1. Subpart Y - Petroleum Refineries	2
1.1 Using e-GGRT to Prepare Your Subpart Y Report	2
1.1.1 Subpart Y Summary Information for this Facility	6
1.1.2 Subpart Y Delayed Coking Unit Information	17
1.1.3 Subpart Y Asphalt Blowing Unit Information	21
1.1.4 Subpart Y Coke Calcining Unit Information	26
1.1.5 Subpart Y Catalytic Cracking, Fluid Coking, and Catalytic Reforming Unit Information	
1.1.6 Subpart Y Flares Unit Information	
1.1.7 Subpart Y Process Vents Unit Information	
1.1.8 Subpart Y Sulfur Recovery Plant Information	58
1.1.9 Subpart Y Emissions Information for Process Units Monitored by CEMS	
1.2 Using Subpart Y Calculation Spreadsheets	68

Subpart Y - Petroleum Refineries

🖶 A printer-friendly version (pdf) (96 pp, 11,239K) of GHG reporting instructions for this subpart

Please select a help topic from the list below:

- Using e-GGRT to Prepare Your Subpart Y Report
 - Subpart Y Summary Information for this Facility
 - Subpart Y Delayed Coking Unit Information
 - Subpart Y Asphalt Blowing Unit Information
 - Subpart Y Coke Calcining Unit Information
 - Subpart Y Catalytic Cracking, Fluid Coking, and Catalytic Reforming Unit Information
 - Subpart Y Flares Unit Information
 - Subpart Y Process Vents Unit Information
 - Subpart Y Sulfur Recovery Plant Information
 - Subpart Y Emissions Information for Process Units Monitored by CEMS
- Using Subpart Y Calculation Spreadsheets
- · Carry forward of data from previous submissions into RY2012 forms
- Subpart Y Rule Guidance
- Subpart Y Rule Language (eCFR)

Additional Resources:

- Part 98 Terms and Definitions
- Frequently Asked Questions (FAQs)
- Webinar Slides

Using e-GGRT to Prepare Your Subpart Y Report

Subpart Y consists of facilities that produce gasoline, gasoline blending stocks, naphtha, kerosene, distillate fuel oils, residual fuel oils, lubricants, or asphalt (bitumen) by the distillation of petroleum or the redistillation, cracking, or reforming of unfinished petroleum derivatives.

This page provides an overview of subtopics that are central to Subpart Y reporting:

If you previously reported for Reporting Year (RY) 2011, the Agency has carried some of your RY2011 data forward and entered it in your RY2012 forms to reduce the reporting burden. It is still your responsibility to review and ensure that all of the information in your submission is correct, but the Agency believes that most of the data which is carried forward is unlikely to change significantly from year to year. For more information about carry forward data, please see the Carry forward of data from previous submissions into RY2012 forms help content.

- Subpart Y Summary Information for this Facility
- Subpart Y Delayed Coking Unit Information
- Subpart Y Asphalt Blowing Unit Information
- Subpart Y Coke Calcining Unit Information
- Subpart Y Catalytic Cracking, Fluid Coking, and Catalytic Reforming Unit Information
- Subpart Y Flares Unit Information
- Subpart Y Process Vents Unit Information
- Subpart Y Sulfur Recovery Plant Information
- Subpart Y Emissions Information for Process Units Monitored by CEMS
- Subpart Y Validation Report

The end of the page contains links you can use for more information on these topics.

If you are using a Best Available Monitoring Method (BAMM) in accordance with the rule in place of a method in Subpart Y, you should select the "Other" option in the method menu and write "BAMM" or "Best Available Monitoring Method" in the corresponding text box. Details regarding BAMM methods used should be included in Subpart A.

Subpart Y Summary Information for this Facility

Subpart Y requires you to report the following data about your facility:

- The annual CO₂ emissions from sour gas sent off-site for sulfur recovery
- The annual CH₄ emissions from the following sources:
 - Uncontrolled Blowdown Systems
 - Equipment Leaks
 - Loading Operations
 - Storage Tanks
 - Delayed Coking

Subpart Y Delayed Coking Unit Information

Subpart Y requires you to report the following data for each delayed coking unit at your facility:

- A unique name or identifier, plus optional description. See also About Unique Unit Names
- Method used to calculate the CH₄ emissions

Subpart Y requires you to report the following data for each coking drum at your facility:

- A unique name or identifier, plus optional description. See also About Unique Unit Names
- Typical drum outage in feet (i.e. unfilled distance from the top of the drum)

Subpart Y Asphalt Blowing Unit Information

Subpart Y requires you to report the following data about your asphalt blowing operations:

- A unique name or identifier, plus optional description for this asphalt blowing unit. See also About Unique Unit Names.
- Specify the control device used to reduce methane (and other organic) emissions from the unit. Select from Vapor scrubber, Thermal oxidizer, Flare, Other (specify), or None.

When you are finished, click SAVE.

If you selected Thermal oxidizer, Flare, or Other, an additional question will appear requiring you to select a CO_2 AND CH_4 EMISSIONS CALCULATION METHOD. The system requires you to select the method used to calculate the CO_2 and CH_4 emissions for your asphalt blowing operations from the following list:

- Equations Y-14 and Y-15 (appears only if Other was selected)
- Equations Y-16a and Y-17
- Equations Y-16b and Y-17
- Equation Y-19 (Process Vent)

Subpart Y Coke Calcining Unit Information

Subpart Y collects the following data about your coke calcining unit:

- · Maximum rated throughput of the coke calcining unit (metric tons coke calcined per stream day)
- Method used to calculate the CH₄ emissions:
 - Equation Y-9
 - Unit-specific measurement data
 - A unit-specific emission factor based on a source test of the unit
- Method used to calculate the N₂O emissions:
 - Equation Y-10
 - Unit-specific measurement data
 - A unit-specific emission factor based on a source test of the unit

Subpart Y Catalytic Cracking, Fluid Coking, and Catalytic Reforming Unit Information

Subpart Y collects the following data about your Catalytic Cracking, Fluid Coking, or Catalytic Reforming unit:

- A unique name or identifier, plus optional description for this unit (see also About Unique Unit Names)
 - Specify the type of unit:
 - Fluid Catalytic Cracking Unit
 - Thermal Catalytic Cracking Unit
 - Traditional Fluid Coking Unit
 - Catalytic Reforming Unit
 - Fluid Coking Unit with Flexicoking Design (see note below)
- An indication whether each unit is monitored by a CEMS

