance of permits and projects that undergo environmental review. The MPCA has devoted staff to the evaluation of existing permit and modeling procedures in order to better understand the challenge presented by the new NAAQS implementation. This information acts as a baseline by which the agency is able to compare to new NAAQS implementation in other states.

The second step in this process was the identification of other state organizations responsible for the administration of the NAAQS. The MPCA is a member of National Association of Clean Air Agencies (NACAA). The membership of NACAA is composed of state and local agencies responsible for managing air quality. The MPCA asked NACAA to facilitate a benchmarking survey through the use of their membership list.

The third step in this project was the development of a survey instrument that could be used to gather state implementation information. The two features of concern included the mechanism of delivery and the content of the survey instrument. The MPCA has found that the delivery of a survey instrument using the SNAP software has provided high quality data with a high response rate. The content of the survey instrument was developed by MPCA staff, reviewed by MPCA management and vetted through NACAA membership. Topically, the survey instrument included two tiers of questions that related to general permitting issues and state-level environmental review in the context of the new NAAQS for NO_2, SO_2 and $PM_{2.5.}$ The daft questions were sent to NACAA membership for review and comment. After final revisions were made to the survey instrument, the MPCA sent the online link to the NACAA for distribution. The survey period opened on November 3rd, 2010, and closed on December 3rd, 2010. All NACAA members were invited to respond. A follow-up review of response data by respondents was

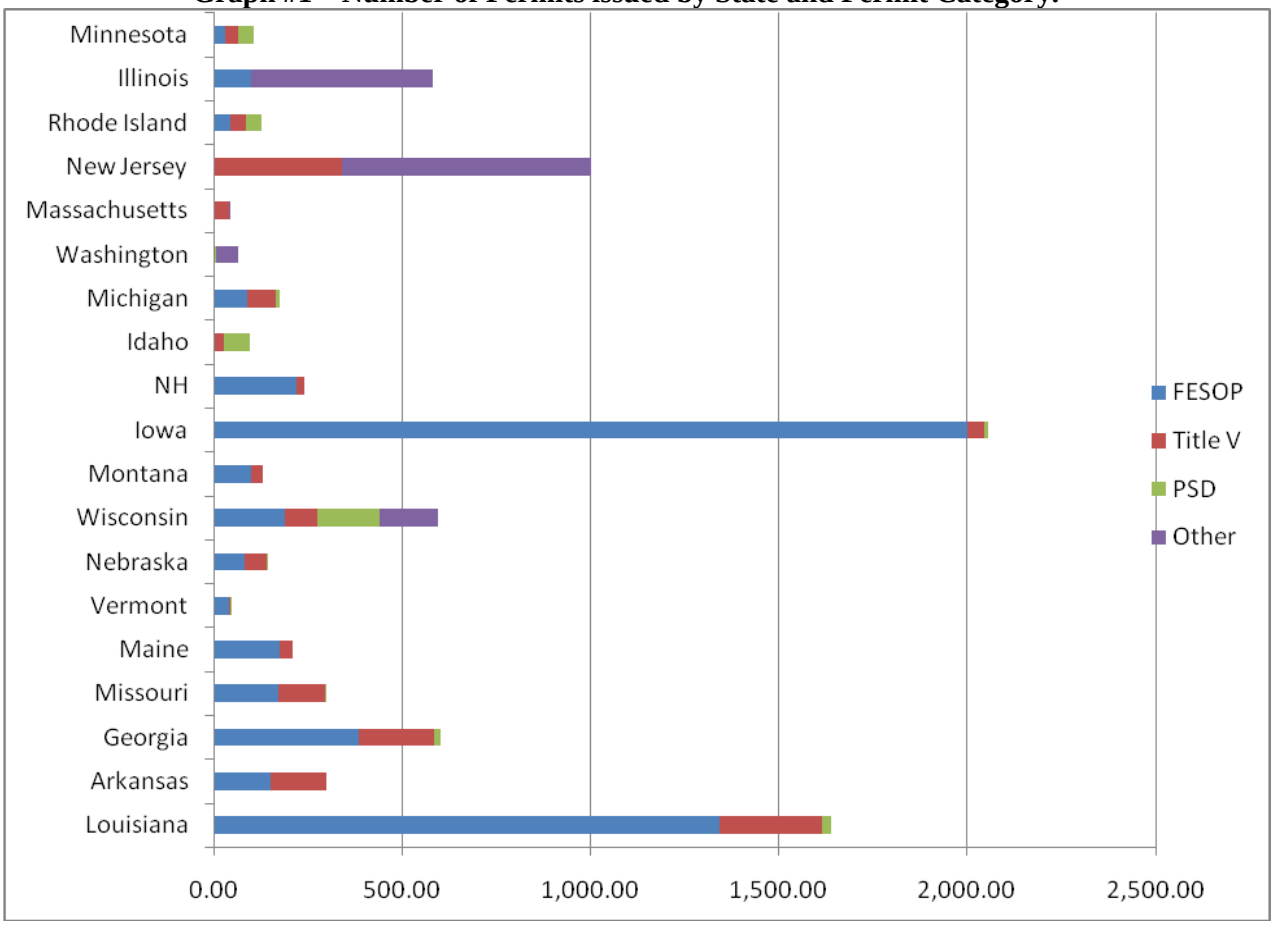
provided as a means to "member check" the data. In some circumstances, a follow-up teleconference was used to gather additional details.

