2020 National Emissions Inventory Technical Support Document: Overview

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2.1 What are EIS sectors?

First used for the 2008 NEI, EIS Sectors continue to be used for all 2020 NEI data categories. The sectors were developed to better group emissions for both CAP and HAP summary purposes. The sectors are based simply on grouping the emissions by the emissions process as indicated by the SCC to an EIS sector. In building this list, we gave consideration not only to the types of emissions sources our data users most frequently ask for, but also to the need to have a relatively concise list in which all sectors have a significant amount of emissions of at least one pollutant. The SCC-EIS Sector cross-walk used for the summaries provided in this document is available for download from the Source Classification Codes (SCCs) website. No changes were made to the SCC-mapping or sectors used for the 2020 NEI except where SCCs were retired, or new SCCs were added.

Some of the sectors include the nomenclature "NEC," which stands for "not elsewhere classified." This simply means that those emissions processes were not appropriate to include in another EIS sector and their emissions were too small individually to include as its own EIS sector.

Since the 2008 NEI, the inventory had been reported and compiled in EIS using five major data categories: point, nonpoint, onroad, nonroad and events. The event category was used to compile day-specific data from prescribed burning and wildfires. While events could be other intermittent releases such as chemical spills and structure fires, prescribed burning and wildfires had been a focus of the NEI creation effort and were the only emission sources contained in the event data category.

For the 2020 NEI, we have aggregated the wildfires and prescribed burning emissions into county-level estimates and loaded these into the nonpoint data category. Table 2-1 shows the EIS sectors or source category component of the EIS sector in the left most column. EIS data categories -Point, Nonpoint, Onroad, Nonroad, and Events- that have emissions in these sectors/source categories are also reflected.

As Table 2-1 illustrates, many EIS sectors include emissions from more than one EIS data category because the EIS sectors are compiled based on the type of emissions sources rather than the data category. Note that the emissions summary sector "Mobile – Aircraft" is reported partly to the point and partly to the nonpoint data categories and "Mobile – Commercial Marine Vessels" and "Mobile – Locomotives" are reported to the nonpoint data category. NEI users who aggregate emissions by EIS data category rather than EIS sector should be aware that these changes will give differences from historical summaries of "nonpoint" and "nonroad" data unless care is taken to assign those emissions to the historical grouping.

Table 2-1: EIS sectors/source categories with EIS data category emissions reflected

Component **EIS Sector or EIS Sector: Source Category Name**	**Point**	**Nonpoint**	**Onroad**	**Nonroad**
Agriculture - Crops & Livestock Dust		☑		
Agriculture - Fertilizer Application		☑		
Agriculture - Livestock Waste	☑	☑		
Biogenics - Vegetation and Soil		☑		
Bulk Gasoline Terminals	☑	☑		

Component EIS Sector or EIS Sector: Source Category Name	Point	Nonpoint	Onroad	Nonroad
Commercial Cooking		☑		
Dust - Construction Dust	☑	☑		
Dust - Paved Road Dust		☑		
Dust - Unpaved Road Dust		☑		
Fires - Agricultural Field Burning		☑		
Fires - Prescribed Burning		☑		
Fires - Wildfires		☑		
Fuel Comb - Comm/Institutional - Biomass	☑	☑		
Fuel Comb - Comm/Institutional - Coal	☑	☑		
Fuel Comb - Comm/Institutional - Natural Gas	☑	☑		
Fuel Comb - Comm/Institutional - Oil	☑	☑		
Fuel Comb - Comm/Institutional - Other	☑	☑		
Fuel Comb - Electric Generation - Biomass	☑			
Fuel Comb - Electric Generation - Coal	☑			
Fuel Comb - Electric Generation - Natural Gas	☑			
Fuel Comb - Electric Generation - Oil	☑			
Fuel Comb - Electric Generation - Other	☑			
Fuel Comb - Industrial Boilers, ICEs - Biomass	☑	☑		
Fuel Comb - Industrial Boilers, ICEs - Coal	☑	☑		
Fuel Comb - Industrial Boilers, ICEs - Natural Gas	☑	☑		
Fuel Comb - Industrial Boilers, ICEs - Oil	☑	☑		
Fuel Comb - Industrial Boilers, ICEs - Other	☑	☑		
Fuel Comb - Residential - Natural Gas		☑		
Fuel Comb - Residential - Oil		☑		
Fuel Comb - Residential - Other		☑		
Fuel Comb - Residential - Wood		☑		
Gas Stations	☑	☑	☑	
Industrial Processes - Cement Manufacturing	☑			
Industrial Processes - Chemical Manufacturing	☑	☑		
Industrial Processes - Ferrous Metals	☑			
Industrial Processes - Mining	☑	☑		
Industrial Processes - NEC	☑	☑		
Industrial Processes - Non-ferrous Metals	☑	☑		
Industrial Processes - Oil & Gas Production	☑	☑		
Industrial Processes - Petroleum Refineries	☑	☑		
Industrial Processes - Pulp & Paper	☑			
Industrial Processes - Storage and Transfer	☑	☑		
Miscellaneous Non-Industrial NEC: Residential Charcoal Grilling		☑		
Miscellaneous Non-Industrial NEC: Portable Gas Cans		☑		

