

Attachment 1

New Jersey Department of Environmental Protection Comments on U.S. Environmental Protection Agency's 2016 Version 2 Emissions Modeling Platform

December 16, 2021

1. Point Sources: Integrated Planning Model (IPM)

Power plant emissions are very important in the modeling inventory. USEPA uses the Integrated Planning Model (IPM) to estimate future power plant emissions. The Eastern Regional Technical Advisory Committee (ERTAC) has developed and uses an electricity generating utility growth model to estimate future power plant emissions. This model is similar to IPM in that the ERTAC model provides an estimate of future emissions and operations of power plants. However, the ERTAC model is different from IPM in that the model estimates the future power plant operations based on state specific data and inputs without linkage to economics directly. Growth is estimated using Department of Energy, Annual Energy Outlook (AEO) and National Energy Regulatory Council (NERC) projections. ERTAC states feel the ERTAC model better represents power plant emission estimates.

2. Point Sources: Focus On Daily Emissions

The USEPA should ensure the emissions on high electric demand days (HEDDs), most specifically from power plants, are properly reflected in the modeling. High electric demand days typically coincide with high temperatures and elevated ozone air quality. Some states like New Jersey regulate these emissions more stringently than other states.

3. Behind the Meter Generation

Behind the meter generation is the use of generators typically reserved for emergency situations to reduce the demand on the grid during high electricity demand days, which usually coincides with high temperature and high ozone days. The emissions from these sources are not correctly characterized in the inventory, and therefore, do not show up as a major contributor of ozone precursors on these high days. The emissions from these units may be in the inventory if the unit is situated in a Title V facility and required to be report emissions. But for the units that are not at a Title V facility, it is unclear if the emissions from these units are properly captured in the inventory, especially the area/nonpoint inventory. Some states like New Jersey regulate these emissions more stringently than other states. Also, the emissions from the units in the inventory are averaged out over the entire year but should be temporalized like power plant HEDD units.

4. Nonroad Emissions – Commercial Marine Vessels:

The 2016 version 1 and 2 emissions are the same in the modeling inventory. The September 2021 Technical Support Document (TSD) states the following:

"Category 1 and category 2 (C1C2) commercial marine vessel (CMV) emissions sources back cast to 2016 from the 2017NEI using a multiplier of 0.98. Emissions unchanged from 2016v1 January 2020 version of CMV. Includes C1C2 emissions in U.S. state and Federal waters, and also all non-U.S. C1C2 emissions including those in Canadian waters. Gridded and hourly resolution."

"Category 3 (C3) CMV emissions converted to point sources based on the center of the grid cells. Includes C3 emissions in U.S. state and Federal waters, and also all non-U.S. C3 emissions including those in Canadian waters. Emissions are consistent with 2016v1 January 2020 version of CMV and are back cast to 2016 from 2017NEI emissions based on factors derived from U.S. Army Corps of Engineers Entrance and Clearance data and information about the ships entering the ports. Gridded and hourly resolution."

"The 2016v2 CMV emissions are based on the emissions developed for the 2017 NEI and are the same as those used in the 2016v1 platform."

The 2016v1 and 2016v2 data when compared to the 2017 National Emissions Inventory (NEI) emissions does not appear to match the TSD description of back casting from the 2017 NEI for New Jersey and for other states in New Jersey's modeling domain. For New Jersey, 2016 NOx emissions are much higher than the 2017 NEI emissions (by approximately 3,500 tons per year) and for New York the 2016 NOx emissions are much lower than the 2017 NEI emissions. The 2016v2 county emissions also do not appear to match the 2017 NEI.

For example, the 2016 C1C2 NOx emissions in New Jersey's Hudson County (34017) are much higher (by approximately 2,371 tons per year) while correspondingly New York's Manhattan County (36061) sees a decrease from 1,700 to 0 tons per year. This indicates an allocation of C1C2 emissions from Manhattan to Hudson counties. Many C1C2 ferries operate within and between both of these counties and ferry operations constitute a significant portion of C1C2 emissions for these counties.

The 2017 NEI represents the most current emission estimates and accurate spatial allocations for this source category and should be used as the basis for the modeling inventory.