Summary of Results

Question #1 - Approximately how many air quality permits, by permit type (e.g., Title V), do you issue annually?

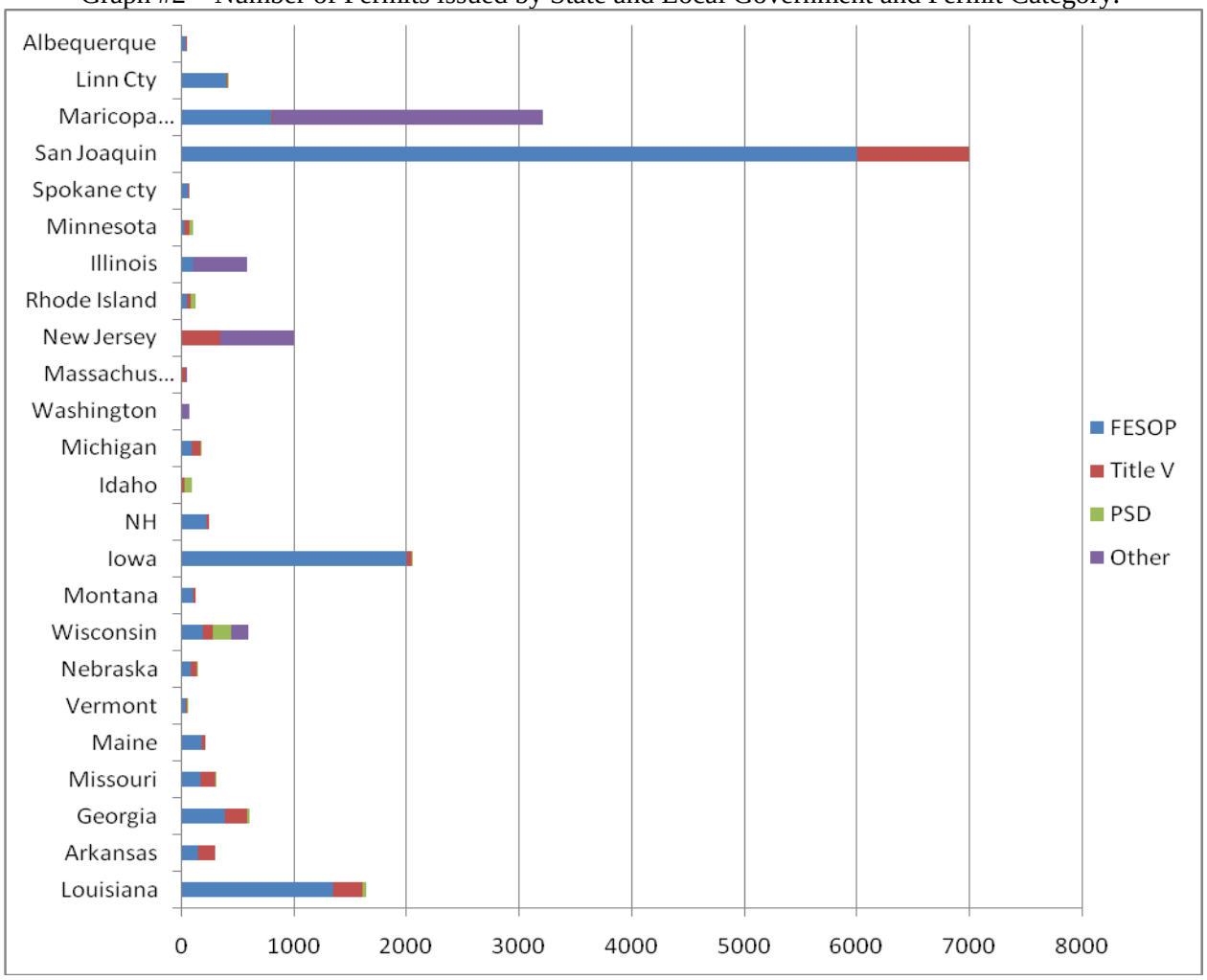
The data generated by this question reflected the categories of permits issued by each state (FESOP (Federally Enforcable State Operating Permits), Title V, PSD, Other) and does not distinguish between new permits, revisions or reissuance. The data was separated into two graphs. Graph #1 is a representation of the number of permits (approximate) issued by each state. The information in Graph #2 includes the states in comparison to the local units of government. The state that issued the most permits was Iowa, with 2,055. A majority of these permits were FESOP (approximately 2,000).

