

S.C. Department of Environmental Services

Air Permit Application Checklist

Purpose

This checklist is to assist applicants and consultants in submitting an air permitting construction permit application. The following information is expected to be provided to the agency for an application to be deemed complete.

This list is extensive, but there exist too many scenarios for it to be exhaustive. The facility and consultant will need to use experience to appropriately address their project's details. Contact the Bureau of Air Quality's Air Permitting Division or Air Modeling Section with any questions. Visit <https://des.sc.gov/programs/bureau-air-quality/air-quality-permits/baq-permitting-contacts-industry-sectors> for permitting contacts by industrial sector. For modeling questions, contact Modeling Section Manager, at 803-898-4074.

Important Notes

Confidential Information

Confidential information should not be attached to or included in the ePermitting submission. Confidential information should be mailed to Air Permitting Division, 2600 Bull Street, Columbia, SC 29201.

Certifier Agreements

Facility representatives and consultants signing (certifying) the application must have ePermitting accounts and a certifier agreement with wet ink signature on file prior to certifying the application. The Bureau will not add a consultant or additional users to a site. The facility representative's (ePermitting administrator) must invite any additional users.

ePermitting

For the login portal, a copy of the certifier agreement form, or troubleshooting tips for SCDES ePermitting, visit: <https://des.sc.gov/permits-regulations/permit-central/epermitting>

Air Permitting - Construction Submission

(Information for Air Modeling - Emission Point Information starts on Page 10)

Facility Identification

- ☐ Site Name - This field is the name that will appear on the permit.
- ☐ Facility Federal Tax Identification Number
- ☐ Facility's Primary Products - Brief description
- ☐ Site Primary SIC Code(s)

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- ☐ Site Primary NAICS Code(s)
- ☐ Physical Address - This is required. If not yet assigned, approximate and correct later.
- ☐ County - If the site spans two or more counties, pick the county where most of the pollution sources exist.
- ☐ Latitude/Longitude - The ePermitting portal will display Google Maps and have you place a pin on the site.

Project Information

- ☐ Project Description - Brief description of the physical and/or operational changes for the project.
- ☐ Project Narrative - Attach a more detailed narrative. Including, but not limited to:
 1. Description of the facility's proposed new or altered processes. Include how the new or altered sources affect the existing operation (e.g., removal of bottlenecks, increase of capacity).
 2. A detailed schedule for construction of the source or modification.
 3. Design capacity of the proposed or modified sources.
 4. Typical operating schedule of the proposed or modified sources.
 5. Physical and chemical properties and feed rate of the raw materials used, and products made from which the facility determined potential emissions.
 6. Specifications and drawings showing the project's design and plant layout.
 7. Process flow diagram / production process layout of all new or altered sources showing the flow of materials and intermediate and final products. Include emission routing and exhaust points to the atmosphere.
- ☐ Permit Type - Select all permit types that will apply to this project.
- ☐ Applicable and Potentially Applicable Regulations - Select all categories of regulations that are applicable or potentially applicable. Potentially applicable regulations or standards are those that superficially appear that they could apply to the facility/source

Single Source

- ☐ Sources List
 - List the names of other facilities that this facility is considered a single source with for any regulation, or those that superficially appear that they could be a single source with this facility.

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- For each regulation, indicate if your determination concluded that the regulation is or is not applicable.

☐ Additional Information - Upload the detailed justification and any supporting information.

Equipment

☐ Be as detailed as possible when filling out the Equipment Description fields. The following includes examples of source types and relevant information associated with that source:

- External Combustion Sources: Equipment type and usage (e.g. steam generation, process heat, drying, curing, etc.), maximum heat capacity (Million BTU/hr), primary and backup fuel type (e.g. natural gas, fuel oil, coal, etc.), low NOx burners, direct or indirect heating
- Stationary Internal Combustion Sources: Equipment type and usage (e.g. emergency generator, fire pump, etc.), output brake/electrical power (hp/kW), fuel type, engine/cylinder displacement
- Liquid Storage Tanks: Tank type (e.g. fixed roof, floating roof, variable vapor pressure, etc.), materials stored, loading source (e.g. pipeline, rail car, process, etc.)
- Incinerators: Incinerator type (e.g. rotary kiln, air curtain, single chamber, etc.), waste types (e.g. municipal waste, yard waste, clean wood, etc.), maximum waste charge rate (tons/day or lb/hr), burner capacity (BTU/hr), minimum chamber temperature
- Surface Coating Sources: Coating operation type (e.g. large appliances, auto and light duty trucks, paper and other webs, publication printing inks, etc.)
- Review applicable and potentially applicable regulations to determine additional equipment information that may be required for permitting.