Component EIS Sector or EIS Sector: Source Category Name	Point	Nonpoint	Onroad	Nonroad
Miscellaneous Non-Industrial NEC: Nonpoint Hg		☑		
Miscellaneous Non-Industrial NEC (All other)	☑	☑		
Mobile – Aircraft	☑			
Mobile - Commercial Marine Vessels		☑		
Mobile – Locomotives	☑	☑		
Mobile - NonRoad Equipment – Diesel	☑			☑
Mobile - NonRoad Equipment – Gasoline	☑			☑
Mobile - NonRoad Equipment – Other	☑			☑
Mobile - Onroad – Diesel Heavy Duty Vehicles			☑	
Mobile - Onroad – Diesel Light Duty Vehicles			☑	
Mobile - Onroad – Gasoline Heavy Duty Vehicles			☑	
Mobile - Onroad – Gasoline Light Duty Vehicles			☑	
Solvent - Consumer & Commercial Solvent Use: Agricultural Pesticides		☑		
Solvent - Consumer & Commercial Solvent Use: Asphalt Paving		☑		
Solvent - Consumer & Commercial Solvent Use: All Other Solvents		☑		
Solvent - Degreasing	☑	☑		
Solvent - Dry Cleaning	☑	☑		
Solvent - Graphic Arts	☑	☑		
Solvent - Industrial Surface Coating & Solvent Use	☑	☑		
Solvent - Non-Industrial Surface Coating		☑		
Waste Disposal: Open Burning		☑		
Waste Disposal: Nonpoint POTWs		☑		
Waste Disposal: Human Cremation		☑		
Waste Disposal: Nonpoint Hg		☑		
Waste Disposal (all remaining sources)	☑	☑		

2.2 How is the NEI constructed?

Data in the NEI come from a variety of sources. The emissions are predominantly from S/L/T agencies for both CAP and HAP emissions. In addition, the EPA quality assures and augments the data provided by states to assist with data completeness, particularly with the HAP emissions since the S/L/T HAP reporting is voluntary.

The NEI is built by data category for point, nonpoint, nonroad mobile, and onroad mobile. Each data category contains emissions from various reporters in multiple datasets which are blended to create the final NEI "selection" for that data category. Each data category selection includes S/L/T data and numerous other datasets that are discussed in more detail in each of the following sections in this document. In general, S/L/T data take precedence in the selection hierarchy, which means that it supersedes any other data that may exist for a specific county/tribe/facility/process/pollutant. In other words, the selection hierarchy is built such that the preferred source of data, usually S/L/T, is chosen when multiple sources of data are available. There are exceptions, to this general rule, which arise based on quality assurance checks and feedback from S/L/Ts that we will discuss in later sections.

The EPA uses augmentation and additional EPA datasets to create the most complete inventory for stakeholders, for use in such applications as AirToxScreen, air quality modeling, national rule assessments, international reporting, and other reports and public inquiries. Augmentation to S/L/T data, in addition to EPA datasets, fill in gaps for sources and/or pollutants often not reported by S/L/T agencies. The basic types of augmentation are discussed in the following sections.