Also, the future year emission estimates show a decreasing pattern for NOx and PM, however, 2023 emissions are higher than 2017 NEI emissions, because they were projected off of 2016v2 emissions that were too high. The future emissions should also be adjusted after the base year 2016v2 emissions are corrected.

5. Area Source/Nonpoint: Comments on Solvent Volatile Organic Compound (VOC) Emissions Inventory United States Environmental Protection Agency (USEPA) Modeling Inventory 2016v2 and 2020 National Emissions Inventory (NEI)

5.1 Introduction, Collaborative and State Specific Data:

The 2016v1 based modeling platform was developed as a USEPA/state/ Regional Planning Organization (RPO) collaborative process. USEPA recently completed 2016v2 and asked states and RPOs for comments on the platform, after changes were incorporated by USEPA and designated as a new version. States anticipated updates and use of the new mobile model. However, a removal and replacement of all solvent Source Classification Code (SCC) emissions, including state submitted data and point source data was not anticipated.

USEPA replaced or removed state submitted data in the 2016v2 modeling inventory for area and point sources without notifying the states that submitted data in order to implement a new methodology. The goal of the new methodology is to include in the modeling inventory VOCs that are exempt either in the Federal definition of VOC, due to low ozone reactivity, or exempt in Federal, CA and some state consumer product and architectural coating rules. USEPA also wanted to use National solvent sales data that was not previously used in emission estimates. However, in implementing this new methodology, several important incorrect assumptions were made as discussed further below.

It should be noted that states that do submit their own emission data often use state specific data that is not available to USEPA. Also, USEPA does not have the resources to access state specific data for all categories. Therefore, USEPA often uses National data and allocates it to the state level using a general activity indicator. Therefore, any benefit of the state specific data is lost. Examples are county level confidential employment data, state specific pesticide usage reports and state specific regulations.

USEPA has responded that a state can request that their data be put back into the next version of the modeling inventory. While this option is appreciated, it does not solve many of the problems that were created with the new methodology (and problems that may have existed with the previous methodology) in the inventory Nationwide and for states that do not have the resources to estimate their own emissions and choose to accept USEPA data. If emissions are allocated incorrectly and a state submits its own emissions, it does not solve the allocation problem and emissions may be lost. This also creates a disconnect between any benefits that may have been gained with the new methodology.

USEPA should not implement a new methodology that excludes states from submitting state specific emissions or data that may be more accurate than a national estimate, or that allows the state submission, but the state cannot replicate the methodology implemented by the USEPA. Other area (nonpoint) calculation tools are available to states to run with state specific data.

Nationwide solvent emissions in the 2016v2 inventory updated version (November 23, 2021) are 6 percent lower than 2016v1. The goal of the new methodology was to ensure exempt solvents were included in the modeling. However, the new methodology may be underestimating regulatory, more reactive VOCs with inaccurate assumptions and is incorrectly allocating the national emissions to the state level by not incorporating state specific regulations.

There appears to be a pattern overall that several states that submit emission estimates have increased VOC emissions in the modeling inventory, while most states have decreases. Nationwide inventory summaries and summaries specific to New Jersey (NJ) and California (CA) which were created using USEPA summaries are attached as examples. The total solvent summaries are not representative of what is happening within the individual categories, due to so many other changes within the categories.

5.2 Uniform Emission Factors:

In its new solvent sector, USEPA has used the same emission factors for all states, not accounting for individual state rulemakings. An incorrect assumption was made that consumer products that were reformulated in accordance with CA rules are being sold nationwide. CA emissions and speciation profiles are not representative of the whole country and not even of the OTC states that have adopted similar rules, because no OTC state has adopted all of the VOC limits equivalent to CA yet. Some manufacturers sell some reformulated products nationwide and other products are state specific. In addition, the South Coast Air Quality Management District (SCAQMD) has the most stringent regulations for consumer products, architectural coatings, degreasing and other categories in the country, even more stringent than other districts in CA and California Air Resource Board (CARB) models.