Control Devices

☐ Control devices are categorized as Inherent, Required, or Voluntary. These are defined as:

- **Inherent:** Integral part of the physical equipment and not present for the purposes of air pollution control. Consult the latest EPA guidance letter: [Merit Energy](#). Indication of "Inherent" should be accompanied by a detailed justification for the determination as an attachment. The explanation must address the three questions below. See guidance letter for more detailed information.

1. Is the primary purpose of the equipment to control air pollution?
2. Where the equipment is recovering product, how do the cost savings from the product recovery compare to the cost of the equipment?
3. Would the equipment be installed if no air quality regulations are in place?

- **Required:** Control device is relied-upon or required by regulation, and controlled emissions are used to show compliance with applicable standards and regulations.
- **Voluntary:** Control device is not relied-upon, and uncontrolled emissions are used to show compliance with applicable standards and regulations.

Monitoring of the control device should be proposed including the basis for the chosen parameter and the time period.

If there is a complex scenario (e.g., a boiler that also functions as a control device), provide a detailed explanation in the project narrative.

Exempt Equipment

- ☐ Consult the [Bureau of Air Quality Permitting Exemption List](#). Note that, other than emergency generators, sources subject to 40 CFR 60, 61, or 63, cannot be exempt.

Emissions

The Department has published emission calculators for select industries. Visit: <https://des.sc.gov/programs/bureau-air-quality/air-quality-permits/guidance-emission-calculators-air-permits>

If required by regulations (e.g., Title V, PSD), your individual source calculations and total emission calculations must include fugitive emissions.

- ☐ In the table provided, provide the project wide pre-construction and post-construction uncontrolled, controlled, and Potential to Emit emission rates. These are defined as:
 - **Uncontrolled Emissions:** Maximum emission rate at full design capacity without consideration of control devices or emission limitations.
 - **Controlled Emissions:** Maximum emission rate at full design capacity taking into consideration control devices.
 - **Potential to Emit (PTE):** The maximum capacity of a source to emit a regulated pollutant under its physical and operational design. Any physical or operational limitation on the capacity of the source to emit a regulated pollutant, including air pollution control equipment and restrictions on hours of operation or on the type or amount of material combusted, stored, or processed, shall be treated as part of its design only if the limitation or the effect it would have on emissions is federally enforceable. Secondary emissions do not count in determining the potential to emit of a source.
 - Emission reductions from voluntary control devices should not be factoring in the above calculations.

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- Emission reductions from inherent control devices are included as uncontrolled emissions.
- ☐ If the project is a PSD project or the facility is an existing PSD major source, see Standard 7 in the State Air Pollution Control Regulations and Standards section for additional emissions calculations that may need to be included.
- ☐ If the project requires emission calculations to demonstrate PSD as not applicable, see Standard 7 in the State Air Pollution Control Regulations and Standards section for additional emissions calculations that may need to be included.
- ☐ In addition to the project-wide table, upload a spreadsheet of the individual detailed calculations. If PSD applicability emissions need to be included, the detailed calculations must include how these were derived.
- SPREADSHEETS SHOULD BE IN XLSX FORMAT. This is necessary to verify calculations.
- The source of the emissions factors or other calculation variables must be fully identified. Examples:
 - Published factors: Publication, version/revision date, chapter, table, source type, etc.
 - Manufacturer's guarantees/certifications: Identify the manufacturer and the document name. The manufacturer's guarantees/certifications must be uploaded with the additional emissions documentation.
 - Source tests: If department approved test, facility name (if not the same), the test date, source, and pollutants. If out-of-state, the full test report must be uploaded with the additional emissions documentation.
 - Safety Data Sheets (SDS) or Environmental Data Sheets (EDS): Product name and date of the SDS/EDS. Method of application and transfer efficiency (and source), if appropriate. The SDS/EDS must be uploaded with the additional emissions documentation. Numerous SDS/EDS can be combined into a single zip file for upload convenience.
 - Control Devices: Provide the capture efficiency and identify the source of the destruction/removal efficiency used. If manufacturer's information, this information must be uploaded with the additional emissions documentation.
 - Fuel characteristics: Fuel type, sulfur content, BTU content, % ash, etc. Identify the source of these values. If not common/published values, include an analysis or vendor specifications with the additional emissions documentation.