- For Fluid Coking Units with Flexicoking Design, you will be asked if the GHG emissions from the low heat value gas are accounted for in Subpart C.
 - If your answer to this question is 'yes', you are only required to report maximum rated throughput of the fluid coking unit with flexicoking design
 - If your answer to this question is 'no', you are required to report maximum rated throughput of the fluid coking unit with flexicoking design and the methods used to calculate emissions per the sections below

For Catalytic Cracking or Coking units that are NOT monitored by CEMS, Subpart Y also collects the following data:

- Maximum rated throughput of the unit (bbl per stream day)
- Method used to calculate CO₂ emissions (only appears if you select No for using a CEMS):
 - 98.253(c)(2) Equation Y-6 and continuous monitor for flow (but not meeting the CEMS monitoring requirements of 98.253(c)(1);
 e.g., not meeting the full CEMS quality assurance requirements)
 - 98.253(c)(2) Equation Y-6 and Y-7a
 - 98.253(c)(2) Equation Y-6 and Y-7b
 - 98.253(c)(3) Equation Y-8 (option appears only for Catalytic Cracking or Coking units; available only for catalytic cracking units and fluid coking units with rated capacities of 10,000 barrels per stream day (bbls/sd) or less that do not use a continuous CO₂ CEMS for the final exhaust stack)
 - 98.253(e)(3) Equation Y-11 (option appears only for Catalytic Reforming units)
- Method used to calculate CH₄ emissions:
 - Equation Y-9
 - Unit-specific measurement data
 - A unit-specific emission factor based on a source test of the unit
- Method used to calculate N₂O emissions:
 - Equation Y-10
 - Unit-specific measurement data
 - A unit-specific emission factor based on a source test of the unit

For Catalytic Cracking or Coking units that are monitored by CEMS, Subpart Y also collects the following data:

- Maximum rated throughput of the unit (bbl per stream day)
 - Method used to calculate CH₄ emissions:
 - Equation Y-9
 - Unit-specific measurement data
 - A unit-specific emission factor based on a source test of the unit
- Method used to calculate N₂O emissions:
 - Equation Y-10
 - Unit-specific measurement data
 - · A unit-specific emission factor based on a source test of the unit

Subpart Y Flares Unit Information

Subpart Y collects the following data about your flare unit:

- A unique name or identifier, plus optional description for this flare unit (see also About Unique Unit Names)
 - Type of flare:
 - Steam assisted
 - Air assisted
 - Unassisted
 - Other (specify)
- Flare service type:
 - General facility flareUnit flare
 - Unit flare
 - Emergency only flare
 - Back-up flare
- Other (specify)
 Method used to calculate the CO₂ emissions:
 - 98.253(b)(1)(ii)(A) Equation Y-1a Gas Composition Monitored (Equation Y-1a or Y-1b must be used if you have a continuous
 gas composition monitor on the flare or if you measure it at least weekly)
 - 98.253(b)(1)(ii)(A) Equation Y-1b Gas Composition Monitored (Equation Y-1a or Y-1b must be used if you have a continuous gas composition monitor on the flare or if you measure it at least weekly)
 - 98.253(b)(1)(ii)(B) Equation Y-2 Heat Content Monitored (Equation Y-2 must be used if you have a continuous higher heating value monitor or measure it at least weekly and the heating value monitor or measurement is not based on compositional analyses; if compositional analyses are used, you must use Equation Y-1a or Y-1b)
 - 98.253(b)(1)(iii) Equation Y-3 Start-up, Shutdown, Malfunction (Equation Y-3 must be used if you do not measure gas composition or heating value at least weekly.)

Subpart Y Process Vents Unit Information

Subpart Y collects the following data about your Process Vent unit:

- A unique name or identifier, plus optional description for this process vent unit (see also About Unique Unit Names):
- Operation type associated with this process vent:
- · Control device used to reduce methane (and other organic) emissions from the unit:
- Annual volumetric flow discharged to the atmosphere (scf)
- Method used to measure or estimate the annual volumetric flow rate:
- Number of venting events, if vent is intermittent
- Cumulative venting time (hours)
- Greenhouse gases to report for this process vent. Select any combination of CO₂, CH₄ or N₂O. CO₂ emissions must be reported if the process vent contains greater than 2 percent by volume CO₂ or greater. CH₄ emissions must be reported if the process vent contains 0.5 percent by volume of CH₄ or greater. N₂O emissions must be reported if the process vent contains 0.01 percent by volume of N₂O or greater.

Subpart Y collects the following data if CO2 is being reported for this Process Vent:

- Annual CO₂ emissions from this process vent (metric tons).
- Annual average mole fraction of CO₂
- Method used to measure or estimate the annual average mole fraction of CO₂

Subpart Y collects the following data if CH₄ is being reported for this Process Vent:

- Annual CH₄ emissions from this process vent (metric tons).
- Annual average mole fraction of CH₄
- Method used to measure or estimate the annual average mole fraction of CH₄

Subpart Y collects the following data if N2O is being reported for this Process Vent:

- Annual N₂O emissions from this process vent (metric tons).
- Annual average mole fraction of N₂O
- Method used to measure or estimate the annual average mole fraction of N₂O

Subpart Y Sulfur Recovery Plant Information

Subpart Y collects the following data about your sulfur recovery plant:

- Maximum rated throughput of the sulfur recovery plant (metric tons sulfur per stream day)
 - Type of sulfur recovery plant:
 - Caustic scrubber
 - Claus
 - Lo-cat
 Sulfuris asid also
 - Sulfuric acid plant
 Other (appairs)
 - Other (specify)
- Method used to calculate the CO₂ emissions. Specify either Equation Y-12 or Process Vent Method. [Only appears if No is selected for using a CEMS. For Claus Plants (that do not use a CEMS according to Subpart C), Equation Y-12 must be used. For non-Claus plants (that do not use a CEMS according to Subpart C), either Equation Y-12 or the Process Vent Method may be used.]
- Indicate whether, if you recycle tail gas, the recycled flow rate and carbon content of recycled tail gas is included in the measured volumetric flow and carbon mole fraction data. If you do not recycle tail gas, please select No. [This question appears only if Equation Y-12 is selected]. Click either Yes or No.
- Indicate if a correction for CO₂ emissions in the tail gas is used. [This question appears only if Yes is selected for previous question]. Click either Yes or No. Note that per Section 98.253(f)(5), if tail gas is recycled to the front of the sulfur recovery plant and the recycled flow rate and carbon content is included in the measured data, then the annual CO₂ emissions must be corrected to avoid double counting these emissions.