There are several consumer products with high emissions and high emission reductions that are regulated in CA more stringently than the rest of the country, and those products are not sold nationally. Manufacturers produce multiple versions of products for different states as stated on their websites and their Material Safety Data Sheets (MSDS) sheets. Examples are Multi-Purpose Solvents and Paint Thinners, estimated at about 12 tons per day (tpd) VOC in CA, with almost all of that resulting in emission reductions after regulation, windshield washer fluids, estimated at about 24 tpd VOC reduction in CA in non-freeze zones only (no other states are implementing this), stains and varnishes (not different formulations, different sizes) and brake cleaners.

While the reformulated version of latex paints is generally sold nationwide, this is not the case for all reformulated coatings in the architectural coatings rule. Many solvent-based coatings such as stains and varnishes are sold in small containers due to the 1 liter exemption but sold in larger containers in other states.

Although consumer products are regulated statewide in CA, SCAQMD has more stringent limits for paint thinners and multi-purpose solvents. Other regulations are by air district such as

architectural coatings, industrial adhesives, degreasing and autobody refinishing. Products not yet regulated by states other than CA include perfumes, insect repellants, CA's most stringent consumer products adhesive limits and several other categories in the Ozone Transport Commission (OTC) Consumer Products Model Rule Phase V. CA has the most stringent limit for industrial maintenance coatings (contained in their architectural coating rule), which was not incorporated into the OTC Architectural Coatings Model Rule Phase I, it was incorporated into Phase II, which not all OTC states have adopted. In addition, the SCAQMD has eliminated the one-liter exemption for several coating categories including varnishes, which has not been done by CARB or the OTC states.

USEPA uses CA product specific speciation profiles to account for exempt VOCs, however, this could underestimate regulatory, more highly reactive VOCs if the reformulated products are not being sold nationwide. USEPA allocates National sales data to state and counties using factors such as population and employment. As was done in previous NEIs, the allocations should be weighted differently for states and CA districts that have solvent VOC rules such as CA, SCAQMD, OTC states with Phase 1 and Phase 2 consumer products rules, OTC states with Phase 3 and Phase 4 consumer products rules, OTC states with Phase 1 architectural coatings rules and OTC states with Phase 2 architectural coatings. The consumer products and architectural coatings rules are of primary importance in this weighting system as they involve nationally sold products, however, there are also state specific area source VOC rules based on OTC model rules for autobody refinishing, solvent degreasing, industrial adhesives, and asphalt paving.

By using the same emission factors for all states, USEPA is ignoring the significant effort conducted by CA and states that have adopted consumer products and architectural coatings rules and other state specific rules.

If USEPA does not have factors to allocate the emissions to the states properly, then the previous NEI estimation methods should be used either in their entirety, or to create new ratios for the split or a new methodology needs to be utilized to determine the split. An example is residential wood burning, where USEPA's new methodologies and tools had flaws that produced data that did not make sense. It allocated to the county level based on housing alone, not housing with wood burning devices. Based on state comments, USEPA's contractor developed ways to improve the methodology. It is not the responsibility of the states to improve USEPA's Nationwide methodologies.

5.3 VOC Definition and t-butyl acetate (TBAC):

Another factor that makes CA emissions and speciation profiles different than the rest of the country is the definition of VOC. CA's definition of VOC is different than the Federal definition of VOC. Most states that adopted OTC model rules used the Federal definition of VOC. CA does not exempt t-butyl acetate (TBAC) which is used in coatings and adhesives. Manufacturers specifically petitioned USEPA to exempt TBAC, due to the CA and OTC product regulations for consumer products and architectural coatings. They wanted to use it as a replacement for

regulatory VOCs. Therefore, if CA doesn't allow it and the Federal and OTC rules do, that creates a different formulation for certain products than what is being sold in CA. The Federal VOC definition required TBAC data usage be reported and submitted to USEPA to be evaluated. This data should be evaluated by USEPA as part of the new methodology to see if TBAC is used more in product formulations outside CA.

5.4 CA Emissions:

USEPA modeling inventory data shows significant increases in CA emissions data, approximately 100 percent increase in total solvent VOCs, a 243 percent increase in consumer products (CA SCCs 2440000000 and 2440020000 deleted by USEPA were added to consumer products for comparison purposes) and a 77 percent increase in architectural coatings. This is a major indicator that the methodology (new and/or old) is flawed. CA is the leader and model for how consumer products and architectural coatings are inventoried and regulated and it represents the most accurate data for these sources (for CA and in part for OTC states if applied appropriately). That means the inaccurate emissions allocated to CA either should be allocated elsewhere in other states, or the National data may have other issues such as double counting with point sources. It should also be noted that manufacturing surveys and reports are not the same thing as usage and sales reports within a state. It is not clear if USEPA's manufacturing data was adjusted for imports and exports, etc. CA survey data is state specific.