Graph #1 – Number of Permits issued by State and Permit Category.



When local governmental unit permitting actions are included in the analysis, San Joaquin Air District issues the largest number of air quality permits in a one-year period (approximately 7,000). A majority of these permits are FESOPs, with the remainder issued as Title V.

Graph #2 – Number of Permits issued by State and Local Government and Permit Category.

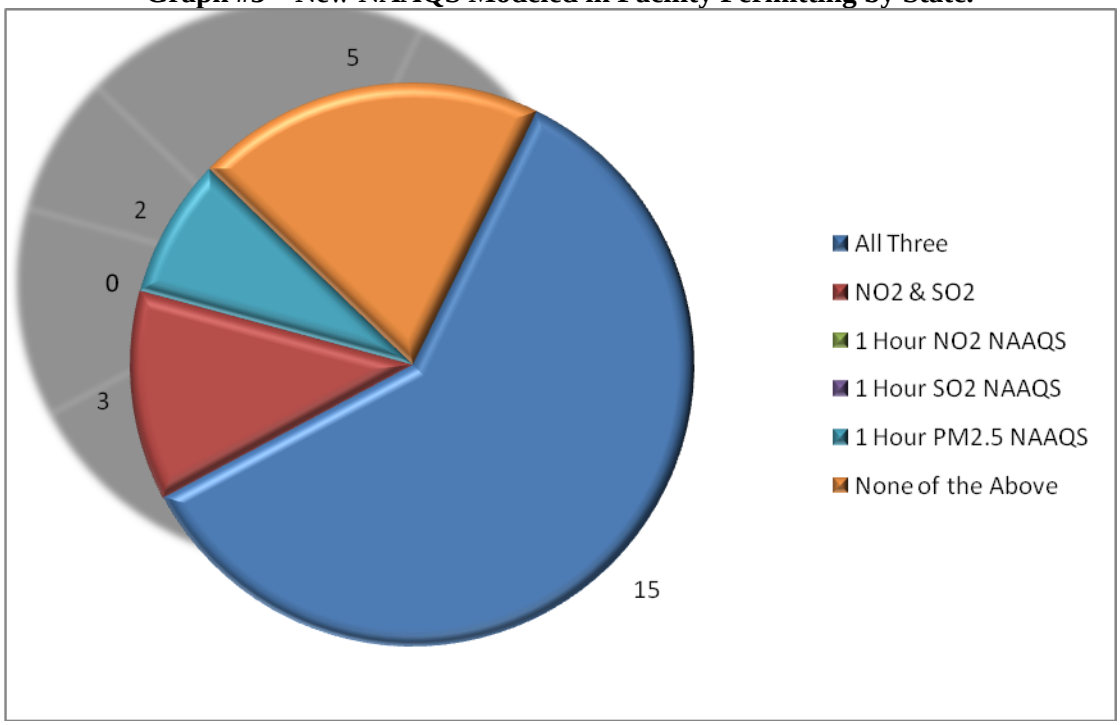


For Minnesota benchmarking purposes, the permit values reported by the state of **Minnesota** (105) are most similar with those reported by **Rhode Island** (125), **Idaho** (95), **Michigan** (175), **Montana** (130) and **Nebraska** (142). The permits numbers reported vary by permit category from state to state. It should also be noted that a limitation to this analysis is the nature of permit actions reported. The number of permits reported by each state or local unit of government is an estimate. In addition, the nature of the permit actions as reported by each state does not reflect the administrative review practice, time or the number of full time employees (FTEs) available within each state program.