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- Liquid Storage Tanks: Name and version of software used for calculations. Either in the spreadsheet or uploaded with the additional emissions documentation, provide inputs used. If using EPA Tanks, you must use at least version 5.1.
- Chemical Production methodology: Batch process, continuous process, source of emission factors and equations, software used and version, fugitive emission calculations.
- Published/Research Body Emission Factors (e.g., NCASI) - If the publication is not readily available online, include it with the additional emissions documentation. If the factors are not part of a publicly available publication (e.g., members only emission database), include documentation from the research body authenticating the factors and explain what sources/conditions, they represent.

☐ Additional Documentation

- Uploaded all additional documentation to support the emissions calculations. For example, SDS/EDS, manufacturer's guarantees, etc.

Synthetic Minor Limits

- ☐ For your existing and/or requested synthetic minor limits, indicate which regulation(s) you are requesting to avoid, which pollutant(s), the emission limitation, and the sources.
- ☐ For each limit, provide the existing or proposed methods for monitoring, recordkeeping, and reporting.

State Air Pollution Control Regulations and Standards

To view State Air Pollution Control Regulations and Standards, visit <https://des.sc.gov/permits-regulations/laws-regulations-regulatory-updates/regulations-table>, select "Air" in the Bureau drop-down, and click Apply.

- ☐ Identify applicable and potentially applicable regulations or standards. Potentially applicable regulations or standards are those that superficially appear that they could apply to the facility/source. Examples:
 - For boilers that pre-date Standard 5.2, select Standard 5.2, indicate it is not applicable, and provide the justification that the boilers were installed prior to applicability date of Standard 5.2.
 - Non-combustion VOC sources that postdate Standard 5, select Standard 5, indicate it is not applicable, provide the justification that the sources did not exist on the applicability date of Standard 5. (See "Existing process" definition in this Standard)
- ☐ For each regulation, explain how the source will comply with the regulation. Include the existing or proposed methods for monitoring, recordkeeping, and reporting.

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Guidance for specific regulations:

- For Standard 1, review Fuel Burning Operation definition in SC Regulation 61-62.1.
- For Standard 3, identify the source categories to which the equipment is subject.
- For Standard 4, if the source is subject to Section VIII, specify the maximum process rate, if acid mist is present, and how the process weight rate was determined.
- For Standard 5.2, if manufacturer's certifications/guarantees will be used for compliance, note that in the explanation. If these documents have already been obtained, include them in the emission's additional information documents. If they are not included, the Department may require their submittal prior to startup or a stack test to verify compliance.
- For Standard 7, the applicability procedures for PSD are complex and the facility should consult the regulation for specific requirements and definitions to assist in determining applicability. The application should include at a minimum:
 - Any applicability tests with basis and supporting documentation:
 - Actual-to-projected-actual applicability test for projects that only involve existing emissions units:
 - Actual-to-potential test for projects that only involve construction of a new emissions unit(s).
 - Hybrid test for projects that involve multiple types of emissions units.
 - Additional emissions calculations relied upon in the applicability determination of PSD and BACT. Examples:
 - Baseline Actual Emissions
 - Projected Actual Emissions
 - Project's Significant Emissions Increase
 - Project's Significant Net Emissions Increase
 - Excludable Emissions
 - Debottlenecked Emissions
 - Increased Utilization of Emission Units

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- Fugitive Emissions
- Increases at Support Facilities
- The facility should contact the Air Permitting Division prior to submission to verify the correct calculations and applicability test required for a complete application.
- **Best Available Control Technology (BACT):** If the project is considered major or a major modification for PSD, a BACT analysis for each NSR regulated pollutant for which the net emissions increase or the potential to emit is significant. See SC Regulation 61-62.5 Standard 7 (B)(49) for the significant emission rate list for each NSR regulated pollutant.
 - For each source that emits a pollutant that triggers BACT (including otherwise exemptible sources), you must address each BACT analysis step.
 - Identify Alternative Emission Control Techniques (Step 1)
 - Technical Feasibility Analysis (Step 2)
 - Ranking the Technically Feasible Alternatives to Establish a Control Hierarchy (Step 3)
 - Evaluating Remaining Control Technologies (Step 4)
 - Selecting BACT (Step 5)
- ☐ For projects that have been determined to be subject to PSD requirements, upload your detailed Best Available Control Technology analysis and supporting documentation.

40 CFR 60 - Standards of Performance for New Stationary Sources

To view Part 60 regulations, visit <https://www.ecfr.gov/current/title-40/chapter-I/subchapter-C/part-60>.

