

AEDT Functionality Comparison

Function Availability	INM	EDMS	AEDT							
			2a	2b	2c	2d	3b	3c	3d	3e
64-bit application				X	X	X	X	X	X	X
ESRI ArcGIS	N/A	N/A	10.0	10.2.5	10.2.5	10.2.5	10.2.5	10.2.5	10.2.5	10.2.5
Database Platform	DBF	DBF	SQL 2008 R2	SQL 2008 R2	SQL 2008 R2	SQL 2012	SQL 2012	SQL 2017	SQL 2017	SQL 2017
BADA Family 3 aircraft performance model			X	X	X	X	X	X	X	X
BADA Family 4 aircraft performance model							X	X	X	X
Procedures with altitude controls			X	X	X	X	X	X	X	X
Procedures with speed controls, for BADA 4 only							X	X	X	X
Reduced thrust profiles and alternative weight profile ⁱ							X	X	X	X
User-defined BADA 4 profiles							X	X	X	X
Runway to runway sensor path operations			X	X	X	X	X	X	X	X
Partial sensor path operations (arrivals or departures), for BADA 4 only							X	X	X	X
Support for fixed-point profiles with BADA 4 performance model									X	X
Unified study for global/regional/airport analysis				X	X	X	X	X	X	X
Multi-threaded execution (not supported for generating AERMOD inputs and for AERMOD air quality analysis)	X		X	X	X	X	X	X	X	X
Real-time status and logging	X	X		X	X	X	X	X	X	X
Distributed computing execution(not supported for dispersion modeling)			X	X	X	X	X	X	X	X
System data protected from user changes; user-defined data creation from system data template	X	X		X	X	X	X	X	X	X
Integrated function for updating Study versions	X	X		X	X	X	X	X	X	X
Only a single study database to manage				X	X	X	X	X	X	X
Terrain, ambient, and weather references saved	X			X	X	X	X	X	X	X
Creation and maintenance of studies through the user interface	X	X		X	X	X	X	X	X	X
Checking for study internal consistency	X	X		X	X	X	X	X	X	X
Generation of administrative file, including complete study database, log files, and study input report	X			X	X	X	X	X	X	X

Function Availability	INM	EDMS	AEDT							
			2a	2b	2c	2d	3b	3c	3d	3e
CSV import of tracks and aircraft operations										X
Conversion of INM and EDMS studies to ASIF format				X	X	X	X	X	X	X
ASIF import	N/A	N/A	X	X	X	X	X	X	X	X
ASIF partial study import	N/A	N/A	X	X	X	X	X	X	X	X
ASIF export of aircraft definitions	N/A	N/A		X	X	X	X	X	X	X
Metric results definitions as a more-flexible replacement for scenarios and cases				X	X	X	X	X	X	X
Workflow (wizard) feature for defining metric results				X	X	X	X	X	X	X
Copy-edit of scenarios/metric results definitions	X	X		X	X	X	X	X	X	X
Workflow (wizard) feature for creating operation				X	X	X	X	X	X	X
Workflow (wizard) feature for editing operations					X	X	X	X	X	X
Workflow (wizard) feature for creating multiple operations (bulk create)						X	X	X	X	X
User-editable annualizations (scaling factors on operation groups/cases)	X		X	X	X	X	X	X	X	X
Display of all aircraft equipment available	X	X	X	X	X	X	X	X	X	X
Make new airplane from existing airplane	X	X		X	X	X	X	X	X	X
Creation and editing of aircraft flight profiles	X	X		X	X	X	X	X	X	X
ASIF import of user-defined spectra									X	X
Editing of non-aircraft parameters		X		X	X	X	X	X	X	X
Creation and editing of equipment groups	X			X	X	X	X	X	X	X
Editing of group percent distributions	X			X	X	X	X	X	X	X
Flights distributed across tracks using group percent ⁱⁱ	X			X	X	X	X	X	X	X
Aircraft noise-power-distance table plotting	X		X							
Creation and editing of custom noise metric	X	X		X	X	X	X	X	X	X
Creation and editing of grid/receptor set	X	X		X	X	X	X	X	X	X
Point/grid receptors	X		X	X	X	X	X	X	X	X
Population receptors for noise modeling	X		X							
Dynamic grid support (recursive grid in INM) for dB-based metrics	X			X	X	X	X	X	X	X
Dynamic grid support for time-based metrics						X	X	X	X	X
Dynamic grid support for user-defined noise metrics							X	X	X	X