USEPA claims that states including CA can replace USEPA generated emissions with their own estimates, provided adequate activity data and documentation is provided for estimates that differ significantly from USEPA estimates. The Federal consumer products, architectural coatings and autobody refinishing rules are based on CA rules, as well as other rules and programs like portable fuel containers and vapor recovery at gasoline service stations. CA's over 30 years of experience and documentation can be found on their very detailed and thorough websites. USEPA should be generating estimates based on CA's research and documentation, as appropriate, and not contrary to it. This is a major problem that USEPA's estimates are significantly different than CAs for CA.

5.5 SCC Allocations:

One major goal of air emissions inventories is to help identify sources of air pollution and develop strategies to reduce emissions from those sources of air pollution. The existing solvent inventory SCCs are based on USEPA Emissions Inventory Improvement Program (EIIP), CA and Federal emissions inventories, surveys, and regulations. The inventory categories were designed to be aligned with CA and Federal surveys and regulations. USEPA's new solvent methodology which was incorporated into the modeling inventory prematurely combined multiple categories that would not be regulated the same way such as factory coatings vs. coatings applied outside the factory environments, consumer product degreasing products and commercial and industrial degreasing solvents. Prior to initial comments, USEPA already identified this as an issue and made changes to the 2020 DRAFT NEI to incorporate the deleted SCCs. While the updated version of the 2016v2 solvents inventory provided on November 23,

2021, allocates to all the SCCs and is an improvement over the 2016v2 platform, it still appears to possibly combine sources of pollution that are not regulated the same way and are not consistent with existing inventory guidance, CA and Federal regulations and surveys. As discussed previously, industrial surface coatings are factory coatings not industrial "maintenance" coatings. Examples of industrial maintenance coatings are coatings for bridges, dams, etc... They need to be separate because they are applied differently, estimated differently, and regulated differently. Industrial maintenance coatings are a subset of architectural coatings. The Federal definitions for architectural coatings and industrial maintenance coatings are as follows:

“Architectural coating means a coating recommended for field application to stationary structures and their appurtenances, to portable buildings, to pavements, or to curbs. This definition excludes adhesives and coatings recommended by the manufacturer or importer solely for shop applications or solely for application to non-stationary structures, such as airplanes, ships, boats, and railcars.”

“Industrial maintenance coating means a high performance architectural coating, including primers, sealers, undercoaters, intermediate coats, and topcoats formulated and recommended for application to substrates exposed to one or more of the following extreme environmental conditions in an industrial, commercial, or institutional setting: (1) Immersion in water, wastewater, or chemical solutions (aqueous and nonaqueous solutions), or chronic exposure of interior surfaces to moisture condensation; (2) Acute or chronic exposure to corrosive, caustic, or acidic agents, or to chemicals, chemical fumes, or chemical mixtures or solutions; (3) Repeated exposure to temperatures above 120 °C (250 °F); (4) Repeated (frequent) heavy abrasion, including mechanical wear and repeated (frequent) scrubbing with industrial solvents, cleansers, or scouring agents; or (5) Exterior exposure of metal structures and structural component.”

While these definitions have been updated by CA and OTC states, the general principle of what they represent remains the same. The following inventory SCCs associated with these definitions are as follows:



2401001000	surface coating	Solvent Utilization;Surface Coating;Architectural Coatings;Total: All Solvent Types
2401100000	surface coating	Solvent Utilization;Surface Coating;Industrial Maintenance Coatings;Total: All Solvent Types
2401008000	surface coating	Solvent Utilization;Surface Coating;Traffic Markings;Total: All Solvent Types
2401200000	surface coating	Solvent Utilization;Surface Coating;Other Special Purpose Coatings;Total: All Solvent Types

They are different than industrial surface coatings and should have a different category label in the modeling inventory.