- ☐ Identify applicable and potentially applicable regulations or standards. Potentially applicable regulations or standards are those that superficially appear that they could apply to the facility/source. For applicable standards, information should be provided to allow for a determination of which sections of the subpart apply and what compliance option will be chosen if there is more than one. Examples:
 - For boilers that pre-date Subpart Dc, select Subpart Dc, indicate it is not applicable, provide the justification that the boilers were installed prior to applicability date of Subpart Dc.

Guidance for specific regulations:

- All liquid storage tanks that could potentially be subject to Subparts Kb or Kc, both regulations must be addressed.

40 CFR 61 - National Emission Standards for Hazardous Air Pollutants

To view Part 61 regulations, visit <https://www.ecfr.gov/current/title-40/chapter-I/subchapter-C/part-61>.

- ☐ Identify applicable and potentially applicable regulations or standards. Potentially applicable regulations or standards are those that superficially appear that they could apply to the facility/source. For applicable standards, information should be provided to allow for a determination of which sections of the subpart apply and what compliance option will be chosen if there is more than one.

40 CFR 63 - National Emission Standards for Hazardous Air Pollutants for Source Categories

To view Part 63 regulations, visit <https://www.ecfr.gov/current/title-40/chapter-I/subchapter-C/part-63>.

- ☐ Identify application and potentially applicable regulations or standards. Potentially applicable regulations or standards are those that superficially appear that they could apply to the facility/source. For applicable standards, information should be provided to allow for a determination of which sections of the subpart apply and what compliance option will be chosen if there is more than one.

Other Federal Air Pollution Control Regulations and Standards

To view other Federal Air Pollution Control Regulations and Standards, visit <https://www.ecfr.gov/current/title-40/chapter-I/subchapter-C>.

- ☐ Identify application and potentially applicable regulations or standards. Potentially applicable regulations or standards are those that superficially appear that they could apply to the facility/source.

Guidance for specific regulations:

- 40 CFR 58 - Ambient Air Quality Surveillance - Sources that emit 0.5 TPY of lead are required to have a source specific ambient air monitor for lead. If the project has the potential to emit 0.5 TPY or more of lead, or if the addition of the project to your facility will cause the facility's potential to emit for lead to be 0.5 TPY or more, the regulation must be addressed. You may contact the BAQ to discuss compliance options before submittal.

Contacts

See note at the beginning of the document regarding certifier agreements.

- ☐ Air Permitting Contact(s) - This should be the facility representative that can answer technical questions about the facility and permit application. This should not be a consultant.

- ☐ Owner or Operator - The owner or operator is any person who owns, leases, operates, controls, or supervises a source of air emissions. This cannot be the consultant, unless the consultant is contracted to perform these activities.
 - ☐ Professional Engineer - Per regulations, construction permit applications shall be reviewed, signed, and sealed by a professional engineer registered to practice in the State of South Carolina (except professional engineers employed by the federal government preparing applications for the federal government or other professional engineers exempted from the state registration requirements).
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Air Modeling - Emission Point Information

The [Air Dispersion Modeling Guidelines](#) (modeling guidelines, herein) should be referenced as the applicant completes this checklist to ensure that general procedures are followed. If procedures are not applied as prescribed in the modeling guidelines, the applicant must coordinate this with Air Modeling personnel and acceptably justify the approach taken. Any questions can be directed to the Bureau of Air Quality modeling manager (803-898-4074). This checklist is meant to help the applicant ensure completeness. Some items may be redundant to those already included (above) by Air Permitting. The Department may decline an application during its completeness review period if the following items are not checked, documented, or applied with consistency.

General Information

- ☐ Name of facility, consultant, and permit number (if already known)
- ☐ Contact name, phone number, and email address
- ☐ Physical location of the facility

Modeling Report / Narrative (Discussing Modeling Components for Compliance)

- ☐ Brief description of the facility, processes, project-related equipment, and proposed project changes (construction of new emission sources, replacement of older equipment, relocation, etc.)
- ☐ Reason(s) an air quality analysis is required (emission rate increases, new pollutants emitted, changes in emission point parameters such as lowering a stack height, etc.)
- ☐ Brief physical description of the location (urban/rural, local topography)
- ☐ Scaled map (with North arrow) of the facility location and layout clearly showing the emission points, property boundary, and nearby structures

For all applications that require regulatory compliance with Standard No. 2 and Standard No. 8:

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- ☐ Brief description of the methods used to demonstrate facility-wide compliance (options may include AERMOD, SCREEN3, AERSCREEN, Other Information, exemptions, de minimis, and/or deferrals) for each applicable pollutant
- ☐ Table with emission point IDs and pollutant-by-pollutant emission rates (and CAS numbers for Standard No. 8 pollutants)
 - This information is submitted within the “Air Modeling - Emission Point Information” section of SCDES ePermitting.
 - An Excel spreadsheet with this information is also recommended, and in some cases, will be required for facilities with many emission points.
 - All information provided MUST be consistent with the data contained within the input and output air dispersion modeling files.
 - Emission point IDs and emission rates should match the information in all modeling analyses provided with the application submittal.
- ☐ Table with emission point IDs, emission point locations (based on UTM NAD83 datum and UTM base zone 17), and all appropriate dispersion characteristic parameters for all emission points applied within modeling compliance demonstrations, including all sources that apply “Other Information”
 - Dispersion characteristic parameters for point sources, for example, would include stack height, exit temperature, stack diameter, exit velocity, discharge orientation, whether there is a rain cap (and type of cap, if applicable).
 - The appropriate source types (point, area, volume, etc.) must be applied to any modeling provided.
 - Emission point parameters should be provided in the ePermitting "Air Modeling - Emission Point Information" form and/or in an Excel spreadsheet.
 - Emission point locations and dispersion characteristic parameters provided MUST be consistent with the data contained within the input and output air dispersion modeling files.
- ☐ Identification of any changes or corrections to equipment IDs, emission rates, and/or emission point parameters compared to previously submitted air dispersion modeling compliance demonstrations, such that historical analyses can be verified by the SCDES BAQ modeling reviewer with the current application
 - As applicable, find the facility's most recently dated air dispersion modeling summary in ePermitting. Alternatively, request the most recent air dispersion modeling summary from the

SCDES BAQ modeling manager to confirm that the existing emission point information remains consistent with the information provided for past compliance demonstrations.

- Emission point IDs, emission rates, and emission point parameters in the modeling files provided with the submittal should match any existing emission point IDs (if unchanged).
 - If existing emission point information has changed, then a discussion of the changes and a cross-referencing table (for changes to emission point IDs, for instance) must be provided.
- ☐ Complete justification for any assumptions made for excluding permitted sources from modeling (including those from intermittent emissions, internally vented emissions, etc.)
- ☐ Complete discussion of any assumptions made to revise the worst-case maximum allowable short-term emission rates for modeling analyses, including any uncommon parameters, intermittent emissions (e.g., annualizing rates), operating limitations (e.g., hours per day and/or hours per year operating schedules), loading scenarios, etc.
- ☐ Mention of how terrain is handled in the chosen model and whether U* or non-U* meteorological files were used for AERMOD compliance demonstrations
- ☐ Discussion and table(s) containing modeling results and comparison to the applicable standards

Non-Modeling Analyses (Exemptions / De minimis / Deferrals)

- ☐ Proper Justification and Basis for Exemptions
- Standard No. 2 categorical exemptions: Equipment listed in the [Bureau of Air Quality Permitting Exemption List](#) may use a categorical exemption from modeling requirements.
 - Standard No. 2 emission rate-based exemptions (by source): Data and calculations supporting the conclusion for each of the sources/pollutants involved must be provided. Please note that if project or facility total emission rates exceed PSD Significant Emission Rate thresholds, a facility-wide exemption may not be appropriate, and air dispersion modeling may be required. Please contact the Air Modeling manager for further guidance.
 - Standard No. 8 exemptions: Fuel-burning sources that burn only virgin fuel or specification used oil as defined in SC Regulation 61-62.1, sources subject to and in compliance with one or more National Emission Standards for Hazardous Air Pollutants (NESHAP), pollutants from sources that are emitted in trace quantities, and other exemptions as listed in the modeling guidelines could be exempt from modeling requirements.
 - Please Note: For Standard No. 8 pollutants, certain sources that emit VOCs less than 1,000 lb/month may be exempt from permitting requirements but are not necessarily exempt from Standard No. 8 modeling requirements.

☐ De minimis (Standard No. 8)

- Source-by-source emission rates for each pollutant (excluding applicable exemptions) should be provided and summed so that the facility-wide emission rate total (lb/day) is appropriately compared to the respective de minimis emission rate threshold (lb/day) as shown in the modeling guidelines.

☐ Deferrals (Standard No. 8)

- The pollutant(s) in question MUST have been previously modeled.
- Deferred new sources should not have worse dispersive characteristics than previously modeled sources. Merged stack parameter (M) calculations should be provided if the worst-case source is not obvious.
- Deferred new sources (or relocations) cannot be closer to the nearest property line than the already modeled source(s).