Subpart Y Emissions Information for Process Units Monitored by CEMS

For each CEMS Monitoring Location, provide the following information:

- A unique unit name or identifier for the CML (see also About Unique Unit Names)
- An optional description or label for the CML
- The configuration of processes or process units that are monitored by the CML:
 - Single industrial process or process unit that exhausts to a dedicated stack

- Multiple industrial processes or process units share a common stack
- Industrial process or process unit shares a common stack with one or more stationary fuel combustion units
- The name of each fuel combusted in the unit(s) monitored by the CEMS
- The Tier 4/CEMS methodology start and end dates
- The cumulative total of hourly CO₂ mass emissions for each quarter of the reporting year (in metric tons) (*Do not cumulate emissions data between quarters*)
- The total annual CO2 mass emissions measured by the CEMS (in metric tons)
- An indication whether emissions reported for the CEMS include emissions calculated according to 98.33(a)(4)(viii) for a slipstream that bypassed the CEMS
- The total annual biogenic CO₂ emissions from the combustion of all biomass fuels combined (in metric tons) (*if applicable*)
- The total annual non-biogenic CO₂ emissions (includes fossil fuel, sorbent, and process CO₂ emissions, in metric tons)
- The total annual CH₄ and N₂O emissions associated with the combustion of all Table C-2 fuels combusted in all processes/process units monitored by the CEMS derived from application of Equation C-10 (in metric tons) (*if there are no combustion emissions in this CML, please enter zero*)
- The total number of source operating hours in the reporting year
- The total operating hours in which a substitute data value was used in the emissions calculations for the CO₂ concentration parameter
- The total operating hours in which a substitute data value was used in the emissions calculations for the stack gas flow rate parameter
- If moisture correction is required and a continuous moisture monitor is used, the total operating hours in which a substitute data value was used in the emissions calculations for the stack gas moisture content parameter
- An indication of the process units monitored by the CML
- The CO₂ emissions from this CEMS Monitoring Location that are attributable to process CO₂ emissions from this process unit (metric tons).

Subpart Y Validation Report

The Validation Report assists with the completeness and quality of your reporting data.

We strongly encourage you to use the Validation Report to check your work. The Validation Report performs two types of checks:

- Data Completeness: Data required for reporting that are missing or incomplete.
- Data Quality: Data that are outside of the expected range of values.

You may view the Validation Report at any time.

Note that the Validation Report is intended to assist users in entering data, but it is not an indication that the reporter has entered all necessary information, nor is it an indication that the reporter is in compliance with part 98. Furthermore a negative finding on the validation report is not a guarantee that a data element was entered incorrectly.

Back to Top

See Also

Screen Errors Using e-GGRT to Prepare Your Subpart Y Report Subpart Y Summary Information for this Facility Subpart Y Delayed Coking Unit Information Subpart Y Asphalt Blowing Unit Information Subpart Y Coke Calcining Unit Information Subpart Y Catalytic Cracking, Fluid Coking, and Catalytic Reforming Unit Information Subpart Y Flares Unit Information Subpart Y Process Vents Unit Information Subpart Y Sulfur Recovery Plant Information Subpart Y Emissions Information for Process Units Monitored by CEMS Subpart Validation Report

Subpart Y Summary Information for this Facility

This topic provides a step-by-step description of how to enter Subpart Y summary information about this facility.