2.2.1 Toxics Release Inventory data

The EPA used air emissions data from the 2020 Toxics Release Inventory (TRI) to supplement point source HAP and NH3 emissions provided to EPA by S/L/T agencies. For 2020, all TRI emissions values that could reasonably be matched to an EIS facility with some certainty and with limited risk of double-counting nonpoint emissions were loaded into the EIS for viewing and comparison if desired, but only those pollutants that were not reported anywhere at the EIS facility by the S/L/T agency were included in the 2020 NEI.

The TRI is an EPA database containing data on disposal or other releases including air emissions of over 650 toxic chemicals from approximately 21,000 facilities. One of TRI's primary purposes is to inform communities about toxic chemical releases to the environment. Data are submitted annually by U.S. facilities that meet TRI reporting criteria. Section 3 (Point Data category) provides more information on how TRI data was used to supplement the point inventory.

2.2.2 Chromium speciation

The 2020 reporting cycle included 5 valid pollutant codes for chromium, as shown in Table 2-2.

Table 2-2: Valid chromium pollutant codes

Pollutant Code	Description	Pollutant Category Name	Speciated?
1333820	Chromium Trioxide	Chromium Compounds	yes
16065831	Chromium III	Chromium Compounds	yes
18540299	Chromium (VI)	Chromium Compounds	yes
7440473	Chromium	Chromium Compounds	no
7738945	Chromic Acid (VI)	Chromium Compounds	yes

In the above table, all pollutants but "chromium" are considered speciated, and so for clarity, chromium (pollutant 7440473) is referred to as "total chromium" in the remainder of this section. Total chromium could contain a mixture of chromium with different valence states. Since one key inventory use is for risk assessment, and since the valence states of chromium have very different risks, speciated chromium pollutants are the most useful pollutants for the NEI. Therefore, the EPA speciates S/L/T-reported and TRI-based total chromium into hexavalent chromium and non-hexavalent chromium. Hexavalent chromium, or Chromium (VI), is considered high risk and other valence states are not. Most of the non-hexavalent chromium is trivalent chromium (Chromium III); therefore, the EPA characterized all non-hexavalent chromium as trivalent chromium. The 2020 NEI does not contain any total chromium, only the speciated pollutants shown in Table 2-2.

This section describes the procedure we used for speciating chromium emissions from total chromium that was reported by S/L/T agencies.

We used the EIS augmentation feature to speciate S/L/T agency reported total chromium. For point sources, the EIS uses the following priority order for applying the factors:

1) By Process ID
2) By Facility ID

3) By County
4) By State
5) By Emissions Type (for NP only)
6) By SCC
7) By Regulatory Code
8) By NAICS
9) A Default value if none of the others apply

If a particular emissions source of total chromium is not covered by the speciation factors specified by any of the first 8 attributes, a default value of 34 percent hexavalent chromium, 66 percent trivalent chromium is applied.

For the 2020 chromium augmentation, only the "By Facility ID" (2), "By SCC" (6), and "By Default" (9) were used on S/L/T-reported total chromium values. For TRI dataset chromium, the "By NAICS" (8) option was primarily used, although a small number of "By Facility" (2) occurrences were used rather than NAICS. The EIS generates and stores an EPA dataset containing the resultant hexavalent and trivalent chromium species. For all other data categories (e.g., nonpoint, onroad and nonroad), chromium speciation is performed at the SCC level.

This procedure generated hexavalent chromium (Chromium (VI)) and trivalent chromium (Chromium III), and it had no impact on S/L/T agency data that were provided as one of the speciated forms of chromium. The sum of the EPA-computed species (hexavalent and trivalent chromium) equals the mass of the total chromium (i.e., pollutant 7440473) submitted by the S/L/T agencies.

The EPA then used this dataset in the 2020 NEI selection by adding it to the data category-specific selection hierarchy and by excluding the S/L/T agency unspeciated chromium from the selection through a pollutant exception to the hierarchy.