Question #2 - Are you currently modeling any of the following new standards in facility permitting (operating or construction permitting)?

This item provided respondents with more than one choice. The responses were categorized to reflect the respondent's air quality modeling practice for the new NAAQS. The dominant response category indicates that most respondents are currently modeling for all three pollutants at this time.

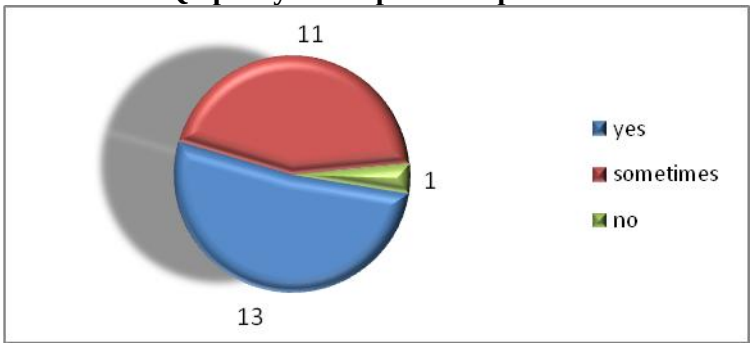
Graph #3 – New NAAQS Modeled in Facility Permitting by State.



Question #3 - Do you have a general policy for implementing the recent NAAQS changes in modeling and facility permitting? If so, please describe.

This question was a forced-choice response. As noted in Graph #4, there is a nearly even distinction between respondents on the presence of a general implementation policy for the new NAAQS.

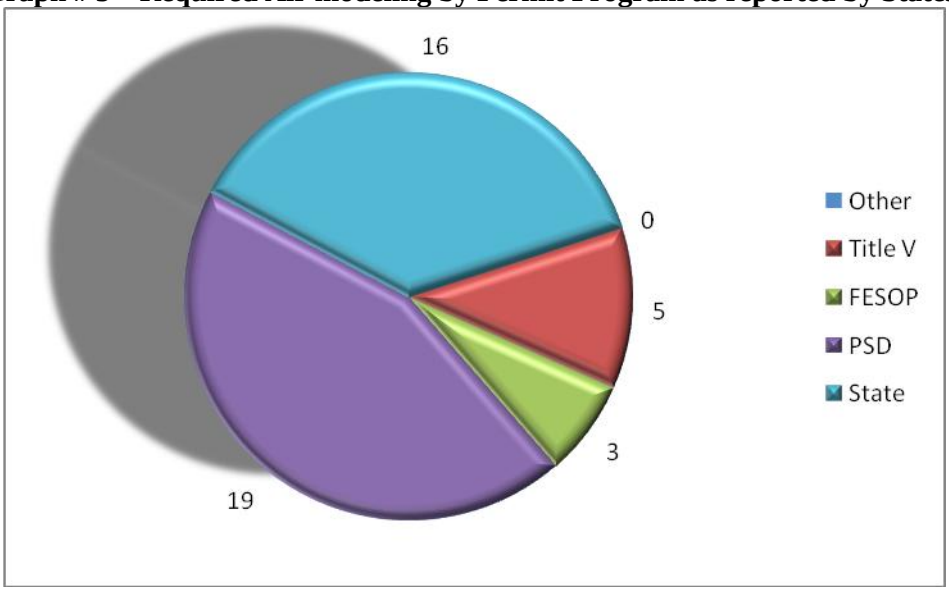
Graph #4 – New NAAQS policy development/implementation status by State.