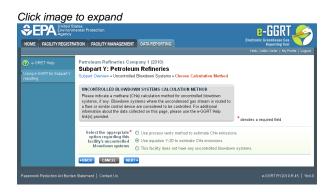
	tates nental Protection			Electro	onic Greenhouse	Gas
OME FACILITY REGISTR	ATION FACILITY MANAGEMENT	DATA REPORTING			Reporting	Tool
				Hel	o, Cattin Carter (My Profile Logout
	Petroleum Refineries Com					
	Subpart Y: Petroleur	n Refineries				
sing e-OGRT for Subpart Y porting	Subpart Overview			FDA has fe	nalized a rule that	defers the
	OVERVIEW OF SUBPART Y F	REPORTING REQUIRE	MENTS	deadline fo	or reporting certain	data elements
	Subpart Y requires affected fac				puts to emission e ters until March 31	
	from flares, catalytic cracking u with flexicoking design, delayer	d coking units, catalytic	c reforming units, sulfur		(published August ce with the rule, e-	25, 2011). In
	recovery units, coke calcining u tanks, uncontrolled blowdown s	inits, asphalt blowing, e	equipment leaks, storage	currently o	collecting this subs	et of inputs to
	non-merchant hydrogen plants.	For additional informat	ion about Subpart Y reporti	ng, emission e	quations.	
	please use the e-GGRT Help lin	nk(s) provided.		A 54	bpart Y: View'	Validation
				<u>(1)</u>	opure r. voor	Faircairon
	FACILITY-LEVEL EMISSIONS 5					
	FACILITY-LEVEL EMISSIONS S		-		a 1	
	Uncontrolled Blowdown System		EO2 (metric tons) C	Ha (metric tons)	Status' Incomplete	OPEN
	Equipment Leaks	0	N/A		Incomplete	OPEN
	Equipment Leaks		N/A N/A		Incomplete	OPEN
	Storage Tanks		N/A		Incomplete	OPEN
	Storage Tanks Sour Gas Sent Off-Site		IWA		Incomplete	OPEN
	Delayed Coking		N/A		Incomplete	OPEN
	Delayed Coking		IWA		mcompiere	OPER
	DELAYED COKING UNITS					
	Unit Name/Identifier None entered				Status ¹	Delete
	ADD a Delayed Coking Unit					
	Unit Name/Identifier None entered	C02	: (metric tons) C	H4 (metric tons)	Status ¹	Delete
		C02	: (metric tons) C	H4 (metric tons)	Status ¹	Delete
	None entered		: (metric tons) C	:H4 (metric tons)	Status ¹	Delete
	None entered ADD an Asphalt Blowing Unit			1H4 (metric tons)		Delete
	None entered ADD an Asphalt Blowing Unit COKE CALCINING UNITS EMIS Unit Name/Identifier None entered	SIONS SUMMARY				
	None entered	SIONS SUMMARY				
	None entered ADD an Asphalt Blowing Unit COKE CALCINING UNITS EMIS Unit Name/Identifier None entered ADD a Cake Calcining Unit	SIONS SUMMARY CO2 (metric tons)	CHa (metric tons) N			
	None entered ADD on Asphalt Blowing Unit COKE CALCINING UNITS EMIS Unit Name/Identifier None entered ADD a Coke Calcining Unit CATALYTIC CRACKING UNITS, CONTING UNITS,	SIONS SUMMARY CO2 (metric tons)	CHs (metric tons) N			
	None entered ADD an Asphalt Blowing Unit COKE CALCINING UNITS EMIS Unit Name/demifiler None entered ADD a Coke Calcining Unit CATALYTIC CRACKING UNITS, COKING UNITS WITH FLEXICC UNITS EMISSION SUMMARY.	SIONS SUMMARY CO2 (metric tons) TRADITIONAL FLUID IKING DESIGN, AND C	CHe (matric tons) N	2 0 (metric tons)	Status ¹	Delete
	None erfered ADD an Asphalt Blowing Unit. COKE CALCINING UNITS EMIS Unit Name Identifies None erfered ADD a Coke Calcining Unit CATALYTIC CRACKING UNITS. CONING UNITS WITH IFLEXCO UNITS EMISSIONS SUMMARY Unit Name/Identifier	SIONS SUMMARY CO2 (metric tons) TRADITIONAL FLUID IKING DESIGN, AND C	CHe (matric tons) N	2 0 (metric tons)	Status ¹	
	None entered ◆ AOD an Asphalt Blowing Unit CONE CALCINING UNITS EMUS Unit Nameildentiller None ettered ◆ ADD a Calo Calcing Unit CATALYTE CRACKING UNITS CATALYTE CRACKING UNITS CATALYTE CRACKING UNITS CONING UNITS WITH FLEXICO UNITS RUNSIONS SUMMARY Unit Nameildentiller Kone ettered	SIONS SUMMARY CO2 (metric tons) TRADITIONAL FLUID KING DESIGN, AND C CO2 (metric tons)	CHe (matric tons) N	2 0 (metric tons)	Status ¹	Delete
	None erfered ADD an Asphalt Blowing Unit. COKE CALCINING UNITS EMIS Unit Name Identifies None erfered ADD a Coke Calcining Unit CATALYTIC CRACKING UNITS. CONING UNITS WITH IFLEXCO UNITS EMISSIONS SUMMARY Unit Name/Identifier	SIONS SUMMARY CO2 (metric tons) TRADITIONAL FLUID KING DESIGN, AND C CO2 (metric tons)	CHe (matric tons) N	2 0 (metric tons)	Status ¹	Delete
	None entered ◆ AOD an Asphalt Blowing Unit CONE CALCINING UNITS EMUS Unit Nameildentiller None ettered ◆ ADD a Calo Calcing Unit CATALYTE CRACKING UNITS CATALYTE CRACKING UNITS CATALYTE CRACKING UNITS CONING UNITS WITH FLEXICO UNITS RUNSIONS SUMMARY Unit Nameildentiller Kone ettered	SIONS SUMMARY CO2 (metric tens) TRADITIONAL FLUID KING DESIGH, AND C CO2 (metric tens)	CHe (matric tons) N	2 0 (metric tons)	Status ¹	Delete
	Non-centered ◆ ACO as Asphat Bowing Unit COME CALCIMISO UNITS EMISS Unit Name Midentifier None entered ◆ ACO a Calcing Unit CATALYTIC CRACKING UNITS CATALYTIC CRACKING UNITS Unit Name Identifier MARCONCENT CATALYTIC CRACKING UNITS Unit Name Identifier ACO a Catalytic Cracking or Unit Name Identifier MARCONCENT ACO a Catalytic Cracking or Unit Name Identifier MARCONCENT ACO a Catalytic Cracking or Unit Name Identifier MARCONCENT ACO A CATALYTIC CRACKING UNITS ACO A CATALYTIC CRACKING UNITS A	SIONS SUMMARY CO2 (metric tons) TRADITIONAL FLUID KING DESIGH, AND C CO2 (metric tons) Coking Unit IMMARY	CHe (matric tons) N	20 (metric tons)	Status ¹ Status ¹	Delete
	None entend	SIONS SUMMARY CO2 (metric tons) TRADITIONAL FLUID KING DESIGH, AND C CO2 (metric tons) Coking Unit IMMARY	CIL: (mitric: toros) N COXING UNITS, FLUID CATALYTIC REFORMING CIL: (mitric: toros) N	20 (metric tons)	Status ¹ Status ¹	Delete
	Non-centered ◆ ACO as Asphat Bowing Unit COME CALCIMISO UNITS EMISS Unit Name Midentifier None entered ◆ ACO a Calcing Unit CATALYTIC CRACKING UNITS CATALYTIC CRACKING UNITS Unit Name Identifier MARCONCENT CATALYTIC CRACKING UNITS Unit Name Identifier ACO a Catalytic Cracking or Unit Name Identifier MARCONCENT ACO a Catalytic Cracking or Unit Name Identifier MARCONCENT ACO a Catalytic Cracking or Unit Name Identifier MARCONCENT ACO A CATALYTIC CRACKING UNITS ACO A CATALYTIC CRACKING UNITS A	SIONS SUMMARY CO2 (metric tons) TRADITIONAL FLUID KING DESIGH, AND C CO2 (metric tons) Coking Unit IMMARY	CIL: (mitric: toros) N COXING UNITS, FLUID CATALYTIC REFORMING CIL: (mitric: toros) N	20 (metric tons)	Status ¹ Status ¹	Delete
	Non-extend	SIONS SUMMARY CO2 (metric tens) TRADITIONAL FLUE URING DESIGH, AND C CO2 (metric tens) CO2 (metric tens) CO2 (metric tens)	CIL: (mitric: toros) N COXING UNITS, FLUID CATALYTIC REFORMING CIL: (mitric: toros) N	20 (metric tons)	Status ¹ Status ¹	Delete
	None extended ◆Acco as Asphate Browing Unit Conter CALCINIES UNITS EMISSION Unit Name of develifier None extended ◆Acco a calculation Unit CafAstrice Cancelling Unit None extended ◆Acco a calculation Cancelling Unit CafAstrice Cancelling Unit CafAstri	SIONS SUMMARY CO2 (matrix tons) TRADITIONAL FLUID KING DESIGH, AND C CO2 (matrix tons) Colong Unit MMARY CO2 (matrix tons) SIONS SUMMARY	CIL (mitric tans) N D COKING UNITS, FLUID ATALYTIC RESOLUTION CIL (mitric tans) N CIL (mitric tans) N	20 (metric tens) 20 (metric tens) 20 (metric tens)	Status ¹ Status ¹	Delete Delete Delete
	Non-centend	SIONS SUMMARY CO2 (matrix tons) TRADITIONAL FLUID KING DESIGH, AND C CO2 (matrix tons) Colong Unit MMARY CO2 (matrix tons) SIONS SUMMARY	CIL (mitric tans) N D COKING UNITS, FLUID ATALYTIC RESOLUTION CIL (mitric tans) N CIL (mitric tans) N	20 (metric tons)	Status ¹ Status ¹	Deiete
	None extended ◆ ACOs an Asphate Blowing Unit Conte C-ALCOMING UNIT'S EMISS Unit Name of desulfier None extended ◆ ACOs a Calce Contende UNIT'S CARACINEC UNIT'S CARACINEC UNIT'S CARACINEC UNIT'S CONTENDE UNIT SEMISSIONES SUMMANYS Unit Name identifier None extended ◆ ACOs a Calaxybic Cracking or i Larkes UNIT's EMISSIONES Unit Name identifier None extended ◆ ACOs a Filme PROCESS VENTS UNIT'S EMISSIONES Unit Name identifier None extended PACOS a Filme	SIONS SUMMARY CO2 (matrix tons) TRADITIONAL FLUID KING DESIGH, AND C CO2 (matrix tons) Colong Unit MMARY CO2 (matrix tons) SIONS SUMMARY	CIL (mitric tans) N D COKING UNITS, FLUID ATALYTIC RESOLUTION CIL (mitric tans) N CIL (mitric tans) N	20 (metric tens) 20 (metric tens) 20 (metric tens)	Status ¹ Status ¹	Delete Delete Delete