Most of the speciation factors used in the 2020 NEI are SCC-based and are the same as were used in 2011 through 2017 NEI, based on data that have long been used by the EPA for NATA and other risk projects. However, some values are updated with every inventory cycle. New data may be developed by OAQPS during rule development or review of Air Toxics Screening Assessments. The speciation factors are accessed in the EIS through the reference data link "Augmentation Profile Information." A chromium speciation "profile" is a set of output multiplication factors for a type of emissions source. The profile data for chromium are stored in the same tables as the HAP augmentation factors described in Section 2.2.3. The speciation factors are a specific case of HAP augmentation whereby the "output pollutants" are always hexavalent chromium and trivalent chromium, and the "input pollutant" is always chromium. There are 3 main tables and a summary table. The summary table excludes the metadata and comments regarding the derivation of the factors and assignment to SCCs; to learn more of the derivation of the factor or assignment of "profile" to a source, the main tables (not summary table) should be consulted.

The three main tables are:

- Augmentation Profile Names and Input Pollutants – general information about the profile and source of the profile names and factors.
- Augmentation Multiplication Factors – provides the output pollutants and multiplication factors associated with a given Augmentation Profile and input pollutant.
- Augmentation Assignments – provides the assignment of the profile to the data source (the list of 9 items above).

The summary table is the Augmentation Multiplication Factors and Assignments, a composite table that provides a view of all the combinations of output pollutants and assignment information associated with a given profile.

For non-EIS users, the data from the main tables were downloaded and provided as described in Section 3 (3.1.4-S/L/T chromium speciation, 3.1.5 – TRI chromium speciation and 3.1.6, HAP augmentation).

2.2.3 HAP augmentation

The EPA supplements missing HAPs in S/L/T agency-reported data. HAP emissions are calculated by multiplying appropriate surrogate CAP emissions by an emissions ratio of HAP to CAP emission factors. For the 2020 NEI, we augmented HAPs for the point and nonpoint data categories. Generally, for point sources, the CAP-to-HAP ratios were computed using uncontrolled emission factors from the WebFIRE database (which contains primarily AP-42 emissions factors). For nonpoint sources, the ratios were computed from the EPA-generated nonpoint data, which contain both CAPs and HAPs where applicable.

HAP augmentation is performed on each emissions source (i.e., specific facility and process for point sources, county and process level for nonpoint sources) using the same EIS augmentation feature as described in chromium speciation. However, unlike chromium speciation, there is no default augmentation factor so that not every process that has S/L/T CAP data will end up with augmented HAP data.

HAP augmentation input pollutants are S/L/T-submitted VOC, PM10-PRI, PM25-PRI, SO2, and PM10-FIL. The resulting output can be a single output pollutant or a full suite of output pollutants. Not every source that has a CAP undergoes HAP augmentation (i.e., livestock NH3 and fugitive dust PM25-PRI). The sum of the HAP augmentation factors typically does not equal 1 (100%) because not all of the VOC or PM mass will be a HAP. We try to ensure that the sum of HAP-VOC factors is less than 1 because it can't be more but it is sometimes close or equal to 1. HAP augmentation factors based on PM mass are typically much less than 1 for almost all SCCs. HAP augmentation factors are grouped into profiles that contain unique output pollutant factors related to a type of source. Assigning these profiles to the individual sources depends on the source attributes, commonly the SCC.

There are business rules specific to each data category discussed in the point (Section 3.1.6) and nonpoint sections of the TSD. The ultimate goal is to prevent double-counting of HAP emissions between S/L/T data and the EPA HAP augmentation output, and to prevent, where possible, adding HAP emissions to S/L/T-submitted processes that are not desired. NEI developers use their judgment on how to apply HAP augmentation to the resulting NEI selection.

Caveats

HAP augmentation does have limitations; HAP and CAP emission factors from WebFIRE do not necessarily use the same test methods. In some situations, the VOC emission factor is less than the sum of the VOC HAP emission factors. In those situations, we normalize the HAP ratios so as not to create more VOC HAPs than VOC. We are also aware that there are many similar SCCs that do not always share the same set of emission factors/output pollutants. We do not apply ratios based on emission factors from similar SCCs other than for mercury from combustion SCCs. We would prefer to get HAPs reported from S/L/T agencies or from facility reports to the Toxics Release Inventory, but HAP augmentation is used as a last available option. Compliance test data does not usually provide an annual emissions total.

