2014 Aircraft LTO Data Processing for the National Emission Inventory

---

Purpose

To assist state, local, and tribal agencies in their submittal of aircraft-related activity data, EPA has compiled the aircraft landing and takeoff (LTO) data from several Federal Aviation Administration's (FAA) data sources including the following: T-100 dataset, Terminal Area Forecast (TAF) data, Air Traffic Activity Data Systems (ATADS) data, and Airport Master Record (form 5010) data. These data are available for review and revision by agencies in order to accurately estimate activity data for all aircraft types. These compiled data, including local revisions, will be used to calculate the 2014 National Emission Inventory (NEI) aviation emissions.

Please note that by reviewing and correcting the LTO data in this dataset you will NOT need to submit an airport emissions file to EIS. You may also add touch and goes (TGO) to the LTO data. If you send the revisions back to EPA now, EPA will perform the processing tasks required, such as matching EIS facility, unit, and process IDs for the airports, as well submitting the emissions inventory to the EIS Gateway. This will be the easiest way for agencies to submit local data into EIS; those who choose not to participate in this data gathering process, but still want local emissions data included in EIS, will be required to prepare their data to meet all EIS input requirements and submit it themselves.

Note EPA strongly encourages agencies to review and, if necessary, submit their LTO data to the EPA via this review process. In doing so, then states need not run the FAA emissions model or submit EIS xml files for the 2014 NEI.

Background

The T-100 data is derived from commercial aviation operations, reported directly by the airlines and specifically includes very detailed information about large commercial air carriers and air taxis. Because the T-100 aircraft data are provided for individual aircraft specifying manufacturer and aircraft model, they can be matched to specific aircraft in the FAA's Emission Dispersion and Modeling Systems (EDMS) which is a computer tool used to estimate emissions. Because of the details provided in T-100, it is also possible to identify which aircraft are typically used for air taxi services based on typical passenger capacity. All non-air taxi data in the T-100 data are assumed to be larger commercial aircraft.

The FAA's TAF and ATADS datasets do not provide operations data at the aircraft manufacturer and model level of detail that the T-100 data does; instead, operations are provided for general aircraft types (i.e., air carriers, air taxis, general aviation and military). ATADS includes actual operations at FAA controlled facilities, while TAF includes the ATADS data and also modeled operations for other non-FAA control facilities. Note that the TAF and ATADS data are provided

as operations (separate operation counts for each landing and takeoff leg), such that the TAF and ATADS operations need to be divided by 2 to get LTOs.

Because both the T-100 data and the TAF/ATADS data are reported by the airports include commercial air carriers and air taxis, the data needs to be adjusted to avoid issues of double counting when the two datasets are combined. This adjustment is done by summing up the air taxi and large commercial aircraft LTOs reported in the T-100 data for each airport and comparing these values to the commercial and air taxi data from TAF and ATADS at the same airport. Priority is given to maintaining T100 data due to its higher specificity as follows:

- If the TAF/ATADS LTO value is greater than the T-100 value for a specific aircraft type and airport, then the T-100 value was subtracted from the TAF/ATADS value. e.g., T100 reports 1000 LTO for Airport1, whereas TAF reports 2000. The database will include 1000 LTO from T100 and 1000 LTO from TAF.

- If the T-100 value was greater than or equal to the TAF value, then the TAF value was set to zero. e.g., T100 reports 2000 LTO for Airport2 and TAF reports 1000. The database will include 2000 LTO from T100 and 0 from TAF.

The 5010 forms are used for airport infrastructure planning include a variety of information about airport operations and characteristics. Such information is particularly important for smaller facilities and military bases where data sources are sparse. The EPA reviewed the data reported in the 5010 submittals to estimate LTO activity for general aviation, air taxis and military operations. These data were compared by SCC to the TAF/ATADS data and adjusted for double counting using a similar approach to that used to adjust the T-100 and TAF/ATADS data. The TAF/ATADS data was considered to be of higher quality than the 5010 data and was given priority in the adjustment as the T-100 was prioritized in the T-100 with TAF/ATADS adjustment. The hierarchy summarized in table 1 was used to adjust LTO data.