Question #4 - If you require air quality modeling, which of the following programs contains a requirement to conduct modeling:

This item provided the respondents with an opportunity to select multiple options in order to reflect the characteristics of air modeling in various permit programs. The majority of responses were split (approximately) between PSD (operational and construction) permits and "Other."

Graph # 5 – Required Air modeling by Permit Program as reported by States.



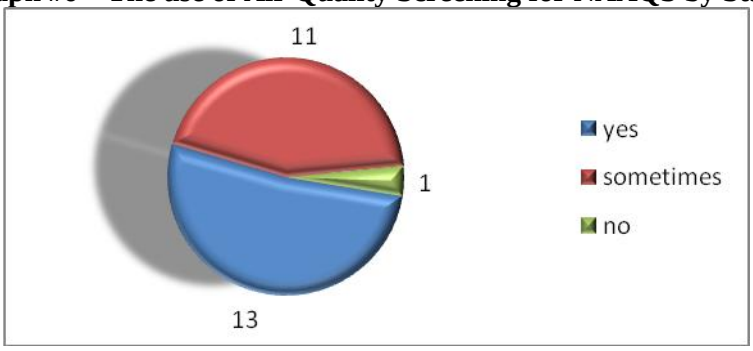
Not all respondents provided commentary in the "Other" category. The following comments were provided:

- **Georgia** - General modeling for air toxics
- **Washington** - Both PSD and State Construction
- **Massachusetts** - Not currently implementing PSD
- **New Jersey** - Title V for significant modifications, we have no State operating permits
- **The San Joaquin Valley APCD** - California Environmental Quality Act (CEQA)

Question #5 - Is screening used as part of your permit review?

This was a forced-choice response item. The responses are illustrated in Graph #6.

Graph #6 – The use of Air Quality Screening for NAAQS by State.



Question #7 - If you require modeling, what level of analysis is required? (e.g., screening only or a screening process that can lead to refined modeling if screening reveals a potential exceedance of the NAAQS).

The responses for this question followed two distinct themes: screening that lead to refined modeling and "other." A total of 14 of the respondents use a screening approach that can lead to refined modeling and did not distinguish or treat the new NAAQS pollutants differently. Linn County uses screening only and did not provide any additional response regarding further review. The "other" category reflects various screening or modeling practices that did not follow the dominant screening-refined modeling relationship. A review of these responses is presented below:

- **Louisiana** - Currently modeling is only required when a permit triggers PSD; then all PSD rules apply. Screening and/or modeling may also be required at the discretion of upper management.
- **Georgia** - PM2.5: project emissions are modeled, if impacts exceed SIL(s), then a representative background concentration is added. The ambient. 1-hr SO_2 & NO_2 are modeled only if impacts exceed SIL(s), then refined modeling is required.
- **Nebraska** - We usually develop a "rule of thumb" to know when to model for a specific NAAQS after we gain experience. We are attempting to develop a policy to either exclude emergency units from modeling the new standards and/or use the SER as a basis to exclude some state permits from modeling.
- **Wisconsin** - Screening may be used, but usually projects are done with refined modeling (AERMOD).
- **Montana** - Currently, use screening for PM and we are looking into using it for NOx. Refined modeling is used for when the thresholds are exceeded (internal policy).
- **New Jersey** - Screening mainly for HAP sources. Sources modeling NAAQS usually require refined modeling
- **West Virginia** - Standard PSD procedures regarding SILs and preliminary/full impact analysis.

