Proposed Factors for Clean Air Act §105 Grant Allocation Methodology
November 21, 2016

Summary of Proposed FY 2017 Clean Air Act §105 Grant Allocation Factors

This document describes the factors EPA proposes to use in a refined Clean Air Act (CAA) §105 grant allocation methodology for FY 2017 and future years.

OVERVIEW

For each proposed factor, EPA calculates a regional proportion (i.e., the percentage of the factor that applies to each region). Those proportions are then weighted by the proposed allocation factor percentages shown in Tables 1 and 2. Each region's factor proportions are added together to obtain an overall proportion of the total funds to allocate to each EPA region.

The proposed allocation is comprised of two sets of factors:

- Primary Factors (comprising 90% of the total allocation) that reflect the routine, ongoing work of air agencies. These factors and their respective weightings would remain constant, while the data behind these factors would be updated at predictable, periodic intervals.
- Short-term Factors (comprising 10% of the total allocation) that capture new and emerging activities. These factors, and potentially their weighting, would change as activities are completed and new activities emerge.

The tables below summarize the proposed factors, weightings, and update frequency for both the proposed primary and short-term factors:

Table 1: Proposed Primary Factors, Weights, and Update Frequency

Proposed FY17 Primary Allocation Factors	Proposed Weighting	Update Frequency
Ambient Air Monitoring	42.5%	~Every 4 Years
Nonattainment & Maintenance Areas (All NAAQS)	22.5%	Annually
Population	12.5%	~Every 4 Years
Emissions	2.5%	~Every 4 Years
Regional Haze	2.5%	~Every 4 Years
Number of States	5.0%	N/A
State Land Area	2.5%	N/A
Sub-total	**90%**	

Table 2: Proposed Short-Term Factors, Weights, and Update Frequency

Category	Proposed FY17 Short-Term Allocation Factors	Proposed Weighting	Update Frequency
Designations	State Recommendations for 2015 Ozone Designations	2.0%	NPM Guidance Cycle (Every Two Years)*
	SO2 Sources On DRR List	5.5%	
Additional Support for Attainment Planning	SO2 Round 2 NAAs	0.5%	
Infrastructure SIPs	2015 Ozone ISIPs	0.5%	
Transport	State Transport Activities	1.5%	
	Sub-total	**10%**	

*The individual factors within each category will be identified every NPM Guidance cycle. Changes to short-term factors may occur off-cycle in the case of a major policy change or rulemaking and would be communicated via an NPM Guidance Addendum.

PROPOSED FACTOR DESCRIPTIONS

The following pages describe each proposed factor, including a brief discussion of the data source and methodology used to calculate regional ratios for the factor, and the rationale behind its selection and proposed weighting.

PRIMARY FACTORS

Ambient Air Monitoring

Ambient air monitoring was consistently identified as the largest resource for air agencies during regional listening sessions. Based on input from air agencies, EPA is proposing to provide the greatest weighting of the proposed allocation to monitoring.

EPA considered two approaches for determining regional monitoring proportions: using the "existing monitoring network" or EPA's "adequate monitoring network" model. An "adequate monitoring network," as defined by the model, is the number of monitors that are designed to meet NAAQS objectives. Most often, this is more than the minimally required number of monitors. The model shows an expected number of monitors to operate in a given metro area (aggregated by state and Region) for each pollutant. The adequate monitoring network is calculated through a regression analysis using the inputs identified below. The number of monitors is the dependent variable and population and design values are the independent variables. The inputs are:

- Population in each metropolitan area (core-based statistical area, or "CBSA").
- Design value of the CBSAs for each pollutant.
- Per monitor and per site operating costs (based on approved Information Collection Request).

The results of the adequate monitoring network analysis differ from the existing network since it provides an expected number of monitors needed for an adequate monitoring network in each CBSA using the above objective inputs and assuming the same total number of monitors. Since the output of the regression is a direct outcome of all networks across the country, it provides an objective approach to valuing the number of monitors for each pollutant modeled in each CBSA. Because the analysis represents an analysis that focuses on meeting regulatory obligations, it does not provide incentives for air agencies to over- or under-monitor.

The proposed ambient air monitoring factor includes:

- The adequate monitoring network model for ozone, CO, NO2, and PM10.
- The existing monitoring networks for lead and S02 given the source oriented nature of these pollutants.
- The final revised PAMS network design.