Air Dispersion Model Selection and Options

- ☐ The chosen dispersion model is suitable (per models listed in the modeling guidelines) for the specific project and is fully discussed in the narrative.
- ☐ Input and output files for all model runs (including but not limited to AERMAP, BPIP-Prime, AERMOD) are provided in a compressed .zip file within ePermitting.
- ☐ The most recent EPA version of the model is used.
- ☐ Regulatory default options are selected within the applied model. (If any non-regulatory options are used, then justification for such options must be provided in the report. Please note that non-regulatory options selected without the prior approval of the Air Modeling manager may result in rejection of the modeling analysis if the justification provided is not acceptable.)
- ☐ All emission point information in the modeling analysis is consistent with the report provided and the methods described in the modeling guidelines.
 - Modeling compliance demonstrations provided are facility-wide, except when project emissions modeling for Significant Impact Level (SIL) analyses may apply for PSD modeling and an "Other Information" demonstration.
 - Emission point IDs in the model are consistent with the emission point ID in the documentation provided.
 - Proposed maximum allowable emission rates for all non-exempt sources are modeled. Proper justification for any emission rate modeled that is not the maximum allowable is provided.

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- The correct source type is chosen for each emission point in the model.
 - Emission point parameters are input to the model correctly and are consistent with the documentation provided.
 - If the stack has a rain cap that impedes vertical flow or has a horizontal, angled, or downward discharge, the appropriate options and modeled velocity are applied.
 - Ambient exit temperatures are properly modeled as prescribed by the guidelines.
 - If a value other than the physical stack diameter is used for modeling with a point source parameter, that value is fully explained and is consistent with the modeling guidelines.
 - The use of any uncommon parameters, especially operating limitations, is explained and applied correctly (As an example for application of daily limits and 24-hour standards, the EMISFACT keyword in AERMOD should be applied for modeling specific hour-of-day operations.)
- ☐ For multiple emission sources that are merged into one single source in the model, the merged source approach is adequate based on modeling guidelines, and the parameters are correctly applied, whereby the worst-case source parameters are modeled using the emission rate from all sources combined. Merged stack parameter (M) calculation is included.
- ☐ If multiple facilities are located on the same property (parcel of land) or are adjacent properties, emissions are modeled together in one “collocated modeling analysis”.
- Multiple facilities deemed as a “Single Source” by Air Permitting must be modeled as collocated.
 - If multiple facilities have been modeled together in the past, air dispersion modeling should remain collocated, unless suitable justification is provided to model separately.
 - For AERMOD analyses, all non-exempt emission point data and building/structure data necessary from all collocated facilities are combined into one model (for each applicable pollutant) with the property line considered to be the edge of the combined group of parcels owned by all collocated facilities.
 - For SCREEN3, the analysis is performed as usual, with each emission point modeled from all collocated facilities and impacts summed for all sources. However, the minimum receptor distance by source (closest receptor) is based on the nearest offsite point, considering all combined parcels.
- ☐ Modeled receptors have appropriate coverage, per modeling guidelines.
- For SCREEN3, the “minimum” receptor distance is set to the closest distance to the property boundary, and receptors are modeled out to at least 2 km.

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- For AERMOD, the receptor spacing follows guideline procedures with 50 m spacing along the property line and 100 m spacing out to at least 1.5 km beyond the property line.
 - Maximum impacts are not increasing at the far range (for SCREEN3) or edge of the receptor grid domain (for AERMOD) for each pollutant and averaging period processed. If maximum impacts increase at the edge of the modeled receptor domain, the receptor grid should be extended appropriately to ensure compliance at further distances.
- ☐ The appropriate terrain data is applied to the model and is consistent with the guidelines.
- For SCREEN3, terrain is evaluated based on the elevation differences between the elevation at the stack base and the surrounding terrain within 2 km of the source. Simple elevated terrain elevations (and complex, where applicable) are modeled in locations where terrain is greater than 50% of the stack height. (Please note that modeled complex terrain receptor elevations must not exceed the final stable plume rise height as reported by SCREEN3 outputs.)
 - For AERMOD, NED terrain files from the [SCDES Air Dispersion Modeling Data](#) are used. Alternatively, NED terrain files directly from USGS may be used if the data has a maximum horizontal resolution of 1 arc-second. The source of NED data should be stated in the narrative. The domain used in AERMAP must encompass all significant terrain at or above a 10% slope from every receptor. AERMAP must be used to extract elevations for receptors. If source, building, and/or tank elevations are not extracted from NED (alternatively from site survey, for instance), then sufficient documentation explaining the onsite elevation data must be provided.
- ☐ Building downwash is applied correctly.
- For SCREEN3, all buildings within 5L of the evaluated source are analyzed using proper building dimensions. For the compliance test, the worst-case building parameters within 5L of the source are included in the model.
 - For AERMOD, all buildings within 5L of all sources are placed in the model, applying correct dimensions. BPIP-Prime is used to calculate downwash parameters before running AERMOD.
- ☐ The choice of rural vs. urban dispersion coefficients (and relevant parameters) is correctly applied and justified.
- ☐ Proper averaging periods are selected in the modeling analyses.
- ☐ The appropriate meteorological data is applied (for AERMOD only)
- The meteorological station location is clearly defined in the narrative and used for all model runs.
 - Five years of data are used in the model. SCDES five-year meteorological data is provided at the [SCDES Air Dispersion Modeling Data](#) website.