Because much of the AP-42 factors are 20+ years old, many incremental edits to these factors have been made over time. We have removed some factors based on results of NATA reviews. For example, we discovered

ethylene dichloride was being augmented for SCCs related to gasoline distribution. This pollutant was associated with leaded gasoline which is no longer used. Therefore, we removed it from our HAP augmentation between 2011 NEI v2 and 2014. We also received specific facility and process augmentation factors resulting from the NATA and AirToxScreen reviews. More discussion of the underlying data used for the 2020 NEI Point inventory is discussed in Section 3.1.6.

For point sources, HAPs augmentation data are not used when S/L/T air agency data exists at any process at the facility for the same pollutant. That means that if a S/L/T reports a particular HAP at some processes but misses others, then those other processes will not be augmented with that HAP.

2.2.4 PM augmentation

Particulate matter (PM) emissions species in the NEI are: primary PM10 (pollutant code PM10-PRI in the EIS and NEI) and primary PM2.5 (PM25-PRI), filterable PM10 and filterable PM2.5 (PM10-FIL and PM25-FIL) and condensable PM (PM-CON). The EPA needs to augment the S/L/T agency PM components for the point and nonpoint inventories to ensure completeness of the PM components in the final NEI. In general, emissions for PM components missing from S/L/T agency inventories were calculated by applying factors to the PM emissions data supplied by the S/L/T agencies.

PM Augmentation is only run in EIS for point and nonpoint sources. Unlike the PM calculator/Augmentation tool used in previous NEIs, EIS PM Augmentation only gap-fills missing PM components, and does not overwrite existing S/L/T PM data, which already undergoes rudimentary EIS QA checks as the data is being loaded into EIS.

PM augmentation factors for Point and Nonpoint data categories are discussed in more detail in Section 3 for point sources, and in Section 7 for nonpoint sources when the nonpoint sections of the 2020 NEI TSD are released by March 31, 2023.

2.2.5 Other EPA datasets

In addition to TRI, chromium speciation, HAP and PM augmentation, the EPA generates other data to produce a complete inventory. New for 2020, as part of the NEI selection process, EIS generates speciated PM2.5 emissions for all sources with PM emissions. These PM species are a result of speciation where the NEI PM25-PRI emissions are split into five PM2.5 species: elemental (also referred to as “black”) carbon (EC), organic carbon (OC), nitrate (NO3), sulfate (SO4), and the remainder of PM25-PRI (PMFINE). In addition, a copy of PM25-PRI and PM10-PRI from mobile source diesel engines, relabeled as DIESEL-PM25 and DIESEL-PM10, respectively, are also generated.

Examples of other EPA data for point sources, discussed in Section 3, include commercial sterilizers amended via AirToxScreen review, landfills, railyards, electric generating units (EGUs), and aircraft.

2.2.6 Data Tagging

S/L/T agency data generally is used first when creating the NEI selection. When S/L/T data are used, then the NEI would not use other data (primarily EPA data from stand-alone datasets or HAP, PM or TRI augmentation) that also may exist for the same process/pollutant. Thus, in most cases the S/L/T agency data are used; however, for several reasons, sometimes we need to exclude, or “tag out” S/L/T agency data. Examples of these "S/L/T tags” are when S/L/T agency staff alert the EPA to exclude their data (because of a mistake or outdated value), or when EPA staff find problems with submitted data. Another example is when S/L/T emissions data are significantly less than TRI and are presumed to be incomplete, which can happen for S/L/T that use automated gap-filling procedures for facilities that do not voluntarily provide HAP emissions. These automated procedures

gap-fill only for processes that have emission factors and miss processes/pollutants that may have been reported to TRI using other means besides published emission factors.

In previous NEI years data tagging had also been used to avoid double-counting emissions by using emissions from more than one dataset because the two datasets were at different levels of granularity and thus not able to be integrated to the full process level of detail required by the standard selection hierarchy software. The primary example of this is the TRI dataset, which provides facility-total emissions rather than individual process-level emissions. Because the TRI emissions must be stored to a single emission process that is not the same as that used by the S/L/T agency, the standard hierarchy selection software would use both. Thus, tagging was used to "block" any TRI values where the S/L/T had reported the same pollutant at any process(es) within the same facility. Since the 2017 NEI, a series of additional rules were added to the selection hierarchy to avoid such tagging. Point source datasets are identified as being either Process-level, Unit-level, or Facility-level granularity, and the selection software now uses those identifications to avoid double-counting, avoiding the need for those types of tags.