USEPA has significantly increased emissions in the other product coatings SCC and has decreased emissions in the architectural coatings SCC. This doesn't appear to align with current guidance, surveys, and regulations. But if the four SCCs are combined to represent architectural coatings, that may alleviate the difference in allocation.

The degreasing category in nonpoint is not a consumer products category, it represents small stationary source emissions not submitted in emissions statements such as automotive repair shops and industrial not otherwise in point sources.

Autobody refinishing has two components, coating emissions and solvent cleanup emissions. The significant decrease in emissions from autobody refinishing indicates that these emissions were most likely allocated elsewhere incorrectly.

It should also be noted that CA regulates aerosol coatings as consumer products, not coatings.

If USEPA does not have the ability to split SCCs with the source data used, then the previous NEI estimation methods should be used either in their entirety, or to create ratios for the split or a new methodology needs to be utilized to determine the split. An example is residential wood burning, where USEPA's new methodologies and tools had flaws that produced data that did not make sense. Based on state comments, USEPA's contractor developed ways to improve the methodology. It is not the responsibility of the states to improve USEPA's Nationwide methodologies that do not align with years of existing guidance and regulations.

5.6 Growth and Control Factors:

Care should be taken in SCC changes in the modeling inventory because the future years growth and control factors were estimated in accordance with 2016v1. By abandoning years of established methods for certain SCCs and allocating source emissions differently than has been done in the past, the existing growth factors and control factors in the modeling inventory may not be accurate anymore. Much of this is alleviated by the updated version, but the updated version is still not allocated the same as has been historically consistent with Federal and CA consumer product surveys and EIIP guidance. The new allied products SCC did not have a growth factor associated with it in 2016v1, and it might combine employment categories with population categories. In the area source inventory, the majority of emissions are grown either by population or employment. Assigning a population growth factor to an employment category would most likely overestimate emissions. The control factors are calculated based on the previous SCCs. This would also be problematic in the future when new OTC model rules are adopted by states. All of the existing technical support document calculations are based on existing SCCs and definitions in established guidance, CA, and Federal rules.

5.7 New SCC Code, Allied Products:

USEPA has stated that paint thinners and multi-purpose solvents were not included in previous inventories and are now included in the new "Allied Paint Products" SCC 2401004000 that has

been added to capture these emissions. The details of this category are not contained in the DRAFT 2020 NEI Nonpoint Emissions Methodology and Operating instructions (NEMO) or the 2016v2 modeling platform technical support document. A description provided by USEPA stated that “allied paint products include, but are not limited, to, paint and varnish removers, thinners for lacquers and other solvent based paint products, brush cleaners, and painting clean up solvents. This SCC is meant to represent emissions from allied paint product usage in consumer, commercial, institutional, and industrial settings. The existing coating SCCs are for specific industries and/or special purpose coating operations, whereas allied painting products are used more broadly. The solvent usage associated with these products were not previously accounted for in USEPA generated emission estimates. While these solvents are accounted for in the Freedonia Report, which served as the base product usage reference in prior NEIs, their mass was included within the “Construction” market, which was not previously used.”

It is still not clear if any coatings are included in this new SCC. It is also not clear if this category actually contains industrial solvents if the source data is labeled as “construction”. And it is not accurate to say that these emissions were not included in previous NEI inventories. Per the 2017 NEMO, "Emissions factors for the three Consumer and Commercial categories—including FIFRA related products, coatings and related products, and misc. products—are not estimated by using Freedonia data, but rather come from USEPA’s Air Emissions Inventory Improvement Program (EIIP)." As documented in the EIIP, the USEPA consumer products EIIP emission factor includes paint thinners.

As was done previously in established CA and USEPA guidance, surveys and regulations, the consumer thinners and solvents should be separated from industrial solvents. Paint thinners and multi-purpose solvents should be in consumer products like they were previously (2460500000), which does not overlap point sources and industrial solvent cleaning (including automotive repair) should be under degreasing 2402000000, which is reconciled with point sources. They are different products, regulated differently, and speciated differently. Paint thinners and multi-purpose solvents are regulated in the CA and OTC consumer product rules not the coating rules.

And if this SCC does actually include solvent based coatings, mixed with thinners and clean-up solvents, that should be separated, and coatings emissions should be put under the appropriate coatings SCCs. As already stated, different products, regulated differently and speciated differently.