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- The correct met data (single year or concatenated) is chosen for the specific pollutant and averaging period modeled for all pollutants. (See Table A.1 of the modeling guidelines.)
 - The most recent data available on the SCDES Modeling Data website is applied (if data is processed elsewhere or one year of onsite data is proposed for use, pre-approval from SCDES Air Modeling is required).
 - The correct profile base elevation of the meteorological station location is applied in the model.
- ☐ Appropriate output option model high values are chosen and are consistent with the documentation provided (for AERMOD only)
- For Standard No. 2 criteria pollutant modeling, the recommended (or conservative) output rank is selected for comparison to the standard for each pollutant and averaging period. (Refer to Table A.1 of the modeling guidelines for more information.)
 - For Standard No. 8 toxic air pollutant modeling, the highest 1st high value is selected for comparison to the standard.
 - Narrative results are consistent with results based on the model outputs provided.
- ☐ Background concentrations are correctly added to model results. (Standard 2 pollutant modeling)
- Background concentrations must be determined for each pollutant and each averaging period.
 - The background concentrations are added to the modeled concentrations, which are then compared to the applicable ambient air quality standard to determine compliance.
 - The recommended background concentrations for modeling purposes can be found at [SCDES Air Dispersion Modeling Data](#) website.
 - The use of any other background data source must be justified and pre-approved by SCDES Air Modeling before submitting the application.
- ☐ If applicable, NO₂ is properly modeled using NO_x emission rates (for AERMOD)
- The use of the Tier 1 (100% NO_x) or Tier 2 (ARM2) methods may be applied and should be noted in the narrative. If Tier 3 ozone limiting methods (for example, OLM, PVMRM, or GRSM) are used, a discussion and justification of the chosen method must be provided in the narrative.
 - In-Stack NO₂/NO_x ratios are set to default (0.5), or complete justification for using any value other than 0.5 within the report is provided.
 - The ambient equilibrium ratio is 0.9, or full justification is provided for any value other than 0.9.

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- For ozone limiting methods, ozone or NO₂ data (as appropriate) from a representative monitor site are correctly applied and are justified.
- ☐ Additional AERMOD selections and processing options (shown below) are correctly applied.
 - All plume depletion options are turned off.
 - Elevations for sources, buildings, tanks, and receptors were extracted using AERMAP.
 - Correct building inputs are included in the analysis. BPIP-Prime was run (after running AERMAP and before AERMOD).

Compliance Addressed Using Other Information

- ☐ All justification and applicable supporting data are provided. (See [SCDES Other Information Guidance](#) for complete details.)
 - Each pollutant is addressed for compliance separately.
 - For Single Factor Options, the narrative clearly describes how the chosen option applies.
 - For the Weight of Evidence approach, justification is provided in the narrative, containing at least two options and a discussion of the appropriate background concentration chosen.
 - Maximum allowable emission rates and emission point parameters are required for all new and revised stacks/sources associated with the Other Information.

Additional NSR PSD Modeling Components (Abbreviated)

- ☐ The facility provided a PSD modeling protocol, and SCDES approved the procedures. Any comments provided to the PSD modeling protocol must be addressed in the application.
- ☐ A table showing the project total emissions compared to the PSD Significant Emission Rate (SER) thresholds is provided.
- ☐ A narrative for Class II and Class I impacts, with discussion of individual analyses as shown below (if applicable).