Table. 1 Summary of LTO adjustments

T100_LTO	ATADS/TAF_LTO	5010_LTO	Final LTO	Source
>0	Between 0 and [T100_LTO]	Between 0 and [T100_LTO]	0	T100
0	0	>0	>0	5010
0	>0	N/A	>0	ATADS/TAF
>0	>[T100_LTO]	N/A	>0	ATADS/TAF-T100
>0	>0 and <[T100_LTO]	>[T100_LTO]	0	T100
>0	0	>[T100_LTO]	>0	5010-T100

Reviewing/Revising Data

EPA's compiled LTO data are available for state/local/tribal (SLT) agency review. The data are presented as a Microsoft Access 2013 database. The database includes two drop-down menus: one for selecting data by state and one for selecting data by tribal code. Once the state/tribe has been selected, users have the option of viewing the data in Access (this is Read Only and for review ONLY) or exporting the data to a Microsoft Excel 2013 spreadsheet for further review and revisions. Agencies will need to review both the LTO data as well as facility information. The LTO data will include the Airport identification information, aircraft information, and LTO data. Agencies also have the option of adding TGOs or revising LTOs to TGOs in the LTO dataset. The facility data will include airport identification information, address, coordinates, description, and operating status. Revisions should only be made in the exported Excel files and NOT the Access database. The Access Data base is only for review.

Please note that to export the data to Excel, the user will first need to create a folder on the C drive of their computer called "2014 NEI LTO Review" (C:\2014 NEI LTO Review) The exported Excel file(s) will be generated in this folder. If agencies have difficulties accessing the data due to having an earlier version of Access or Excel please contact Laurel Driver at 919.541.2859 or driver.laurel@epa.gov for assistance. It is important to note that revisions should be made in the Excel files ONLY and not the Access file as described below to facilitate EPA processing and avoid errors:

- Once the Excel files have been created. Please add your state or tribe to the file name. This will prevent you from accidently overriding the file if you export again and will differentiate files when they are sent to the EPA.

- Revising Data: Existing LTO data can be corrected in the Excel file by adding the new data value to the "Revised LTO" column and marking it as a "Revision" in the "Revisions Comment" field.

- Removing Data: Please DO NOT DELETE ANY ROWS in the Excel spreadsheet. If you want to remove LTO data, simply change the "Revised LTO" column to 0 and mark it as a "Revision" in the "Revisions Comment" field.

- Adding Data: Rows can be added in the Excel file to account for new aircraft or engine type combination. Please make sure that the airport, aircraft, and engine combination does not already exist in the dataset before adding new rows, as adding an existing combination may cause double counting. When adding a row, fill in all other fields when possible, including the EISFacilitySiteIdentifier where possible. Also, leave the "PrimaryKey" and the "EPA LTO" fields blank, as these fields are for internal record keeping.

- The EPA will assume a default taxi in time of 7 minutes and a default taxi out time of 19 minutes. If states want to revise the taxi in or out time for specific airports please add the correct times in revised taxi in time and revised taxi out time columns in the Excel file.

- Please note there are some airports in the dataset with limited information pertaining to the airport name, county FIPs, and addresses. Please add additional information if possible in the Excel file.

- There may also be issues with geographic data for airports. In many of the new airports the latitude and longitude are inconsistent with the FIP, city, state, and zip code. Please review and correct these issues if possible in the Excel file.

See figures 1, 2, 3, and 4 for examples on how to correctly submit LTO revisions using the Excel Files. See figures 5, 6, and 7 for examples on how to correctly submit airport revisions using the Excel Files. Please note that some EIS-required fields (i.e., EISEmissionsUnitIdentifier and EISEmissionsProcessIdentifier) are not included in the database. These fields were removed to simplify the data revision process and will be added by EPA. Each facility in EIS already has a static unique EIS FacilitySiteIdentifer which. The three digit alphanumeric airport code may not have been submitted by your agency and may not be familiar. (Note that the FacilitySiteIdentifier indicated may be one of many alternate ones for a given airport). Agencies should feel free to revise and add other codes. You may also find alternate facility codes in EIS by looking up the EIS FacilitySiteIdentifer or airport name on the EIS gateway.

Some airports in the database currently do not have an EISFacilitySiteIdentifier; these are new airports to the NEI in 2014, and EPA will add these during processing. If your airport is not included in this database (either with or without an EISFacilitySiteIdentifier) please add the airport and be prepared to provide the airport's street address, city, state, zip, and latitude/longitude coordinates in the airport revisions.

The AircraftEngineTypeCodes are available under the Reporting Code Tables link in the EIS gateway.

Submitting Data to EPA

States must submit their changes by October 30 to this email address managed by EPA's contractor Eastern Research Group (ERG): NEI@ERG.com. If no changes are required, please indicate that you accept EPA's estimates via an EIS support request (as you would for any category of data for which you accept EPA estimates), or by sending an email indicating acceptance to the above address. Note this email account has a 10 MB limit. If a state submittal is larger than 10 MB, a

message can be left at this e-mail address requesting data transfer using a secure FTP site. A representative from ERG will respond to this request with instructions how to access the FTP site.