If USEPA does not have the ability to split this category with the source data used, then the previous NEI estimation methods should be used either in their entirety, or to create ratios for the split. It is not the responsibility of the states to improve USEPA’s Nationwide methodologies that do not align with years of existing guidance and regulations.

5.8 Paint Strippers and Degreasers:

Paint strippers should not be combined with degreasing. They are different products, regulated differently and speciated differently. As discussed above, point source subtraction is done on the degreasing category, however paint strippers are a category in the CA and OTC consumer products rules. However, the data shows a Nationwide decrease of 32 percent for this combined category. This may be due to some degreasing emissions mistakenly allocated to the new allied coatings SCC.

5.9 Industrial and Commercial Adhesives

Consumer products adhesives and sealants have a size limit and are regulated differently than the commercial/industrial adhesives such as those used by contractors that work outside the factory setting (carpet and floor adhesives, roofing, etc...) CA regulates commercial/industrial adhesives differently than consumer product adhesives. The OTC has a model rule based on CA's model. That is why CA and NJ have a separate SCC for this category. Delaware, Maryland, Massachusetts, and Texas also have this SCC in the inventory, presumably for the same reason. Although this issue has been discussed in the past, USEPA has never used this SCC. In previous modeling inventories prior to the 2016 modelling platform, the Mid-Atlantic Regional Air Management Association (MARAMA) contractor included estimates for this category in the modeling inventory for states that accepted USEPA inventories. Now that we have a collaborative, alignment with CA and state rules would be desirable.

5.10 Point sources:

USEPA deleted point source emissions from the 2016v2 modeling inventory that were perceived as double counting with the new nonpoint solvent emissions estimates. Industry submitted data should not be removed from the inventory. Long standing inventory guidance states that point source subtraction occurs in the area (nonpoint) inventory. USEPA has agreed with this comment and has stated they will use existing point source subtraction guidance in future inventories, but it is currently not corrected in the 2016v2 inventory.

Also, in USEPA's deletion of point solvent VOCs, some other criteria pollutants were also removed, and asphalt roofing VOCs were deleted.

Also note, subtracting point source emissions from nonpoint for a category like degreasing is not an apple-to-apple methodology. The point source solvents are most likely controlled in some fashion. Therefore, the quantity of solvent used in point sources is not properly represented in such a subtraction. This has been documented in the DRAFT 2020 NEI NEMO, but still remains a problem in the modeling inventory.

5.11 Other Miscellaneous:

- USEPA replaced and lowered NJ pesticide emissions by 90 percent and increased CA pesticide emissions by 69 percent, although both states use state specific data.
- USEPA increased graphic arts significantly in NJ and some other states but does not appear to account for state specific regulations.
- USEPA deleted asphalt roofing emissions. USEPA has acknowledged that this was a mistake.

Summary and Next Steps

- Not all consumer products and architectural and industrial maintenance coatings reformulated for compliance in CA are being sold nationally. State and CA district specific rules are not accounted for in the estimates. In some cases, for consumer products and architectural coatings USEPA is reducing VOC emissions in states without rules and increasing VOC emissions in states with rules.
- USEPA emission estimates for CA are increased by a significant amount over CA's estimates. CA is the leader and model for how consumer products and architectural coatings are inventoried and regulated and CA represents the most accurate data for these sources (for CA and in part for OTC states if applied appropriately.) USEPA should be generating estimates that align with CA's research and documentation, as appropriate, and not contrary to it.
- Other category emissions with state specific rules were replaced with National data, also under the incorrect assumption that all states have the same emission factors, such as degreasing, graphic arts, pesticides, autobody refinishing and industrial surface coatings.
- Point source emission data was removed from the inventory, which USEPA acknowledged will not happen again in the future.
- NJ will follow-up with USEPA on if NJ wants its 2016v1 emissions put back into the inventory, replacing USEPA's estimates. With the changed allocation methodology and new SCC code for allied paints, this is a complicated matter and needs additional evaluation to avoid double counting. Ideally, USEPA would make revisions and adjust its allocations to account for the consumer products and architectural coatings rules at a minimum, assuming some reformulated products are being sold nationally and others are not.