	None extended ◆ ACOB an Asphate Blocking Unit OLDE CALCUMUS UNITS EMIS Unit Name of dentifier More extended ◆ ACOB a Calse Calcing Unit Construct Control The Emission Construct Units Calcing Ori Construct Units FEINSCOMES SUMMARY More extended Construct Units FEINSCOMES SUMMARY More extended Action a Process VentTo Units EMIS	SIORS SUMMARY CO2 (maine taro) TDAMTIONAL ELUI (CO2 (maine taro)) CO2 (maine taro) CO2 (maine taro) SIORS SUMMARY CO2 (maine taro))	CIL (mitric tans) N D COKING UNITS, FLUID ATALYTIC RESOLUTION CIL (mitric tans) N CIL (mitric tans) N	20 (metric tens) 20 (metric tens) 20 (metric tens)	Status ¹ Status ¹	Delete Delete Delete
	None extended ● Acco an Asphate Blowing Unit. CORE CALCINING UNITS EMISSION SOL Unit Name/Accountier None extended ● AcCo a Cakering Unit CATALYTIC CRACKING UNITS; COMING UNITS WITH FLEXON, COMING UNITS WITH FLEXON, COMING UNITS WITH FLEXON, COMING UNITS WITH FLEXON, Flexe extended ● AcCo a Cakering or I FLARES UNITS EMISSIONS SOL Unit Name/Accountier Name extended ● AcCo a Floressavent Name extended ● AcCo a Floressavent Unit Name/Accountier Name extended ● AcCo a Floressavent SULFUR RECOVERY UNITS EMIS	SIORS SUMMARY CO2 (maine taro) TDAMTIONAL ELUI (CO2 (maine taro)) CO2 (maine taro) CO2 (maine taro) SIORS SUMMARY CO2 (maine taro))	CHL (metric tons) N COKING UNITS, FLUID ATALYTIC REFORMING ATALYTIC REFORMING CHL (metric tons) N CHL (metric tons) N CHL (metric tons) N	2 0 (metric tens) 2 0 (metric tens) 2 0 (metric tens) 2 0 (metric tens)	Status ¹ Status ¹ Status ¹	Delete Delete Delete
	Non-contendi ● ACO an Asphalt Blowing Unit COLEC CALCUMICS UNITS EMISSION Unit Name didentifier Non-contendition ACO a Caloba Calcimity Contendition Control Units Name didentifier Non-contendition Control Units Contendition Unit Name didentifier Non-contendition PACO a Calabylic Cracking or I CALARES WITTS EMISSIONS SUMMANY Non-contendition ACO a Calabylic Cracking or I Charles Units EMISSIONS SUMMANY Non-contendition Non-contendentifier	SIORS SUMMARY CO2 (maine taro) TDAMTIONAL ELUI (CO2 (maine taro)) CO2 (maine taro) CO2 (maine taro) SIORS SUMMARY CO2 (maine taro))	CHL (metric tons) N COKING UNITS, FLUID ATALYTIC REFORMING ATALYTIC REFORMING CHL (metric tons) N CHL (metric tons) N CHL (metric tons) N	20 (metric tens) 20 (metric tens) 20 (metric tens)	Status ¹ Status ¹ Status ¹	Delete Delete Delete
	None extended ◆ ACOs an Asphate Blowing Unit L CORE CALCINING UNITS EMISS Unit NameAldenilifer None extende → ACO a Cake Cakeining Unit CATALYTIC CRACKING UNITS; CATALYTIC CRACKING UNITS; CATALYTIC CRACKING UNITS; Control Units; Mane and Cakeinifier None extended On C stability: Cracking or I FLARES UNITS EMISSIONS SO: Unit NameAldenilifer None extended PROCESS Vertris: UNITS EMISS UNIT Semissions SO: UNIT Semissions SO: UNITS Manealideentifier None extended SULFUR RECOVERY UNITS EMIS SULFUR RECOVERY UNITS EMIS UNIT Namealideentifier None extended SULFUR RECOVERY UNITS EMIS UNIT Namealideentifier None extended	SIORS SUMMARY CO2 (maine taro) TDAMTIONAL ELUI (CO2 (maine taro)) CO2 (maine taro) CO2 (maine taro) SIORS SUMMARY CO2 (maine taro))	CHL (metric tons) N COKING UNITS, FLUID ATALYTIC REFORMING ATALYTIC REFORMING CHL (metric tons) N CHL (metric tons) N CHL (metric tons) N	2 0 (metric tens) 2 0 (metric tens) 2 0 (metric tens) 2 0 (metric tens)	Status ¹ Status ¹ Status ¹	Delete Delete Delete
	Non-contendi ● ACO an Asphalt Blowing Unit COLEC CALCUMICS UNITS EMISSION Unit Name didentifier Non-contendition ACO a Caloba Calcimity Contendition Control Units Name didentifier Non-contendition Control Units Contendition Unit Name didentifier Non-contendition PACO a Calabylic Cracking or I CALARES WITTS EMISSIONS SUMMANY Non-contendition ACO a Calabylic Cracking or I Charles Units EMISSIONS SUMMANY Non-contendition Non-contendentifier	SIORS SUMMARY CO2 (maine taro) TDAMTIONAL ELUI (CO2 (maine taro)) CO2 (maine taro) CO2 (maine taro) SIORS SUMMARY CO2 (maine taro))	CHL (metric tons) N COKING UNITS, FLUID ATALYTIC REFORMING ATALYTIC REFORMING CHL (metric tons) N CHL (metric tons) N CHL (metric tons) N	2 0 (metric tens) 2 0 (metric tens) 2 0 (metric tens) 2 0 (metric tens)	Status ¹ Status ¹ Status ¹	Delete Delete Delete
	None extended ◆ ACOs an Asphate Blowing Unit L CORE CALCINING UNITS EMISS Unit NameAldenilifer None extende → ACO a Cake Cakeining Unit CATALYTIC CRACKING UNITS; CATALYTIC CRACKING UNITS; CATALYTIC CRACKING UNITS; Control Units; Mane and Cakeinifier None extended On C stability: Cracking or I FLARES UNITS EMISSIONS SO: Unit NameAldenilifer None extended PROCESS Vertris: UNITS EMISS UNIT Semissions SO: UNIT Semissions SO: UNITS Manealideentifier None extended SULFUR RECOVERY UNITS EMIS SULFUR RECOVERY UNITS EMIS UNIT Namealideentifier None extended SULFUR RECOVERY UNITS EMIS UNIT Namealideentifier None extended	SIORS SUMMARY CO2 (maine taro) TDAMTIONAL ELUI (CO2 (maine taro)) CO2 (maine taro) CO2 (maine taro) SIORS SUMMARY CO2 (maine taro))	CHL (metric tons) N COKING UNITS, FLUID ATALYTIC REFORMING ATALYTIC REFORMING CHL (metric tons) N CHL (metric tons) N CHL (metric tons) N	2 0 (metric tens) 2 0 (metric tens) 2 0 (metric tens) 2 0 (metric tens)	Status ¹ Status ¹ Status ¹	Delete Delete Delete
	Non-contendi	SIOHS SUMMARY CO: (matter team) TRADITIONAL FUNCTION CO: (matter team) CO: (matter team) CO: (matter team) CO: (matter team) SIOHS SUMMARY CO: (matter team)	CHa (metric terrs) N coxtitle UNITS, FLUID CATALIVITC REFORMING CHa (metric terrs) N CHa (metric terrs) N CHa (metric terrs) N	 0 (metric tens) 	Status ¹ Status ¹ Status ¹	Delete Delete Delete Delete
	Non-centend ◆ Acco an Asphat Beoring Unit CORE CALCINIKO UNITS EMIS Unit Name descritter Mare ended ◆ Acco a Calching Unit CACCURNEC UNITS EMIS Unit Name descritter Visco a Calching Unit CACCURNEC UNITS EMIS Unit Name descritter Non-centered • Acco a Calching Unit CACRA CALCHING UNITS EMIS Unit Name descritter Non-centered • Acco a Calching CacCurne • Acco a Challer CacCurne • Acco a Calching CacCurne • Acco a Calch	SIONS SUMMARY CO. (mathe taro) TRADITIONAL FLUE (CO. (mathe taro)) CO. (mathe taro) SIONS SUMMARY CO. (mathe taro) SIONS SUMMARY CO. (mathe taro)	CH2 (metric terre) N CCKHG UNITS, FLUID CCKHG UNITS, FLUID CCKHG UNITS, FLUID CCH2 (metric terre) N CH2 (metric terre) N	 C (metric tens) 	Status ¹ Status ¹ Status ¹ Status ¹ Status ¹	Delete Delete Delete Delete Delete Delete
	None extended Acco as Asphat Bowny Unit 2 COME CALCUMBS UNITS EMISSIONES Unit Name Addentifier Price actics Calcing Unit CATALYTIC CRACKING UNITS EMISSIONES CATALYTIC CRACKING UNITS EMISSIONES SUMMARY Unit Name Addentifier None acted In Acco a Cataligne Cracking or a CATALYTIC CRACKING UNITS EMISSIONES SUMMARY Unit Name Addentifier None acted In Acco a Cataligne Cracking or a More acted In Acco a Cataligne Cracking or a None acted In Acco a Cataligne Cracking or a None acted In Acco a Cataligne Cracking or a None acted In Acco a Cataligne Cracking or a None acted In Acco a Cataligne Cracking or a None acted In Acco a Faire PROCESS VENTS UNITS EMISS Unit Name Acteantifier Unit Name Acteantifier Unit Name Acteantifier Unit Name Acteantifier None acteantifier Unit Name Acteantifier Unit Name Actea	SIONS SUMMARY CO. (mathe taro) TRADITIONAL FLUI (CO. (mathe taro)) CO. (mathe taro) SIONS SUMMARY CO. (mathe taro) SIONS SUMMARY CO. (mathe taro)	CH2 (metric terre) N CCKHG UNITS, FLUID CCKHG UNITS, FLUID CCKHG UNITS, FLUID CCH2 (metric terre) N CH2 (metric terre) N	 C (metric tens) 	Status ¹ Status ¹ Status ¹ Status ¹ Status ¹	Delete Delete Delete Delete Delete Delete