Question #8 - What is the specific trigger level or threshold for conducting refined modeling? "(e.g. the interim SILs recommended by the RPOs, the new EPA SILs, etc)"

The primary theme identified in this question response was the use of the EPA SILs as a trigger for refined modeling. Based on the information provided, 17 of the reporters indicated that they are using the

EPA SILs for the New NAAQS in some form as criteria in the decision to pursue refined modeling. Four states had variations on this theme:

- **Vermont** - We currently have a threshold of 10 tons per year that triggers modeling. A facility would start with a screening process and progress to refined as may be necessary. We are contemplating increasing our modeling thresholds to significant levels (ie. 10 tpy PM2.5, 15 PM10, 25 TSP, 40 NOx SO2, 50 CO)
- **Michigan** - Michigan uses a case-by-case approach to determine the need for refined modeling. Factors can include; rural/urban setting, dispersion characteristics, level of emissions...
- **Washington** - If the source under consideration is sufficiently isolated such that there are no competing sources to be considered, a screening analysis showing that modeled plus representative background concentrations are less than the NAAQS is sufficient. Otherwise concentrations exceeding a SIL or a sufficiently complex source that cannot be modeled by a screening model will require refined modeling.
- **New Jersey** - If a source is proposing a significant increase in emissions that will trigger refined modeling. we also conduct dispersion modeling for Title V facilities that propose a significant emissions increase of a NAAQS pollutant.

Question #9 - Please provide a brief description of the protocol for refined modeling you use if the screening trigger or threshold is exceeded.

All states follow the EPA Guidance in one form or another. Some states have devised specific implementation aspects that are based on the Federal guidance. **Iowa**, **New Jersey** and **San Joaquin Valley** reference their own policy documents.

Question #10 - If you are not modeling, are there specific barriers to conducting this modeling?

Only three responses were filed for this question. The responses are provided as follows:

- **Louisiana** - The number of permits issued and staffing levels do not allow the state to conduct modeling on most permits.
- **Idaho** - A barrier for new NAAQS modeling is the date when new NAAQS are incorporated by reference into Idaho Rules.
- **City of Albuquerque** - 1-update Appx W; 2-provide a refined NO_2 modeling technique and 15 minute data(hourly data not really appropriate for 1-hr stnd); 3-complete $PM_{2.5}$ guidance, specifically Tier 2

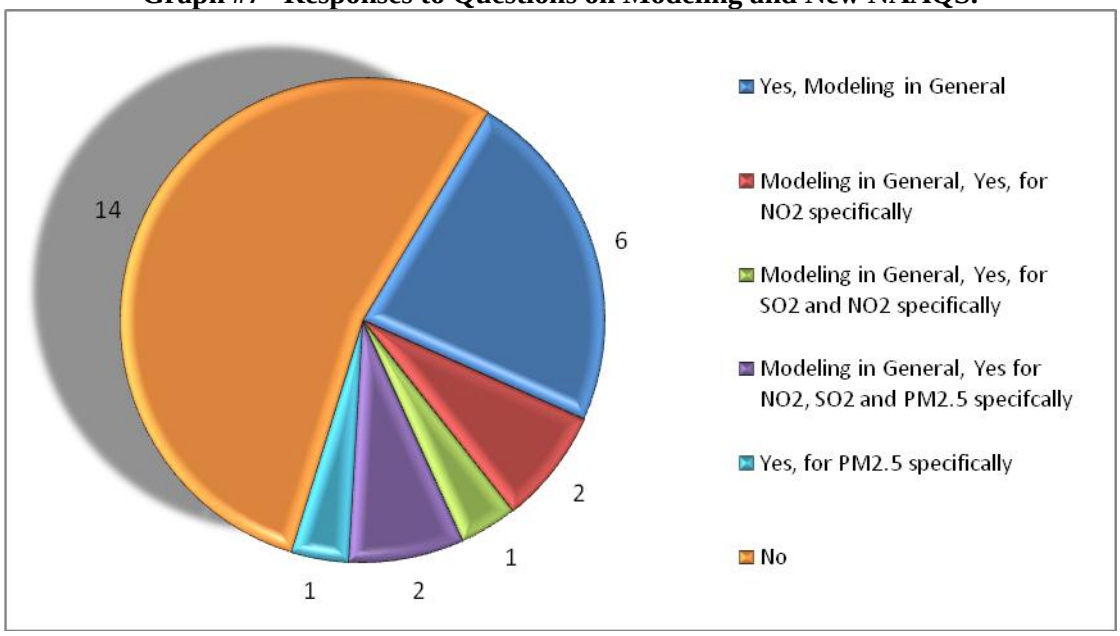
Question #11 - Do you have state-level guidance available for implementing new NAAQS changes in modeling generally, or NO_2, NO_2, or $PM_{2.5}$ modeling specifically?

