

**Texas Commission on Environmental Quality  
RAP-SCT Application Instructions for  
Readily Available Permit – Simple Cycle Turbine**

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## Overview

The RAP-SCT is a New Source Review (NSR) initial permit to authorize operations of an electric utility simple cycle turbine facility. The RAP-SCT application provides administrative and technical information needed by the TCEQ to evaluate operations of simple cycle turbines. These instructions detail the steps the applicant must take to apply for a RAP-SCT.

Facilities shall be constructed and operated as specified in the application for the permit. All representations regarding construction plans and operation requirements contained in the permit application shall be enforceable representations upon issuance of the permit.

The applicant must enter the required information, as detailed in these instructions, for each emission source included in their project.

For each emission source listed in the spreadsheet:

- The emission point is identified with a pre-assigned emission point identification number (EPN) which cannot be changed. The emission point is defined as the point from which air contaminants enter the ambient air.
- The applicant must enter the required information into the yellow cells within each tab that is applicable to their project. Some cells have drop-down selections. If a cell displays "Error," the project does not qualify for the RAP-SCT, or an error has been made on the entry.
- Best Available Control Technology (BACT) [30 TAC § 116.111(a)(2)(C)] is provided by the TCEQ in the spreadsheet. The applicant must review the BACT with consideration given to the technical practicability and the economic reasonableness of reducing or eliminating emissions from the facility. The practices and controls listed for each emission source represent BACT for that specific unit. Acceptance of the BACT for each unit is confirmed on the Emission Summary tab.

### To Apply for a Readily Available Permit – Simple Cycle Turbine (RAP-SCT):

1. Read the RAP-SCT Qualifying Criteria to determine if the project meets the required specifications. The RAP-SCT Qualifying Criteria can be found at: [RAP-SCT Qualifying Criteria](#).
2. Read the RAP-SCT Conditions to determine if the facility meets the permit conditions. The RAP-SCT Conditions can be found at: [RAP-SCT Conditions](#).
3. Read the RAP-SCT Application Instructions and complete the RAP-SCT Spreadsheet. The RAP-SCT Spreadsheet can be found at: [RAP-SCT Spreadsheet](#).
4. Complete the Form PI-1 (General Application Form), using the PI-1 Instructions. The applicant does not need to submit all additional items listed in the PI-1 Instructions, as they are included in the required spreadsheet. Only the following additional items as detailed below need to be submitted. The Form PI-1 can be found at: [www.tceq.texas.gov/permitting/air/forms/newsourcereview/nsr\\_general\\_forms.html](http://www.tceq.texas.gov/permitting/air/forms/newsourcereview/nsr_general_forms.html).
  - a. *Process Description:* Provide a process description to accompany the process flow diagram that discusses each step in the process and provides a step-by-step explanation of exactly how your business operates. The description should assist the permit reviewer through the process with emphasis on where the emissions are generated, why the emissions must be generated, what air pollution controls are used (including process design features that minimize emissions), and where the emissions enter the atmosphere.

The process description must also explain how the facility or facilities will be operating when the maximum possible emissions are produced. For some source types, this will probably be the highest production rate. For other source types, the maximum emission rates may occur at partial load. When applicable, discuss cycle times, reaction times, temperatures, pressures, material flow rates, and production rates. Be specific, and do not use generalities

such as a small amount, sometimes, and occasionally opened. The process description must also include how the facility is operated during periods of planned MSS and what emission reduction techniques will be used to limit emissions, changes in character of emissions, and the frequency and duration of each type of planned MSS activity.

All information in the process description is an enforceable representation.

- b. *Process Flow Diagram:* Provide a process flow diagram for all permit applications so that the permit reviewer can verify all technical information regarding the affected facility. The process flow diagram should be sufficiently descriptive so the permit reviewer can determine the raw materials to be used in the process; all major processing steps and major equipment items; individual emission points associated with each process step; the location and identification of all emission abatement devices; and the location and identification of all waste streams (including wastewater streams that may have associated air emissions). Block flow diagrams generally are not sufficient except for very simple facilities such as boilers.

Alternate material flows and changes in routing of emissions during periods of planned MSS should be depicted as well as any alternate emission control devices that will be used during these periods.