Updating Summary Information for this Facility

To update Subpart Y Summary Information for this Facility, locate the FACILITY-LEVEL EMISSIONS SUMMARY table on the Subpart Y Overview page, and click OPEN for the appropriate section.

Updating Uncontrolled Blowdown Systems

Petroleum Refineries must specify a CH₄ calculation method for uncontrolled blowdown systems, if any. Blowdown systems where the uncondensed gas stream is routed to a flare or similar control device is considered to be controlled.



Step 1: Select Estimation Method

Subpart Y requires you to specify the appropriate option regarding this facility's uncontrolled blowdown systems. Select from:

· Use process vents method to estimate CH₄ emissions

- Use equation Y-20 to estimate CH₄ emissions
- This facility does not have any uncontrolled blowdown systems

When you are finished, click NEXT.

If "This facility does not have any uncontrolled blowdown systems" is selected then no further data is collected for uncontrolled blowdown systems.

Depending on which methodology you choose, follow either Step 2a or Step 2b.

Click image to expand

	ates ental Protection		e-GGRT <i>S</i>
HOME FACILITY REGISTRA	TION FACILITY MANAGEMENT DAT	A REPORTING	Electronic Greenhouse Gas Reporting Tool Helio, Catlin Carter I My Profile I Locout
e-GRET Help Using e-GGRT for Subpart Y reporting	Petroleum Refineries Company Subpart Y: Petroleum Re Subpart Overview -> Uncontrolled Blowd	efineries own Systems » Eq. Y-20	
	Use this page to enter the GHG data information about the data collected in Ink(s) provided.	on this page, please use the e-GGRT Help	(Eq. Y-20) CH4 emissions (metric tons)
	CH+=($Q_{Ref} \times EF_{BD} \times \frac{16}{MVC} \times 0.001$) ver an element in the equation above to reveal a c	lefinition of that element.
		999 (metric tons) se Y-20 spreadsheet to calculate	
	Basis for the methane emission factor value	ony records 💌	
	Statement ContactUs		e-GORT RY2010.R.45 Ybd-1

Step 2a: Equation Y-20 Summary and Result

The annual CH₄ emissions from blowdown systems is required. The e-GGRT system provides links to optional worksheets that may be used to perform the calculations; use of the spreadsheet is entirely optional and is provided for your assistance. To calculate this value using the optional spreadsheet, download the spreadsheet by clicking the link titled "Use Y-20 spreadsheet to calculate". Fill in the spreadsheet using the instructions in the spreadsheet. After completing the spreadsheet, copy the value of CH₄ calculated by the spreadsheet to this page in the box next to "Annual CH₄ emissions from blowdown systems (metric tons)".