This was a forced choice question with the following responses possible:

- Yes, modeling in general
- Yes, for NO_2 specifically
- Yes for SO_2 specifically
- Yes, for $PM_{2.5}$ specifically
- No

A total of 26 responses were recorded. Participants were able to select more than one response to reflect the operational aspect of their respective program. The results of the data are presented in Graph #7.

Graph #7 –Responses to Questions on Modeling and New NAAQS.



Question #12 - Does your state have an Environmental Policy Act that requires project-level environmental review (ER)?

Ten of the respondents indicated that they have either a state environmental policy act or related Executive Order that requires some form of environmental review. The states/local units of government that responded affirmatively included ***Georgia, Wisconsin, Montana, Michigan, Washington, Massachusetts, New Jersey, Minnesota, Spokane County (WA), and the San Joaquin Valley APCD***. Linn County, Iowa, indicated that they have a state level environmental review process or equivalent; however, there is no indication that Iowa has a statute or executive order that reflects this level of review. There does not appear to be any County ordinance that would require this level of activity.

Question #13 - Does your state's ER program currently have a requirement (e.g. ER statue, ER rule, ER policy, etc.) for projects to conduct air dispersion modeling to determine compliance

with NAAQS (this question does not apply to modeling required by non-ER programs such as PSD, Title V, etc.)?

This question was a forced choice yes/no response item that was only available to respondents that indicated they had a state level environmental review process. The states that indicated that they had a requirement to address air impacts (e.g., NAAQS) through modeling included **Wisconsin, Michigan, New Jersey, Minnesota**, and **The San Joaquin Valley APCD**. **Montana** did not provide a response to this question.

Question #14 - Is your state considering adding such a requirement?

This was another forced-choice question that was open to the state level environmental review sub-group. None of the states indicated that they would be considering a requirement to model NAAQS as part of the environmental review process.

Question #15 - Does your state's ER program currently require modeling for the new NAAQS? (e.g. PM2.5, 1-hour NO2, 1-hour SO2).

This was a forced-choice yes/no question. **Wisconsin, Michigan, New Jersey** and the **San Joaquin Valley APCD** have indicated that they do. **Minnesota**, in narrative, noted that this is a case-by-case decision. **Georgia**, and **Washington** indicated that they do not. **Massachusetts** does not and provided the following information:

> The Massachusetts Environmental Policy Act (MEPA) review process requires air dispersion modeling for projects that are also subject to the Massachusetts Department of Environmental Protection's (MassDEP) air permit program (as required under the Clean Air Act) or MassDEP's mobile sources policy. This requirement is applied on a case-specific basis after the project has made its initial filing with the MEPA Office (called and Environmental Notification Form, in response to which the Secretary of Energy and Environmental Affairs issues a scope for the environmental impact report, if one is required), and is not part of any express statute, rule or regulation.

Question #16 - Is your state considering adding such a requirement?

This was another forced-choice question that was open to the state level environmental review sub-group. None of the states indicated that they would be considering a requirement to model NAAQS as part of the environmental review process.

Question #17 - What types of projects are required to conduct air dispersion modeling for NAAQS compliance?