2.2.7 Inventory Selection

Once all S/L/T and EPA data are quality assured in the EIS, and all augmentation and data tagging are complete, then we use the EIS to create a data category-specific inventory selection. To do this, each EIS dataset is assigned a priority ranking prior to running the selection with EIS. The EIS then performs the selection at the most detailed inventory resolution level for each data category. For point sources, this is the process and pollutant level. For nonpoint sources, it is the process (SCC)/shape ID (i.e., ports) and pollutant level. For onroad and nonroad sources, it is process/pollutant, and for events it is day/location/process and pollutant. At these resolutions, the inventory selection process uses data based on highest priority and excludes data where it has been tagged. The EPA then quality assures this final blended inventory to ensure expected processes/pollutants are included or excluded. The EIS uses the inventory selection to also create the SMOKE Flat Files, EIS reports and data that appear on the NEI website.

2.3 What are the sources of data in the 2020 NEI?

This section will be developed when we release the nonpoint data category, and hence complete 2020 NEI on March 31, 2023.

2.4 What are the top sources of some key pollutants?

This section will be developed when we release the nonpoint data category, and hence complete 2020 NEI on March 31, 2023.

Table 2-3: EIS sectors and associated 2020 CAP and total HAP emissions (thousands of tons/year)

Sector	CO	NH3	NOX	PM2.5	PM10	SO2	VOC	Black Carbon	Lead	Total HAPs[1]
Agriculture - Crops & Livestock Dust										
Agriculture - Fertilizer Application										
Agriculture - Livestock Waste										
Bulk Gasoline Terminals										
Commercial Cooking										
Dust - Construction Dust										
Dust - Paved Road Dust										
Dust - Unpaved Road Dust										

Sector	CO	NH3	NOX	PM2.5	PM10	SO2	VOC	Black Carbon	Lead	Total HAPs[1]
Fires - Agricultural Field Burning										
Fires - Prescribed Fires										
Fires - Wildfires										
Fuel Comb - Comm/Institutional - Biomass										
Fuel Comb - Comm/Institutional - Coal										
Fuel Comb - Comm/Institutional - Natural Gas										
Fuel Comb - Comm/Institutional - Oil										
Fuel Comb - Comm/Institutional - Other										
Fuel Comb - Electric Generation - Biomass										
Fuel Comb - Electric Generation - Coal										
Fuel Comb - Electric Generation - Natural Gas										
Fuel Comb - Electric Generation - Oil										
Fuel Comb - Electric Generation - Other										
Fuel Comb - Industrial Boilers, ICEs - Biomass										
Fuel Comb - Industrial Boilers, ICEs - Coal										
Fuel Comb - Industrial Boilers, ICEs - Natural Gas										
Fuel Comb - Industrial Boilers, ICEs - Oil										
Fuel Comb - Industrial Boilers, ICEs - Other										
Fuel Comb - Residential - Natural Gas										
Fuel Comb - Residential - Oil										
Fuel Comb - Residential - Other										
Fuel Comb - Residential - Wood										
Gas Stations										
Industrial Processes - Cement Manuf										
Industrial Processes - Chemical Manuf										
Industrial Processes - Ferrous Metals										
Industrial Processes - Mining										
Industrial Processes - NEC										
Industrial Processes - Non-ferrous Metals										
Industrial Processes - Oil & Gas Production										
Industrial Processes - Petroleum Refineries										
Industrial Processes - Pulp & Paper										
Industrial Processes - Storage and Transfer										
Miscellaneous Non-Industrial NEC										
Mobile - Aircraft										
Mobile - Commercial Marine Vessels										
Mobile - Locomotives										
Mobile - Non-Road Equipment - Diesel										
Mobile - Non-Road Equipment - Gasoline										
Mobile - Non-Road Equipment - Other										
Mobile - On-Road Diesel Heavy Duty Vehicles										
Mobile - On-Road Diesel Light Duty Vehicles										
Mobile - On-Road non-Diesel Heavy Duty Vehicles										
Mobile - On-Road non-Diesel Light Duty Vehicles										
Solvent - Consumer & Commercial Solvent Use										
Solvent - Degreasing										
Solvent - Dry Cleaning										
Solvent - Graphic Arts										
Solvent - Industrial Surface Coating & Solvent Use										
Solvent - Non-Industrial Surface Coating										
Waste Disposal										
Sub Total (no federal waters)										
Fuel Comb - Industrial Boilers, ICEs - Natural Gas										
Fuel Comb - Industrial Boilers, ICEs - Oil										