The Equation Y-20 Summary is presented on the page. You can hover over an element in the equation to reveal a definition of that element.

The basis for the methane emission factor value is required. Select from:

- Company records
- Measurement data
- Process Knowledge/Engineering calculation
- Used default emission factor
- Other (specify)

Step 2b: Process Vent Method for Uncontrolled Blowdown Systems

The annual CH4 emissions from blowdown systems is required. The e-GGRT system provides links to optional worksheets that may be used to perform the calculations; use of the spreadsheet is entirely optional and is provided for your assistance. To calculate this value using the optional spreadsheet, download the spreadsheet by clicking the link titled "Use Y-19 spreadsheet to calculate". Fill in the spreadsheet using the instructions in the spreadsheet. After completing the spreadsheet, copy the value of CH4 calculated by the spreadsheet to this page in the box next to "Annual CH4 emissions from blowdown systems (metric tons)".

The Equation Y-19 Summary is presented on the page. You can hover over an element in the equation to reveal a definition of that element.

Subpart Y collects the following data:

- Annual volumetric flow discharged to the atmosphere (scf) •
 - Method used to measure or estimate the annual volumetric flow rate:
 - Continuous or at least hourly measurements
 - Routine (less frequent than hourly but at least weekly) measurements
 - · Periodic (less frequent than weekly) measurements
 - Process knowledge
 - Engineering calculation
 - Other (specify)
- Number of venting events for all relevant vents, if vent is intermittent (see note below)
- Cumulative venting time (hours)
- Annual average mole fraction of CH4 (decimal between 0 and 1)
- Method used to measure or estimate the mole fraction of CH4:
 - Engineering estimates/process knowledge
 - Direct measurement
 - Other (specify)

1. Note that number of venting events is not applicable for continuous venting in which case you may leave this field blank

Step 3: Save Your Data

When you have finished entering Equation Y-20 results, click SAVE.

After you save the data on this page, the next time you open the page, the calculator on the top of the page will display the CH₄ emissions, rounded to the nearest 0.01 of a metric ton. The value displayed is for informational purposes only.

Updating Equipment Leaks

Petroleum Refineries must specify the method used to calculate the reported equipment leak emissions.

<section-header><complex-block><complex-block><complex-block><complex-block>

Step 1: Select Estimation Method

Subpart Y requires you to specify the appropriate option regarding this facility's equipment leaks. Select from:

- Use process-specific methane composition data and any of the emission estimation procedures provided in the Protocol for Equipment Leak Emissions Estimates (EPA-453/R-95-017, NTIS PB96-175401)
- Use Equation Y-21

When you are finished, click NEXT.

Step 2a: Equation Y-21 Summary and Result

The annual CH_4 emissions from equipment leaks is required. The e-GGRT system provides links to optional worksheets that may be used to perform the calculations; use of the spreadsheet is entirely optional and is provided for your assistance. To calculate this value using the optional spreadsheet, download the spreadsheet by clicking the link titled "Use Y-21 spreadsheet to calculate". Fill in the spreadsheet using the instructions in the spreadsheet. After completing the spreadsheet, copy the value of CH_4 calculated by the spreadsheet to this page in the box next to "Annual CH_4 emissions from equipment leaks (metric tons)."

The Equation Y-21 Summary is presented on the page. You can hover over an element in the equation to reveal a definition of that element.

Step 2b: Process-specific Methane Composition Data Method Summary and Result

If the "Use process-specific methane composition data and any of the emission estimation procedures provided in the Protocol for Equipment Leak Emissions Estimates" option was selected then the following screen will display.

HOME FACILITY REGIST	RATION FACILITY MANAGEMENT DATA REP	ORTING	Reporting Tool Holio, Catlin Carter My Profile Loj
e-GRET Help Jsing e-OGRT for Subpart Y eporting	Petroleum Refineries Company 1 (201 Subpart Y: Petroleum Refine Subpart Oveniew » Equipment Leaks » CH4 E	ries	
	GHG DATA AND ASSOCIATED INFORMA Use this page to enter the GHG data require information about the data collected on this link(s) provided.	ed by Subpart Y. For additional	99 CH4 emissions (metric tons)
	EQUIPMENT LEAK EMISSIONS INFORMATI		
	Cumulative CH4 emissions for all equipment leak sources	99	(metric tons)
	Cumulative number of catalytic cracking units, coking units (delayed or fluid), hydrocracking, and full-range distillation columns (including depropanizer and debutanizer distillation columns) at the facility	39	
	Cumulative number of hydrotreating/hydrorefining units, catalytic reforming units, and visbreaking units at the facility	29	
	Total number of hydrogen plants at the facility	2	
	Total number of fuel gas systems at the facility	10	
	Number of atmospheric crude oil distillation columns at the facility	4	

Enter process-specific methane composition data (from measurement data or process knowledge) and any of the emission estimation procedures provided in the Protocol for Equipment Leak Emissions Estimates (EPA-453/R-95-017, NTIS PB96-175401).

Enter the following data:

- Cumulative CH₄ emissions for all equipment leak sources (metric tons)
- Cumulative number of catalytic cracking units, coking units (delayed or fluid), hydrocracking, and full-range distillation columns (including depropanizer and debutanizer distillation columns) at the facility
- Cumulative number of hydrotreating/hydrorefining units, catalytic reforming units, and visbreaking units at the facility
- Total number of hydrogen plants at the facility
- Total number of fuel gas systems at the facility
- · Number of atmospheric crude oil distillation columns at the facility

Step 3: Save Your Data

When you have finished entering the above data, click SAVE.

After you save the data on this page, the next time you open the page, the calculator on the top of the page will display the CH₄ emissions, rounded to the nearest 0.01 of a metric ton. The value displayed is for informational purposes only.

Updating Loading Operations

Petroleum Refineries must specify the cumulative annual methane emissions (in metric tons of each pollutant emitted) for loading operations.