EPA assumes that PM2.5 monitoring will remain funded using §103 authority and therefore this pollutant was not included in developing Regional monitoring proportions.

Due to the significance of monitoring costs to state and local air pollution control agencies, EPA considered a weighting range of 40% to 45% of the proposed allocation. For purposes of calculating the proposed allocation, EPA is proposing to weight this factor at **42.5%**. Sensitivity analyses suggest that weighting this factor beyond this range could lead to unexpected and significant swings in allocation results when EPA updates the data behind this factor in future years.

EPA proposes to update the data used to calculate regional proportions for this factor every four years.

Number of Nonattainment and Maintenance Areas for All NAAQS

Developing and implementing State Implementation Plans (SIPs) was cited by air agencies as a significant effort, with nonattainment and maintenance areas requiring ongoing and focused attention. To determine regional proportions for this factor, EPA assigned points to each Region based on both the number and severity of nonattainment and maintenance areas for each NAAQS criteria pollutant.

The table below outlines EPA's proposal for assigning points for each criteria pollutant. EPA is proposing additional ozone points to Regions with states in the Ozone Transport Region (OTR), as these states are required to conduct SIP-like activities. The number of points for either nonattainment or maintenance areas across pollutants is based on the relative amount of work associated with each pollutant (i.e., addressing nonattainment areas for some pollutants require more effort than for others).

Table 3: Proposed Points for Nonattainment and Maintenance Areas*

Criteria Pollutant	Calculation Methodology
Ozone (Credit applied to areas as determined by 1979, 1997, 2008, and 2015 NAAQS)	1 point for each ozone non-attainment area (NAA) 2 points for each ozone NAA classified as moderate or higher 1 point for each state in the OTR 1/2 point for each ozone maintenance area
PM2.5 (Credit applied to areas as determined by 1997, 2006, and 2012 NAAQS)	2 points for each PM2.5 NAA 2 points for each PM2.5 NAA classified as serious 1/2 point for each PM2.5 maintenance area
SO2 (Credit applied to areas as determined by 1971 and 2010 NAAQS)	1 point for each SO2 NAA 1/2 point for each SO2 maintenance area
PM10 (Credit applied to areas as determined by 1987 NAAQS)	2/3 point for each PM10 NAA classified as moderate 1.5 points for each PM10 NAA classified as serious 1/2 point for each PM10 maintenance area
Other NAAQS Pollutants (Credit applied to areas as determined by 1971 CO; 1978 and 2008 Pb; and 1971 NO2 NAAQS)	1 point for each NAA 1/3 point for each maintenance area

*Points are applied for all national standards where there is ongoing work, including some revoked NAAQS.

The points assigned to each area within a region are additive. For instance, an area classified as moderate or higher for ozone receives a score of 3 (1 for being an ozone NAA + 2 for being classified moderate or higher); an area classified as serious for PM 2.5 receives a score of 4 (2 for being a PM 2.5 NAA + 2 for being classified serious). In addition, areas that overlap multiple states receive points for each impacted state (e.g., an ozone NAA that is in two states would be credited as 1 point for State A and 1 point for State B).

EPA considered a weighting range of 20% to 25% for this factor. For purposes of calculating the proposed allocation, EPA is proposing to weight this factor **at 22.5 % of the total proposed allocation.**

EPA proposes to update the data used to calculate regional proportions for this factor annually to capture the work of recently designated areas.

Population

During listening sessions, there was a great deal of discussion regarding how much weight should be given to regional population in the allocation. Population size, along with other factors, would serve as a proxy for areas of work not directly covered by other allocation factors. Additionally, CAA Section 105(b)(1) states that EPA should consider population when allocating CAA § 105 grant funding.

To calculate this factor, EPA uses the most recent population estimate from the U.S. Census Bureau (2015) for each Region's population, and determines its proportion of the total estimated population. While state representatives differed as to the impact that a state's population can have on its workload, EPA considered a weighting range of 10% to 15% for this factor based on the significant amount of work that is connected to population. For purposes of calculating the proposed allocation, EPA is proposing to weight this factor at **12.5 percent of the total proposed allocation.**

EPA proposes to update the data used to calculate regional proportions for this factor every four years.