Function Availability	INM	EDMS	AEDT								
			2a	2b	2c	2d	3b	3c	3d	3e	
Dynamic grid restricted by a boundary								X	X	X	X
Option to visualize the creation of dynamic grids on the map										X	X
Creation and editing of quarter-hourly/daily/monthly operational profiles		X		X	X	X	X	X	X	X	X
Annual average airport weather specification and editing	X	X	X	X	X	X	X	X	X	X	X
Usage of National Climatic Data Center (NCDC) ASOS weather sources		X		X	X	X	X	X	X	X	X
Usage of RUC/RAP, NCAR, and GEOS/MERRA weather			X	X	X	X	X	X	X	X	X
Application of study boundary to limit the area covered by high fidelity weather (RUC/RAP, NCAR, GEOS)			X	X	X	X	X	X	X	X	X
Usage of MERRA-2 and WRF weather						X	X	X	X	X	X
Apply weather at the metric result level						X	X	X	X	X	X
Direct use of US Census data for population exposure	X			X	X	X	X	X	X	X	X
Airport and runway locations for tens of thousands of airports globally	X	X	X	X	X	X	X	X	X	X	X
Creation of user-defined airports and runways	X	X		X	X	X	X	X	X	X	X
Point and polygon airport gates with adjustable emissions dispersion parameters (release height, initial sigma-Y & sigma-Z)		X		X	X	X	X	X	X	X	X
Creation and editing of buildings for emissions dispersion modeling purposes ⁱⁱⁱ		X		X	X	X	X	X	X	X	X
Airport layout editor undo and redo	X			X	X	X	X	X	X	X	X
Airport configuration assignment		X		X	X	X	X	X	X	X	X
Editing of airport capacity parameters		X		X	X	X	X	X	X	X	X
Flight track – display all tracks on map	X		X	X	X	X	X	X	X	X	X
Flight track – display & edit selected tracks on map											X
Flight track – disperse point tracks	X			X	X	X	X	X	X	X	X
Flight track – edit dispersed tracks on the map and in dialog						X	X	X	X	X	X
Flight track – point track creation by point-and-click	X			X	X	X	X	X	X	X	X
Flight track – vector track creation and editing	X					X	X	X	X	X	X
Taxi network graphical design		X		X	X	X	X	X	X	X	X
Taxiway, taxipath, and airport configuration editing		X		X	X	X	X	X	X	X	X
Taxipath connectivity verification		X		X	X	X	X	X	X	X	X
Taxi time-in-mode emissions modeling		X		X	X	X	X	X	X	X	X