- c. *Current Area Map:* An area map that is adequate for a person who has never visited the area to be able to find the proposed site and determine the nature of the surrounding land use. The area map must clearly show features present on a United States Geological Survey (USGS) map, which include: a true north arrow, an accurate scale, the entire plant property, the location of the property relative to prominent geographical features including, but not limited to, highways, roads, streams, and significant landmarks such as buildings, residences, schools, parks, hospitals, day care centers, and churches. The map must also include a circle with a 3,000 foot radius from the property boundary to ensure adequate coverage on all sides of the facility.
- d. *Plot Plan:* A plot plan that clearly shows a north arrow, an accurate scale, all property lines, all emission points, buildings, tanks, process vessels, other process equipment, and two bench mark locations (preferably Universal Transverse Mercator (UTM) coordinates). Should you submit the plot plan electronically, the preferred format to use are drawing interchange format (\*.dxf), drawing format (\*.dwg), or any other computer aided drawing format. **Identify all** emission points on the affected property.

5. Submit a hard-copy of the completed application materials listed below in accordance with the Form PI-1 Instructions. In addition, send the application materials electronically to the Air Permits Initial Review Team at [apirt@tceq.texas.gov](mailto:apirt@tceq.texas.gov).
  - a. Core Data Form (located at: [www.tceq.texas.gov/permitting/central\\_registry/guidance.html](http://www.tceq.texas.gov/permitting/central_registry/guidance.html));
  - b. Form PI-1;
  - c. RAP-SCT Spreadsheet;
  - d. All additional information as described above (process flow diagram, process description, area map, and plot plan); and
  - e. [Table 30 \(Estimated Capital Cost and Fee Verification\)](#).
6. Do not begin construction until notified by the TCEQ. If the facility is already operating, an air authorization is still needed. Seek an authorization as soon as you become aware that this requirement applies.
7. **If the qualifying criteria are not met, or if the applicant does not agree with the RAP-SCT conditions, the applicant will receive notice that the application has been voided. If the**

**application is voided for these reasons, the application should seek a different type of authorization as appropriate.**

## **Instructions for RAP-SCT Spreadsheet**

The instructions are categorized based upon each tab within the spreadsheet.

### **I. Facility Information**

- A. Company or Other Legal Name: **This must match the Form PI-1.** Permits are issued to either the facility owner or operator, commonly referred to as the applicant or permit holder. List the legal name of the company, corporation, partnership, or person who is applying for the permit. We will verify the legal name with the Texas Secretary of State at (512) 463-5555 or at [www.sos.state.tx.us](http://www.sos.state.tx.us). You may be asked to correct the name provided on the RAP-SCT Spreadsheet and Form PI-1, if found to be different. In some cases, we may request a copy of the legal document forming the entity to verify the legal name; for example: general partnership or trust filed with the county.
- B. County: Provide the county the site will be located in. Select the county name from the drop-down menu in the cell.
- C. Customer Number (CN): If known, provide the CN number in the format: CNxxxxxxxx. This is a unique number given to each business, governmental body, association, individual, or other entity that owns, operates, is responsible for, or is affiliated with a regulated entity. We assign the CN when a Core Data Form is initially submitted to the Central Registry.

**Important Note: The company information provided on the Core Data Form must be the same as provided on the Form PI-1 and the RAP-SCT Spreadsheet.**

- D. Regulated Entity Number (RN): If known, provide the RN number in the format: RNxxxxxxxx. This is a unique agency assigned number given to each person, organization, place, or thing that is of environmental interest to us and where regulated activities will occur. The RN is assigned when a Core Data Form is initially submitted to the Central Registry, if the agency has conducted an investigation, or if the agency has issued an enforcement action. The RN replaces existing air account numbers.

**Important Note: The facility information provided on the Core Data Form must be the same as provided on the Form PI-1 and the RAP-SCT Spreadsheet.**

- E. Is this site an existing site? Select the response from the drop-down menu in this cell. This RAP is only for a greenfield site.
- F. Distance from the property line to the closest emission point (in meters): Enter the distance in meters. The setback distance requirements from the property line to the closest emission point vary depending on the county in which the site is located. For El Paso County the setback requirement is 300 meters; for Harris County the setback requirement is 420 meters; and for all other counties the setback requirement is 150 meters.
- G. Is there a school located within 3000 feet of the property line: Select the response from the drop-down menu in this cell. The applicant must select in the spreadsheet whether there are any schools within 3,000 feet of the property line and plot the location of the schools on the area map.