Emissions

Air agencies consistently stated that minor sources of air pollution required significant time and effort and would ideally be addressed in the allocation. However, a reliable, nationwide, and uniform data set for minor sources to use in the allocation does not exist. EPA is proposing to use emissions data from the National Emissions Inventory (NEI) as a partial proxy for the work required to address minor sources. Importantly, emissions are also included in the model to partially capture work that states have to undertake to address air quality issues not captured in other factors. EPA understands that this emissions factor does not cover all minor sources and is not weighted to be proportional to the amount of minor source-related work. Additionally, EPA recognizes that some states raised concerns that including emissions as a factor could act as a disincentive. This is consistent with the requirement in CAA 105(b)(1) for consideration of actual or potential air pollution problems.

This factor would focus on those emissions that air agencies could choose to control with their CAA § 105 funding. The emissions factor uses criteria pollutant data included in the NEI that captured emissions from anthropogenic sources, after removing major sources (i.e. sources that emit over 100 tons of any one pollutant). EPA excluded major sources from this calculation since states cannot use Section 105 funds for Title V-related activities.

To calculate this factor, EPA downloaded the 2014 NEI sector-level data for nitrogen oxides (NO_X), volatile organic compounds (VOCs), particulate matter ($PM_{2.5}$ primary) and sulfur dioxide (SO_2) by state. Major sources and the following NEI sectors were excluded:

- "Biogenics - Vegetation and soil"
- "Dust - Unpaved Road Dust"
- "Fires - Prescribed fires"
- "Fires - Wildfires"
- On-road and Aircraft Mobile Source Sectors

EPA excluded PM_{10} from the methodology because the data reported in the NEI did not appear to align well to work.

EPA is proposing to calculate regional proportions for the emissions factor using the weights below for each pollutant and emissions category (see Table 4 below).

Table 4: Proposed Category Weights and Weights Assigned to Individual Pollutants

Emissions Category	Weight of Category	Pollutants	Pollutant Weight
Point and nonpoint sources	80%	NOx	40%
		VOC	30%
		PM2.5 primary	15%
		SO_2	15%
Mobile non-road	20%	NOx	40%
		VOC	30%
		PM2.5 primary	20%
		SO_2	10%

EPA considered weighting this factor up to 2.5% of the total proposed allocation. For purposes of calculating the proposed allocation, EPA proposes to weight emissions at **2.5% of the total proposed allocation.**

EPA proposes to update the data used to calculate regional proportions for this factor approximately every four years to use the most recent version of NEI data. The NEI is typically updated every three years, with the most recent version being from 2014.

Number of States and State Land Area

Number of States

There is a certain minimum amount of work that all states and territories need to complete and the proposed allocation methodology accounts for that by including a factor that weights the number of states and territories in each Region. To calculate this factor, each state is assigned a single point. For U.S. territories and the District of Columbia, EPA assigned points taking into consideration the program size and equivalency to a state program. Specifically, EPA used the CAA's minimums as a guide – any territory (including DC) that historically receives >0.5% of the allocation formula would be counted as a state and given one point; all other territories would receive a quarter point (0.25). Using this approach, the District of Columbia and Puerto Rico would receive one point, and the remaining territories would receive a quarter point. Regional allocation percentages were calculated by dividing the regional number of points by the overall number of points.

State Land Area

Many air agencies also described increased costs associated with covering large geographic land areas. To address this, EPA is proposing to provide weighting based on a state's total land area. EPA is proposing to categorize states and territories using three sizes – small, medium, and large. EPA sorted states and territories by land area from smallest to largest and assigned each state either 1, 2, or 3 points. Under this approach, 15 states and territories were counted as small and assigned 1 point; 25 were counted as medium and assigned 2 points; and 16 were counted as large and assigned 3 points. Regional allocation percentages were calculated by dividing the sum of state rankings per region by the total sum of all allocated points.

In tandem, EPA considered a weighting range for the state factors of 5% to 10% of the total proposed allocation. For purposes of calculating the proposed allocation, EPA is proposing to weight the number of states factor at **5%** and the land area factor at **2.5% of the total proposed allocation.**

Regional Haze SIP Activities

During the listening sessions, participants stated that responding to regional haze requirements led to increased work load for the states. EPA is proposing this factor to capture this additional work, while recognizing there was not agreement among the states as to how to score this factor.