Function Availability	INM	EDMS	AEDT							
			2a	2b	2c	2d	3b	3c	3d	3e
Taxi delay and sequencing of operations		X		X	X	X	X	X	X	X
Modeling of emissions sources other than aircraft main engines, including ground support equipment and auxiliary power units ^{iv}		X		X	X	X	X	X	X	X
Non-aircraft emission factor deterioration based on equipment age		X		X	X	X	X	X	X	X
Modeling of scheduled aircraft operations	X	X	X	X	X	X	X	X	X	X
Modeling of operational profile operations for aircraft and non-aircraft emissions sources		X		X	X	X	X	X	X	X
Modeling of touch-and-go operations	X	X		X	X	X	X	X	X	X
Modeling of circuit operations	X			X	X	X	X	X	X	X
Modeling of helicopter taxi operations				X	X	X	X	X	X	X
Noise modeling of runup operations	X			X	X	X	X	X	X	X
Revised emissions modeling for Boiler/Heater, Fuel Tank, Sand Salt Pile, and Solvent Degreaser based on the latest EPA approved methodologies										X
Map navigation tools (zoom, pan, rotate)	X	X	X	X	X	X	X	X	X	X
Conversion calculator from X/Y coordinates (relative to the study center at 0/0) to latitude/longitude	X									
Comprehensive geographic feature attribute viewing	X	X		X	X	X	X	X	X	X
Graphical rendering of ESRI Shapefile layers	X			X	X	X	X	X	X	X
Import of satellite imagery and other GIS map services				X	X	X	X	X	X	X
Export GIS layers to shapefiles	X			X	X	X	X	X	X	X
Color and symbol legends for flight operations and airport designs	X		X	X	X	X	X	X	X	X
User-adjustable transparency on map layers				X	X	X	X	X	X	X
Last map location saved	X			X	X	X	X	X	X	X
Screenshot function for map view image capture				X	X	X	X	X	X	X
Option to compute flight performance only			X	X	X	X	X	X	X	X
Track angle checking	X		X	X	X	X	X	X	X	X
Bank angle modeling	X		X	X	X	X	X	X	X	X
Application of study boundary to truncate/extend tracks (legacy NIRS functionality)			X							
Adjustable fuel sulfur content for aircraft and stationary sources emissions modeling purposes		X		X	X	X	X	X	X	X

Function Availability	INM	EDMS	AEDT							
			2a	2b	2c	2d	3b	3c	3d	3e
Adjustable sulfur-to-sulfate conversion rate for aircraft and stationary sources emissions modeling at non-US airports		X	X	X	X	X	X	X	X	X
Smoke number-to-particulate matter model		FOA 3	FOA 3	FOA 3	FOA 3	FOA 3	FOA 3	FOA 3	FOA 4	FOA 4
Non-volatile particulate matter (nvPM) particle mass and number calculated									X	X
Usage of 3CD terrain models for noise calculations	X		X	X	X	X	X	X	X	X
Usage of USGS DEM terrain models for noise calculations	X		X	X	X	X	X	X	X	X
Usage of Gridfloat terrain models for noise calculations	X		X	X	X	X	X	X	X	X
Usage of GeoTIFF terrain data for noise calculations									X	X
Viewing of terrain model on map display	X									
Default terrain values for missing terrain data	X			X	X	X	X	X	X	X
Visualization of missing terrain data	X									
Line-of-sight blockage modeling for noise metrics	X			X	X	X	X	X	X	X
Noise modeling lateral attenuation adjustment	X		X	X	X	X	X	X	X	X
Noise spectral cutoff calculation ^v	X			N/A	N/A	N/A	N/A	N/A	N/A	N/A
SAE ARP 866A atmospheric absorption algorithm	X			X	X	X	X	X	X	X
SAE ARP 5534 atmospheric absorption algorithm				X	X	X	X	X	X	X
A-weighted noise metrics	X		X	X	X	X	X	X	X	X
Tone-corrected noise metrics	X		X	X	X	X	X	X	X	X
C-weighted noise metrics	X		X	X	X	X	X	X	X	X
Modeling of time-based noise metrics	X			X	X	X	X	X	X	X
Noise ambient data screening ^{vi}	X			X	X	X	X	X	X	X
Restrict by boundary when running ambient screening	X				X	X	X	X	X	X
Restrict receptor grid by boundary					X	X	X	X	X	X
Application of study boundary to limit the area covered by contour grid calculations	X							X	X	X
Detailed noise grid computation with attribution to contributing flight operations	X			X	X	X	X	X	X	X
Number above noise level for LAMAX, LCMAX, SEL, and CEXP					X	X	X	X	X	X
Import and export of NMGF formatted noise results	X			X	X	X	X	X	X	X
Combine noise results from different receptor sets						X	X	X	X	X
Comprehensive input parameter report	X	X	X	X	X	X	X	X	X	X