## II. Simple Cycle Turbine

**Important Note: A maximum number of two (2) simple cycle turbines can be authorized by the RAP-SCT. The information required for each simple cycle turbine must be entered into its own respective tab on the spreadsheet. Leave the second turbine tab blank if only applying for one.**

- A. EPN: CTG1 and CTG2 are the assigned EPNs for these units.
- B. Universal Transverse Mercator (UTM) Coordinates of Emission Point: Enter the Zone number, and the East and North coordinates (in meters) for the emission point. Identify emission point by UTM coordinates in meters using the North American Datum 1983 (NAD 83). UTM reference coordinates may be obtained from USGS topographical maps or others, if applicable. Accurate coordinates for each emission point are essential for air dispersion modeling activities.
- C. Discharge Parameters: Enter the discharge parameters listed below for the simple cycle turbine.
- The release height in feet (ft.) – A minimum of 80 ft. is required.
  - The diameter in ft. – A minimum of 15 ft. is required.
  - The temperature in degrees Fahrenheit (°F) – A minimum of 756°F is required.
  - The velocity in feet per second (fps) – A minimum of 52.4 fps is required.
- D. Input Parameters: Enter the input parameters listed below for the simple cycle turbine.
- The rated baseload capacity at site conditions in megawatts (MW);
  - The heat rate of the turbine, on a higher heating value (HHV) basis in British thermal units per kilowatt-hour (Btu/kW-hr); and
  - The higher heating value of the natural gas fuel (in Btu per standard cubic feet).
- E. Emission Rates: The cells under columns “lb/hr” and “tpy” will populate automatically based upon the values entered in the yellow cells within the Input Parameters table. Do not alter any values within the Emission Rates table. Acceptance of the proposed emission rates for this unit is confirmed on the Emission Summary tab.

## III. Fire Water Pump

**Important Note: A maximum number of one (1) fire water pump can be authorized by the RAP-SCT. The information required for fire water pump must be entered into its own respective tab on the spreadsheet.**

- A. EPN: FWP is the assigned EPN for this unit.
- B. UTM Coordinates of Emission Point: Enter the Zone number, and the East and North coordinates (in meters) for the emission point. Identify emission point by UTM coordinates in meters using the North American Datum 1983 (NAD 83). UTM reference coordinates may be obtained from USGS topographical maps or others, if applicable. Accurate coordinates for each emission point are essential for air dispersion modeling activities.
- C. Discharge Parameters: Enter the discharge parameters listed below for the fire water pump.
- The release height in ft. – A minimum of 7 ft. is required.
  - The diameter in ft. – A minimum of 0.33 ft. is required.
  - The temperature in °F – A minimum of 821°F is required.
  - The velocity in fps – A minimum of 90 fps is required.

- D. Input Parameters: Enter the input parameter listed below for the fire water pump.
- The rated brake power of the engine (in horsepower) – The rated brake power of the engine may not exceed 184.22 hp.
- E. Emission Rates: The cells under columns “lb/hr” and “tpy” will populate automatically based upon the values entered in the yellow cells within the Input Parameters table. Do not alter any values within the Emission Rates table. Acceptance of the proposed emission rates for this unit is confirmed on the Emission Summary tab.

#### IV. Dew Point Heater

**Important Note: A maximum number of two (2) dew point heaters can be authorized by the RAP-SCT. The information required for each dew point heater must be entered into its own respective tab on the spreadsheet. Leave the second dew point heater tab blank if only applying for one.**