Sector	CO	NH3	NOX	PM2.5	PM10	SO2	VOC	Black Carbon	Lead	Total HAPs[1]
Fuel Comb - Industrial Boilers, ICEs - Other										
Industrial Processes - Oil & Gas Production										
Industrial Processes - Storage and Transfer										
Mobile - Commercial Marine Vessels										
Sub Total (federal waters)										
Sub Total (all but vegetation and soil)										
Biogenics - Vegetation and Soil										
Total										

1 Total HAP does not include diesel PM, which is not a HAP listed by the Clean Air Act.

2.5 How does this NEI compare to past inventories?

Many similarities exist between the 2020 NEI approaches and past NEI approaches, notably that the data are largely compiled from data submitted by S/L/T agencies for CAPs, and that the HAP emissions are augmented by the EPA to differing degrees depending on geographical jurisdiction because they are a voluntary contribution from the partner agencies. In 2020, S/L/T participation was again somewhat more comprehensive than the previous NEI. The NEI program continues with the 2020 NEI to work towards a complete compilation of the nation's CAPs and HAPs. The EPA provided feedback to S/L/T agencies during the compilation of the data on critical issues (such as potential outliers, missing SCCs, missing Hg data and coke oven data) as has been done in the past, collected responses from S/L/T agencies to these issues, and improved the inventory for the release based on S/L/T agency feedback. In addition to these similarities, there are some important differences in how the 2020 NEI has been created and the resulting emissions, which are described in the following two subsections.

2.5.1 Differences in approaches

With any new inventory cycle, changes to approaches are made to improve the process of creating the inventory and the methods for estimating emissions. The key changes for the 2020 cycle are highlighted here.

To improve the process, we learned from the prior triennial inventories (for 2008, 2011, 2014, and 2017) compiled with the EIS. We made changes to pollutant, SCC, and NAICS codes, refined quality assurance checks and features that were used to assist in quality assurance, but retained the same Nonpoint Survey functionality used in the 2017 NEI (introduced for the 2014 NEI) to assist with S/L/T and EPA data reconciliation for the nonpoint data.

In addition to process changes, we improved emissions estimation methods for all data categories. We summarize the differences in approaches in the following sections.

2.5.1.1 *Point data category*

For point sources, the only major change for 2020 was our incorporation of the Air Toxics Screening (AirToxScreen) assessment between the draft NEI and this 2020 NEI release. AirToxScreen provided SLTs a review of high-risk air toxic facilities. More information on point source improvements is available in Section 3.

2.5.1.2 *Nonpoint data category*

This section will be developed when we release the nonpoint data category, and hence complete 2020 NEI on March 31, 2023.

2.5.1.3 *Onroad and nonroad data categories*

For mobile sources, onroad methodology used an updated version of the MOVES model with updated mobile source activity data such as vehicle miles travelled (VMT), age distributions, and fuel type mix, and improved idling computations; we also received new telematics data from StreetLight Data, Inc. For both onroad and nonroad, we relied on model inputs provided by S/L/T agencies and other sources, except for California and Tribes, who submitted emissions estimates. Sections 5 (nonroad mobile) and 6 (oroad mobile) provide more detail on these improvements.

2.5.2 Differences in emissions between the 2020 and 2017 NEI

This section will be developed when we release the nonpoint data category, and hence complete 2020 NEI on March 31, 2023.