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Flight.txt report that contains NPD and flight segment data	X								X	X
Aircraft flight profile and performance graphs	X		X	X	X	X	X	X	X	X
X-Y plotting of flown aircraft trajectory	X		X	X	X	X	X	X	X	X
Emissions inventory reporting (segment to modal)		X	X	X	X	X	X	X	X	X
Emissions and fuel consumption table reports by source type, with adjustable units		X	X	X	X	X	X	X	X	X
VALE emissions reporting		X		X	X	X	X	X	X	X
Noise table reports	X		X	X	X	X	X	X	X	X
Noise contour generation and display	X		X	X	X	X	X	X	X	X
Non-closing noise contours	X						X	X	X	X
NIRS-format noise impact chart and table reports			X	X	X	X	X	X	X	X
Noise ranking and flight track reassignment of aircraft operations for change analysis			X	X	X	X	X	X	X	X
Emissions dispersion table reports		X		X	X	X	X	X	X	X
Expansion of speciated organic gas emissions		X	X	X	X	X	X	X	X	X
Carbon dioxide, water, and particulate matter speciation for aircraft engines ^{vii}		X		X	X	X	X	X	X	X
Calculate & presentation of pollutant concentrations (based on AERMOD)		X		X	X	X	X	X	X	X
Pollutant concentration contours					X	X	X	X	X	X
Specify averaging period, source groups, and rankings before AERMOD run		X			X	X	X	X	X	X
Emissions dispersion of aircraft operations on curved flight tracks				X	X	X	X	X	X	X
Emissions dispersion of aircraft engine startup emissions		X		X	X	X	X	X	X	X
Emissions dispersion of emissions sources other than aircraft main engines, including APUs, GSE, and other airport sources		X		X	X	X	X	X	X	X
Background emissions concentrations					X	X	X	X	X	X
NO ₂ dispersion modeling using Tier 1, Tier 2 and Tier 3 methods							X	X	X	X
SO ₂ dispersion modeling using Tier 1 method							X	X	X	X
Running multiple pollutants at once in dispersion modeling									X	X
NO ₂ dispersion modeling using AERMOD Aircraft Thrust Specific In-Stack NO ₂ /NO _x Ratios										X
AERMOD, Urban Population option										X

Function Availability	INM	EDMS	AEDT							
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AERMOD, ALPHA options for conversion of NO _x to NO ₂										X
AERMOD, ALPHA option for Low Wind Parameters										X
Support for 1-minute and 5-minute ASOS wind data for dispersion modeling								X	X	X
Low wind speed support (ADJ_U* option in AERMET)								X	X	X
Interface to EPA's AERSURFACE utility									X	X
Environmental justice population identification					X	X	X	X	X	X
Environmental justice Limited English proficiency								X	X	X

ⁱ Prior approval by the FAA Office of Environment and Energy (AEE) is required in order to use non-default profiles for review of FAA federal actions or other FAA regulatory purposes. Further information on requesting approval for use of non-default profiles is provided in the AEDT 3e User Manual, Appendix K.

ⁱⁱ In AEDT, user's access to Aircraft Equipment Group Percent Distribution processing is through direct SQL injection of AIR_OPERATION table.

ⁱⁱⁱ AEDT supports creating and editing of building definitions. The building downwash effects are not modeled.

^{iv} See the supporting MOVES documentation ("AEDT Supplemental Manual: Using MOVES with AEDT") for roadways, or parking facilities, and construction operations. Users must use EPA MOVES to generate these sources

^v In AEDT, this is addressed by the dynamic gridding algorithm rather than pre-processing of aircraft source data as in INM.

^{vi} Requires review and authorization by the FAA Office of Energy and Environment (AEE).

^{vii} Aircraft particulate matter estimated only for engines in the ICAO Engine Emissions Databank (EDB); the smoke number methods are used when measured EI data are not available.