- A. EPN: HEAT1 and HEAT2 are the assigned EPNs for these units.
- B. UTM Coordinates of Emission Point: Enter the Zone number, and the East and North coordinates (in meters) for the emission point. Identify emission point by UTM coordinates in meters using the North American Datum 1983 (NAD 83). UTM reference coordinates may be obtained from USGS topographical maps or others, if applicable. Accurate coordinates for each emission point are essential for air dispersion modeling activities.
- C. Discharge Parameters: Enter the discharge parameters listed below for the dew point heater.
- The release height in ft. – A minimum of 20 ft. is required.
  - The diameter in ft. – A minimum of 0.67 ft. is required.
  - The temperature in °F – A minimum of 700°F is required.
  - The velocity in fps – A minimum of 40 fps is required.
- D. Input Parameters: Enter the input parameter listed below for the dew point heater.
- The heater design firing rate in million BTU per hour (MMBtu/hr) – The heater design firing rate may not exceed 5.99 MMBtu/hr.
- E. Emission Rates: The cells under columns “lb/hr” and “tpy” will populate automatically based upon the values entered in the yellow cells within the Input Parameters table. Do not alter any values within the Emission Rates table. Acceptance of the proposed emission rates for this unit is confirmed on the Emission Summary tab.

#### V. Lube Oil Vent

**Important Note: A maximum number of two (2) lube oil vents can be authorized by the RAP-SCT. The information required for each lube oil vent must be entered into its own respective tab on the spreadsheet. Leave the second lube oil vent tab blank if only applying for one.**

- A. EPN: LOV1 and LOV2 are the assigned EPNs for these units.
- B. UTM Coordinates of Emission Point: Enter the Zone number, and the East and North coordinates (in meters) for the emission point. Identify emission point by UTM coordinates in meters using the North American Datum 1983 (NAD 83). UTM reference coordinates may be obtained from USGS topographical maps or others, if applicable. Accurate coordinates for each emission point are essential for air dispersion modeling activities.

- C. Discharge Parameters: Enter the discharge parameters listed below for the lube oil vent.
- The release height in ft. – A minimum of 20 ft. is required.
- D. Emission Rates: The cells under columns “lb/hr” and “tpy” were developed using engineering judgment and experience. Do not alter any values within the Emission Rates table. Acceptance of the proposed emission rates for this unit is confirmed on the Emission Summary.

## VI. Tank

**Important Note: A maximum number of six (6) tanks can be authorized by the RAP-SCT. The information required for each tank must be entered into its own respective tab on the spreadsheet. If applying for less than six tanks, leave any additional tank tabs blank.**

- A. EPN: TANK1, TANK2, TANK3, TANK4, TANK5, and TANK6 are the assigned EPNs for these units.
- B. Material: Select “Lube Oil” or “Diesel” using the drop-down menu in this cell to enter the material stored in the tank.
- C. UTM Coordinates of Emission Point: Enter the Zone number, and the East and North coordinates (in meters) for the emission point. Identify emission point by UTM coordinates in meters using the North American Datum 1983 (NAD 83). UTM reference coordinates may be obtained from USGS topographical maps or others, if applicable. Accurate coordinates for each emission point are essential for air dispersion modeling activities.
- D. Discharge Parameters: Enter the discharge parameters listed below for the tank.
- The release height in ft. – A minimum of 3 ft. is required.
- E. Emission Rates: The cells under columns “lb/hr” and “tpy” were developed using engineering judgment and experience. Do not alter any values within the Emission Rates table. Acceptance of the proposed emission rates for this unit is confirmed on the Emission Summary.

## VII. Emergency Engine

**Important Note: A maximum number of one (1) emergency engine can be authorized by the RAP-SCT. The information required for the emergency engine must be entered into its own respective tab on the spreadsheet.**

- A. EPN: EGEN is the assigned EPN for this unit.
- B. UTM Coordinates of Emission Point: Enter the Zone number, and the East and North coordinates (in meters) for the emission point. Identify emission point by UTM coordinates in meters using the North American Datum 1983 (NAD 83). UTM reference coordinates may be obtained from USGS topographical maps or others, if applicable. Accurate coordinates for each emission point are essential for air dispersion modeling activities.
- C. Discharge Parameters: Enter the discharge parameters listed below for the emergency engine.
- The release height in ft. – A minimum of 10 ft. is required.
  - The diameter in ft. – A minimum of 0.32 ft. is required.
  - The temperature in °F – A minimum of 859°F is required.
  - The velocity in fps – A minimum of 73.5 fps is required.