Class II Impact Analyses:

- ☐ Justification and the specific details regarding how “ambient air” was determined for receptor placement are provided.
- ☐ For applicable pollutants that exceed the SERs, Class II Significant Impact Level (Class II SIL) modeling and a table showing resulting concentrations compared to the SILs.

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- Project emissions are modeled from all sources with increases (and decreases related to the project, if applicable). See SCDES Modeling Guidelines Section 7.4.2.1.
 - Receptors are based on SCDES Modeling Guidelines Section 7.4.2.2.
 - Terrain data, meteorological data, and building downwash data are all the same base data as would be provided in the "Air Dispersion Modeling Selections and Options" section above.
 - Impacts of secondary PM_{2.5} and ozone are correctly applied. Modeled Emission Rates for Precursors (MERPs) may be used with proper justification for secondary impact contribution. When applicable for PM_{2.5} impact (if PM_{2.5}, NO_x, or SO₂ is above the SER), PM_{2.5} is modeled using AERMOD with secondary impacts of NO_x and SO₂ added. When applicable for ozone impacts (if NO_x or VOC is above the SER), secondary impacts of NO_x and VOC are added.
- ☐ The Significant Impact Area (SIA) is clearly identified for all pollutants greater than the Class II SIL.
- ☐ Pre-construction monitoring is addressed.
- ☐ For pollutants with an impact above the Class II SIL, Full Impact NAAQS and Full Impact PSD Class II Increment Air Quality Analyses are provided.
- Onsite source emission rates are based on maximum allowable operating conditions.
 - All Full Impact PM_{2.5} analyses include secondary impacts from onsite project sources.
 - SCDES modeling emissions inventory data was requested and used for offsite sources in NAAQS and PSD Increment modeling analyses.
 - If the source screening area (50 km plus SIA) extends into Georgia or North Carolina, offsite data was requested and applied in the applicable Full Impact model, as appropriate.
 - Justification for excluding offsite sources (e.g., 20D screening) is provided.
 - Offsite source emission rates are based on maximum allowable or actual emission rates. However, the use of actual emission rates must be supported with calculations provided. Negative emission rates apply only to actual reductions since the Minor Source Baseline Date.
 - The appropriate Minor Source Baselines Dates are considered for source inclusion for PSD increment analyses.
 - Full Impact PM_{2.5} Increment analyses (if applicable) include offsite secondary impacts (from SO₂ and NO_x emissions) with respect to the applicable Minor Source Baseline Date(s), and the details of PM_{2.5} Increment modeling analysis (and secondary contributions) are described in the narrative.

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- Receptors are based on SCDES Modeling Guidelines Section 7.4.3.3.
- ☐ For pollutants with maximum impacts above the NAAQS and/or PSD Increment, it was properly shown that the facility is not contributing to any modeled violation.
- ☐ Correct procedures are applied for Class II Additional Impact Air Quality Analyses.

Class I Impact Analyses:

- ☐ The Federal Land Manager is notified if significant impacts to the Class I area are expected.
- ☐ Correct procedures are applied for Class I Area Significant Impact Level (Class I SIL) Analyses.
 - Onsite project emissions are modeled.
 - For PM_{2.5} demonstrations, the impacts of direct and secondary PM_{2.5} are correctly applied. When applicable for PM_{2.5} impact (if PM_{2.5}, NO_x, or SO₂ is above the SER), PM_{2.5} is modeled, and secondary contributions from NO_x and SO₂ are applied (MERPs).
 - Correct procedures are applied for receptor placement.
- ☐ Correct procedures are applied for Class I Area Increment Analyses (if applicable).
 - The modeled emissions are consistent with the modeling guidelines.
 - The Full Impact PM_{2.5} Class I increment consumption analysis accounts for both the direct and the secondary component of PM_{2.5} increment consumption from direct PM_{2.5} emissions and precursor SO₂ and NO_x.
 - Use of CALPUFF for Class I Increment modeling requires EPA Model Clearinghouse pre-approval.
- ☐ Calculations for Q/D screening are correct and compared to a value of 10 as discussed in the modeling guidelines. Please note that all PSD construction projects within 50 km of a Class I area require AQRV regardless of Q/D.
- ☐ Correct procedures are applied for AQRV analyses (if applicable). The modeling guidelines and/or the FLAG 2010 Report procedures are followed and should be explained in the narrative provided.

For a more detailed checklist involving NSR PSD modeling compliance demonstrations, please see [EPA's Air Quality Analysis Checklist](#)

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RECORD OF REVISIONS	
Date	Description of Changes
July 9, 2025	Initial checklist