EPA proposes to assign one point to each state/territory that impacts a class I area (i.e., each state/territory received 1 point). EPA proposes to assign a second set of points to each state/territory based on the number of class I areas within its borders.

EPA calculated regional proportions for both point categories by dividing the regional number of points by the total number of points allocated. Overall regional allocation percentages were calculated by weighting each of the previous proportions by 50%. EPA considered weighting this factor up to 2.5% of the total proposed allocation. For purposes of calculating the proposed allocation, EPA proposes to weight that this factor at **2.5% of the total proposed allocation.**

EPA proposes to update the data used to calculate regional proportions for this factor every four years.

SHORT-TERM FACTORS

These factors are designed to capture high priority, effort-intensive work being conducted by air agencies expected to last no more than a few years. EPA is proposing a framework for developing factors for future years:

- Designations: Include after a new NAAQS, up to the point of when new designations are made.
- Additional support for attainment planning: Newly designated areas will receive additional credit through the time of the first attainment plan submittal due dates.
- ISIP: Include credit for a new ISIP requirement, triggered by a new/revised NAAQS, give relatively low credit through the period that it is due.
- Transport: Include credit for all states to consider and address interstate transport of air pollution that affects downwind states' ability to attain and maintain NAAQS.

Using the selecting framework above, EPA proposes the following short-term factors, methodologies, and weights for FY 2017. EPA will review and possibly change these factor for FY 2018 – FY 2019 to cover the next round of NPM Guidance.

State Recommendations for 2015 Ozone NAAQS Designations

EPA proposes to include this factor to capture the additional workload that is required prior to designation of ozone areas. To calculate this factor, EPA proposes to allocate points to two categories for each state and territory.

EPA proposes to assign one point to each state/territory that is required to submit a designation. EPA proposes to assign a second set of points to each state/territory based on the number of monitors per state with a "2013-2015 Design Value (ppm)" greater than or equal to 0.07ppm. Regional proportions for both point categories were calculated by dividing the regional number of points by the total number of points allocated. Overall

regional allocation percentages were calculated by weighting each of the previous proportions by 50%. EPA proposes to weight this factor at **2.0% of the total proposed allocation.**

SO2 Sources on the Data Requirements Rule List

EPA proposes to include this factor to capture the additional workload that is required prior to designation of an SO_2 source. To calculate this factor, EPA proposes to allocate points to two categories for each state and territory.

EPA proposes to assign one point to each state/territory that has at least one facility on the "Data Requirements Rule" list. EPA proposes to assign a second set of points to each state/territory for the number of facilities on the DRR list in its borders. EPA proposes to weight each set of points by 50%. Regional proportions were calculated by dividing the regional number of points by the total number of points allocated. Given that there are 375 facilities on the DRR list, EPA proposes to provide the majority of the short-term factor weighting to this factor. EPA proposes to weight this factor at **5.5% of the total proposed allocation.**

SO2 Round 2 NAAs

EPA proposes to include this factor to capture the additional workload that is required to support S02 nonattainment planning. EPA proposes to assign one point to each SO2 round 2 nonattainment area. Regional allocation percentages were calculated by dividing the regional number of points by the total number of points assigned. EPA proposes to weight this factor at **0.5% of the total proposed allocation.**

2015 Ozone ISIPs

EPA proposes to include this factor to capture the additional workload that is required prior to designation of an ozone nonattainment area. To calculate this factor, EPA proposes to assign one point to each state/territory since all states and territories will undertake this work. Regional allocation percentages were calculated by dividing the regional number of points by the total number of points assigned. EPA proposes to weight this factor at **0.5% of the total proposed allocation.**

State Transport Activities

EPA proposes to include this factor to capture work that is required of each state to minimize emissions that would contribute to nonattainment of the ozone NAAQS, or interfere with maintenance of an ozone NAAQS, in a downwind state. To calculate this factor, EPA proposes to assign one point to each state/territory. This calculation method may change as new information on ozone transport is provided by EPA. Regional allocation percentages were calculated by dividing the regional number of points by the total number of points assigned. EPA proposes to weight this factor at **1.5% of the total proposed allocation.**