- D. Input Parameters: Enter the input parameter listed below for the emergency engine.
- The rated brake power of the engine in hp – The rated brake power of the engine may not exceed 1234 hp.
- E. Emission Rates: The cells under columns “lb/hr” and “tpy” will populate automatically based upon the values entered in the yellow cells within the Input Parameter table. Do not alter any values within the Emission Rates table. Acceptance of the proposed emission rates for this unit is confirmed on the Emission Summary tab.

## **VIII. Fugitive Emissions**

- A. EPN: FUG is the assigned EPN for these emissions.
- B. UTM Coordinates of Emission Point: Enter the Zone number, and the East and North coordinates (in meters) for the emission point. Identify emission point by UTM coordinates in meters using the North American Datum 1983 (NAD 83). UTM reference coordinates may be obtained from USGS topographical maps or others, if applicable. Accurate coordinates for each emission point are essential for air dispersion modeling activities.
- C. Discharge Parameters: Enter the discharge parameters listed below for the fugitive emissions.
- The release height in ft. – A minimum of 3 ft. is required.
- D. Emission Rates: The cells under columns “lb/hr” and “tpy” were developed using engineering judgment and experience. Do not alter any values within the Emission Rates table. Acceptance of the proposed emission rates for this unit is confirmed on the Emission Summary tab.

## **IX. Maintenance Activities**

- A. EPN: MAINT is the assigned EPN for these emissions.
- B. UTM Coordinates of Emission Point: Enter the Zone number, and the East and North coordinates (in meters) for the emission point. Identify emission point by UTM coordinates in meters using the North American Datum 1983 (NAD 83). UTM reference coordinates may be obtained from USGS topographical maps or others, if applicable. Accurate coordinates for each emission point are essential for air dispersion modeling activities.
- C. Discharge Parameters: Enter the discharge parameters listed below for the maintenance activities.
- The release height in ft. of the filter and CEMS maintenance activities – A minimum of 15 ft. is required.
  - Other maintenance activities included in MAINT do not have a minimum stack height requirement.
- D. Emission Rates: The cells under columns “lb/hr” and “tpy” were developed using engineering judgment and experience. Do not alter any values within the Emission Rates table. Acceptance of the proposed emission rates for this unit is confirmed on the Emission Summary tab.

## **X. BACT**

The practices and controls listed for each emission source represent BACT for each specific unit. Acceptance of the BACT for each unit is confirmed on the Emission Summary tab.

## **XI. Emission Summary**

Review the Emission Summary tab. Your project is not eligible for a RAP-SCT if any emission rates or totals display “Error.”

Use the drop-down menu in the yellow cell at the bottom of the table to confirm that the applicant has reviewed and agrees to the following:

- BACT as represented in the application;
- Emission rates represented in the Emission Summary section;
- Draft permit’s special conditions; and
- Applicable air quality analysis report.

By selecting the “I agree” statement in the drop-down menu, the applicant also confirms the spreadsheet is submitted as part of their application and accurately represents their proposed project.

## **Additional Resources**

### **I. Emission Calculation Methodology – Electric Utility Simple Cycle Turbines**

This document explains a method of calculating emission rates for an electric utility simple cycle turbine installation. It is assumed that the turbine is a gas turbine using natural gas as fuel. The document covers emission calculations for each pollutant-emitting source or activity that typically occurs at such installations: gas turbines, emergency-use reciprocating engines (i.e., diesel generators and firewater pumps), turbine lube oil vents, dew point heaters, diesel and lube oil storage tanks, leaks from piping components, and miscellaneous maintenance activities. The memo provides discussion of the intended use of the document, as well as emission calculation methods proposed for each emitting activity.

The Emission Calculation Methodology – Electric Utility Simple Cycle Turbines Memo can be found at: [Memo](#).

### **II. Air Quality Analysis Reports for Simple Cycle Turbines**

Air Quality Analyses (AQAs) were performed in support of the RAP-SCT. AQAs were performed for each of the sixteen TCEQ regions. Each of the AQA reports summarizes the results for the respective TCEQ region and includes information specific to the counties of that respective region.

Each of the AQA reports can be located under the RAP-SCT Resources heading at: [RAP WEBPAGE](#).