The narrative reported is provided below:

- **Wisconsin** statutes require that permits demonstrate they will not cause an exceedance of the standard, this is usually interpreted as requirement of modeling demonstration
- **Michigans** SIP requirements recognize that all stationary sources of air emissions consume increment and have an impact on NAAQS. Therefore, MI requires an NAAQS analysis from all sources which go through the permitting exercise. However, MI also relies on institutional knowledge that certain minor source permit applications will not have a detrimental impact on the NAAQS and will not require modeling. This is a case-by-case exercise.
- In **New Jersey**, non Title V facilities that propose a significant emissions increase of a NAAQS pollutant.
- Projects in **Massachusetts** must conduct modeling as part of the MEPA process if they require permitting under MassDEP's air permitting program (minor or major source review) or if they exceed the mobile source trip generations rates. These mobile source trip generation rates are outlined in the MassDEP mobile sources policy and reinforced through a 1991 memorandum with the MEPA office that requires office projects generating 3,000 or more new trips and other non-residential projects generating 3,000 or more new trips and other non-residential projects generating 6,000 or more new trips.
- Under the **Minnesota** ER program, most modeling is conducted on a case-by-case basis. Projects that undergo PSD or related federal permitting will likely include modeling for the EAW. Air modeling in an EIS is common.

Question #18 - What NAAQS are required to be modeled?

- In **Wisconsin**, all NAAQS found in state administrative code - currently pm2.5, soon 1 hour no2 and 1 hour so2
- **Michigan** requires all current NAAQS to be evaluated during the permit application review.
- In **New Jersey**, all except ozone.
- **Massachusetts** - The same pollutants are modeled as those required under MassDEP's air permit program.
- **Minnesota** - All pollutants relevant to a project.
- The **San Joaquin Valley APCD** - all current State and Federal standards

Question #19 - Is there any emissions level or other type of "threshold" below which a project is not required to conduct NAAQS modeling?

This was a forced-choice response item; however, narrative information was provided during follow-up discussions. **Wisconsin** indicated that no thresholds apply. **Michigan**, **New Jersey**, and the **The San Joaquin Valley APCD** indicated that there are thresholds below which a project is not required to conduct NAAQS modeling. Two states provided narrative:

- **Massachusetts** - Again, if a project does not require modeling under the MassDEP air permit program or mobile sources policy, MEPA review generally will not require modeling. The only potential exception are those projects subject to MEPA's Greenhouse Gas Emissions Policy and Protocol, where modeling of mobile source CO_2 emissions may be required when the project is not subject to either of the aforementioned MassDEP programs.
- **Minnesota** - The ER program refers to the air quality permitting program to determine emission thresholds. Typically not an ER task.

Question #20 - Does your state's ER require NAAQS modeling to add in a background concentration of ambient air pollutant levels when determining comulative effects/impacts?

This was a forced-choice response item; however, narrative information was provided during follow-up discussions. The states that indicated they have a background concentration for their cumulative air analysis included **Wisconsin**, **Michigan**, **Massachusetts**, **New Jersey**, **Minnesota** and **Spokane County (WA)**. The **San Jaoquin Valley APCD** indicated that they did not. Massachusetts noted that: "Modeling performed in conjunction with MEPA review follows the same protocols as those established by the MassDEP Air Permit program. This includes consideration of background concentrations."

Question #21 - If so, what air emission activities are included in the background concentration?

This question was provided for states that answered the previous question in the affirmative. The responses provided for a narrative to discuss the composition of background concentration:

- **Wisconsin** - roadways, fugitives, etc - calculated through monitor data
- **Michigan** - Monitor data and offsite emissions inventory.
- **New Jersey** - other major sources within 5-10 km of the source plus monitored background
- **Minnesota** - Emission sources and activities that cannot be identified within the modeling domain.
- **Spokane County (WA)** - We typically use the average levels monitored by the nearest ambient monitor

Question #22 - How many projects per year typically go through air dispersion modeling because of your state's ER program?

- **Wisconsin** - approximately 350
- **Michigan** - Do not have that data readily available due to co-mingling with PSD and the State Air Toxics Program
- **Washington** - Typically we do not do dispersion modeling under SEPA. There are a few very rare occasions where some sort of dispersion modeling is performed as part of SEPA but that is very much the exception.
- **Massachusetts** - The number of projects per year that go through MEPA review that also perform air dispersion modeling can vary based upon the economic and development climate within the State, but a range of twenty to forty projects seems a reasonable average estimate.
- **New Jersey** - For NAAQS compliance maybe 20, more are modeled for HAP emissions
- **Minnesota** - Approximately 12.
- **The San Joaquin Valley APCD** - 50 and about 10-30% require NAAQS modeling.