2.6 How well are tribal data and regions represented in the 2020 NEI?

Nine tribes submitted data to the EIS for 2020 as shown in Table 2-4. In this table, a "CAP, HAP" designation indicates that both criteria and hazardous air pollutants were submitted by the tribe; "GHG" indicates greenhouse gases were submitted. CAP indicates that only criteria pollutants were submitted. Facilities on tribal land were augmented using TRI, HAPs and PM in the same manner as facilities under the state and local jurisdictions, as explained in Section 3, therefore, Tribal Nations in Table 2-4 with just a CAP flag will also have some HAP emissions in most cases. Eight additional tribal agencies, shown in Table 2-5, which did not submit any data, are represented in the point data category of the 2020 NEI due to the emissions added by the EPA. The emissions for these facilities are from the EPA gap fill datasets for airports, EGUs, and TRI data. Furthermore, many nonpoint datasets included in the NEI are presumed to include tribal activity. Most notably, the oil and gas nonpoint emissions have been confirmed to include activity on tribal lands because the underlying database contained data reported by tribes; this will be discussed when the nonpoint data category is released by March 31, 2023.

Table 2-4: Tribal participation in the 2020 NEI

Tribal Agency	Point	Nonpoint	Onroad	Nonroad
Coeur d'Alene Tribe	CAP, HAP	CAP, HAP	CAP, HAP	
Kootenai Tribe of Idaho		CAP, HAP	CAP, HAP	CAP, HAP
Morongo Band of Cahuilla Mission Indians of the Morongo Reservation, California			CAP	
Nez Perce Tribe	CAP, HAP	CAP, HAP	CAP, HAP	CAP, HAP
Northern Cheyenne Tribe	CAP	CAP	CAP	
Salt River Pima Maricopa Indian Community (SRPMIC) EPNR	CAP, HAP, GHG	CAP		
Shoshone-Bannock Tribes of the Fort Hall Reservation of Idaho	CAP, HAP	CAP, HAP	CAP, HAP	CAP, HAP
Southern Ute Indian Tribe	CAP, HAP, GHG	CAP, HAP, GHG		
Ute Mountain Tribe of the Ute Mountain Reservation	CAP, HAP			

Table 2-5: Facilities on Tribal lands with 2020 NEI emissions from EPA only

Tribal Agency	EPA data used
Assiniboine and Sioux Tribes of the Fort Peck Indian Reservation, Montana	Airports
Coeur d'Alene Tribe	TRI
Confederated Tribes and Bands of the Yakama Nation, Washington	TRI
Fond du Lac Band of Lake Superior Chippewa	Airports
Fort Mojave Indian Tribe of Arizona, California & Nevada	GHG, EGUs
Gila River Indian Community	TRI
Navajo Nation	GHG, EGUs, TRI
Nez Perce Tribe of Idaho	TRI
Northern Cheyenne Tribe of the Northern Cheyenne Indian Reservation, Montana	Airports
Omaha Tribe of Nebraska	Airports
Southern Ute Indian Tribe	GHG, Airports
Tohono O-Odham Nation Reservation	TRI
Ute Indian Tribe of the Uintah & Ouray Reservation, Utah	GHG, EGUs, Airports

2.7 What does the 2020 NEI tell us about mercury?

This section will be developed when we release the nonpoint data category, and hence complete 2020 NEI on March 31, 2023.

2.8 References for 2017 inventory contents overview

1. Strait, R.; MacKenzie, D.; and Huntley, R., 2003. PM Augmentation Procedures for the 1999 Point and Area Source NEI, 12th International Emission Inventory Conference – "Emission Inventories – Applying New Technologies", San Diego, April 29 – May 1, 2003.
2. U.S. Environmental Protection Agency, 2018. Residual Risk Assessment for the Coal- and Oil-Fired EGU Source Category in Support of the 2019 Risk and Technology Review Proposed Rule, Office of Air Quality Planning and Standards, Docket No. EPA-HQ-OAR-2018-0794-0070, December 2018.
3. Email from Nabanita Modak, EPA, to Janice Godfrey, EPA (cc: Madeleine Strum, EPA and Eric Goehl, EPA) with attached spreadsheet "Facility FRS_NEI IDS For CISWI Units030917.xlsx" emailed 9/6/2019.

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