The EPA will review the state-submitted data to ensure that it is appropriate and reasonable. Once the LTO data have been finalized, then the aircraft specific LTO data will be run using the latest version of EDMS to estimate criteria and HAP emissions for aircraft engine exhaust, auxiliary power units, and ground support equipment. The remaining aircraft type data will be applied to generic emission factors.

Again, if you need assistance, contact Laurel Driver at 919.541.2859 or driver.laurel@epa.gov.

Note EPA strongly encourages agencies to review and, if necessary, submit their LTO data to the EPA via this review process. In doing so, then states need not run the FAA emissions model or submit EIS xml files for the 2014 NEI.

Figure 1. Exported LTO Data from Access Database for Review (no changes)

Primary Key	StateAnd County FIPSCode	Tribal Code	Airport	State	FacilitySite Identifier	EISFacility Site Identifier	Source Classification Code	Process Description	Aircraft Engine TypeCode	EPA_ LTO	Revised_ LTO	Revised_ TGO	Revised_ Taxi_In_ (default_7_min)	Revised_ Taxi_Out_ (default_19_min)	Revision Comment
1	37001		Example Airport	NC	AAA	10000000	2275050011	Aircraft /General Aviation /Piston	999903	100					
2	37001		Example Airport	NC	AAA	10000000	2275020000	Aircraft/ Commercial	1412	150					

***NOTE: Do not change the Primary Key, these are for internal tracking purposes.**

Figure 2. Example of a LTO revision to an existing record

Primary Key	StateAnd County FIPSCode	Tribal Code	Airport	State	FacilitySite Identifier	EISFacility Site Identifier	Source Classification Code	Process Description	Aircraft Engine TypeCode	EPA_ LTO	Revised_ LTO	Revised_ TGO	Revised_ Taxi_In_ (default_7_min)	Revised_ Taxi_Out_ (default_19_min)	Revision Comment
1	37001		Example Airport	NC	AAA	10000000	2275050011	Aircraft /General Aviation /Piston	999903	100	82			12	Revision

***NOTE: Do not change the Primary Key, these are for internal tracking purposes.**

Figure 3. Example of a LTO deletion of an existing record

Primary Key	StateAnd County FIPSCode	Tribal Code	Airport	State	FacilitySite Identifier	EISFacility Site Identifier	Source Classification Code	Process Description	Aircraft Engine TypeCode	EPA_ LTO	Revised_ LTO	Revised_ TGO	Revised_ Taxi_In_ (default_7_min)	Revised_ Taxi_Out_ (default_19_min)	Revision Comment
2	37001		Example Airport	NC	AAA	10000000	2275020000	Aircraft/ Commercial	1412	150	0				Revision

***NOTE: Do not change the Primary Key, these are for internal tracking purposes.**

Figure 4. Example of a LTO additions to the existing dataset

Primary Key	StateAnd County FIPSCode	Tribal Code	Airport	State	FacilitySite Identifier	EISFacility Site Identifier	Source Classification Code	Process Description	Aircraft Engine TypeCode	EPA_ LTO	Revised_ LTO	Revised _TGO	Revised_ Taxi_In_ (default_7_min)	Revised_ Taxi_Out_ (default_19_min)	Revision Comment
	37001		Example Airport	NC	AAA	10000000	2275050011	Aircraft /General Aviation /Piston	1415		25			12	Addition
	37001		Example Airport	NC	AAB	10000001	2275020000	Aircraft/ Commercial	1418		30		5		Addition

***NOTE: Primary Keys are null for additions.**

Figure 5. Example of Airport Data to review (no change)

AirportKey	StateAnd County FIPSCode	Tribal Code	Airport	City	State	ZIP	Latitude	Longitude	Facility SiteIdentifier	EISFacility SiteIdentifier	OpStatus	RevisionNotes
293	37001		Example Airport	City	NC	27703	54.14472	-165.60416	AAA		Open	

***NOTE: Do not change the Airport Key, these are for internal tracking purposes.**

Figure 6. Example of Airport Data revised

AirportKey	StateAnd County FIPSCode	Tribal Code	Airport	City	State	ZIP	Latitude	Longitude	Facility SiteIdentifier	EISFacility SiteIdentifier	OpStatus	RevisionNotes
293	37001		Example Airport	Town	NC	27703	99.999	9999.999	AAA		Open	Revised City, Lat, and Long

***NOTE: Do not change the Airport Key, these are for internal tracking purposes.**

Figure 7. Example of Airport Data additional

AirportKey	StateAnd County FIPSCode	Tribal Code	Airport	City	State	ZIP	Latitude	Longitude	Facility SiteIdentifier	EISFacility SiteIdentifier	OpStatus	RevisionNotes
	37001		New Airport	Place	NC	27703	55.5555	777.7777	ZZZ		New, since 2014 Inventory	New Airport

***NOTE: AirportKeys are null for additions.**