	States mental Pre				e-GGRT 矣
HOME FACILITY REGIST	RATION	FACILITY MANAGEMENT	DATA REPORTING		Electronic Greenhouse Gas Reporting Tool
					Hello, Caltin Carter My Profile Log
e-GRET Help Jsing e-GGRT for Subpart Y eporting	Sub	leum Refineries Com part Y: Petroleur rt Overview + Loading Oper	n Refineries	ns Estimation	
	Use f mate perce	rials containing an equilibr	data required by Su ium vapor-phase CH4 ion about the data co	bpart Y. Please add vessels with concentration of at least 0.5 llected on this page, please use	CH4 emissions (metric tons)
	LOADI	NG OPERATIONS EMISS	IONS INFORMATION		
	Cum	ulative CH4 emissions fo o	perations	199 (metri	: tons)
	VESS	ELS WITH MATERIALS C	ONTAINING A VAPO	R-PHASE CH4 CONCENTRATION	OF AT LEAST 0.5 PERCENT
		Vessel Type Other (specify) - 10-gallon DD a Vessel Type	drum		Delete ¥

Step 1: Loading Operations Emissions Information

The cumulative CH₄ emissions for loading operations is required. Enter the value of CH₄ in the box next to "Cumulative CH₄ emissions for loading operations (metric tons)".

Step 2: Vessels

Complete the applicable Vessels sections for vessels with materials containing a vapor-phase CH₄ concentration of at least 0.5 percent.

Click the link titled "ADD a Vessel Type".

Click image to expand



Specify the type of vessel:

- Ship or ocean-going vessel
- Railcar
- Tank truck
- Container
- Other (specify)

You may immediately enter materials containing a vapor-phase CH₄ concentration of at least 0.5 percent for this vessel now or whenever you edit an existing vessel (see Step 3: Materials). When you are finished, click SAVE.

Continue to add vessels until all vessel types with materials containing a vapor-phase CH₄ concentration of at least 0.5 percent are listed.

To edit an existing Vessel (e.g., to add, edit, or delete a material), click on the edit icon or the Name/ID link, which is the first column in the VESSELS SUMMARY table.

To delete an existing Vessel, click on the delete icon, which is the last column in the VESSELS SUMMARY table.

Step 3: Materials

Complete the applicable Materials section for each vessel.

Click the link titled "ADD a Material" while adding or editing a Vessel type.



Specify the type of material:

- Unstabilized crude oil
- · Stabilized crude oil
- Still gas or refinery fuel gas
- LPG (propane/butane)
- Ethylene
- Oxygenates
- Naphtha
- Gasoline or gasoline blending stocks other than oxygenates
- Other (specify)

Specify the control device used to reduce emissions from the loading of the material:

- Submerged loading or bottom filling only; no other control system
- Vapor balancing
- Thermal or catalytic incinerator/oxidizer
- Flare
- Carbon adsorber
- Condenser
- Oil scrubber
- None
- Other (specify)

When you are finished, click SAVE.

Continue to add materials for a specific vessel type until all materials containing a vapor-phase CH₄ concentration of at least 0.5 percent that are loaded in the specified vessel type are listed.

To edit an existing Material, click on the edit icon or the Name/ID link, which is the first column in the MATERIAL SUMMARY table.

To delete an existing Material, click on the delete icon, which is the last column in the MATERIAL SUMMARY table. When you are finished, click SAVE.

Step 4: Save Your Data

When you have finished entering loading operations emissions and all vessel/material type combinations for materials containing a vapor-phase CH_4 concentration of at least 0.5 percent, click SAVE.

After you save the data on this page, the next time you open the page, the calculator on the top of the page will display the CH₄ emissions, rounded to the nearest 0.01 of a metric ton. The value displayed is for informational purposes only.

Updating Storage Tanks

Petroleum refineries must report annual CH₄ emissions from unstabilized crude oil storage and stored liquids other than unstabilized crude oil.

Step 1: Indicate receipt of unstabilized crude oil or stored liquids other than unstabilized crude oil

Subpart Y requires you to report whether or not your facility received and stored unstabilized crude oil during the reporting year by selecting one of the following two options:

- "The facility did receive unstabilized crude oil during the reporting year."
- "The facility did not receive any unstabilized crude oil during the reporting year."

Subpart Y requires you to report whether or not your facility received and stored liquids other than unstabilized crude oil during the reporting year by selecting one of the following two options:

- "The facility did receive stored liquids other than unstabilized crude oil during the reporting year."
- "The facility did not receive stored liquids other than unstabilized crude oil during the reporting year."

When finished, click NEXT



Step 2: Indicate emissions calculation methods (if applicable)

If the facility indicates use of "unstabilized crude oil" storage tanks, Subpart Y requires you to report:

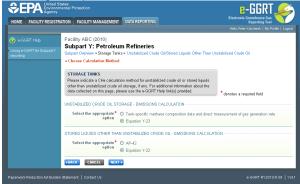
- The method used to calculate the reported storage tank emissions
 - Tank-specific methane composition data and direct measurement of gas generation rate
 - Equation Y-23

If the facility indicates use of "stored liquids other than unstabilized crude oil" storage tanks, Subpart Y requires you to report:

- The method used to calculate the reported storage tank emissions
 - AP-42
 - Equation Y-22

When finished, click NEXT

Click image to expand



Step 3: Enter emissions information and additional data

If the facility indicates use of "unstabilized crude oil" storage tanks, Subpart Y also requires you to report:

- The annual CH4 emissions from unstabilized crude oil storage (from tank-specific methane composition data and direct measurement of gas generation rate or the output of Equation Y-23, in metric tons)
 - The basis for the average mole fraction of CH4 in vent gas
 - Equation Y-23 default
 - Measurement data
 - Product knowledge
 - Other (specify)
- If the facility indicates use of "unstabilized crude oil" storage tanks AND if the facility selected the 'tank-specific methane composition data' method, the system shall require the facility to report:
 - The method used to measure tank-specific methane composition in the vapor
 - Measurement data
 - Product knowledge
 - Other (specify)
 - If measured, the number of hours missing data procedures were used
 - The method used to measure the gas generation rate
 - Procedures specified by flow meter manufacturer
 - · Method published by a consensus-based standards organization
 - If measured, number of hours missing data procedures were used to measure the gas generation rate

For assistance in calculating process CH4 emissions from unstabilized crude oil storage using Equation Y-23, access the optional calculation

spreadsheet by clicking the link located below the red emissions entry box titled "Use Y-23 spreadsheet to calculate" and follow the provided instructions.

If the facility indicates use of "stored liquids other than unstabilized crude oil" storage tanks, Subpart Y also requires you to report:

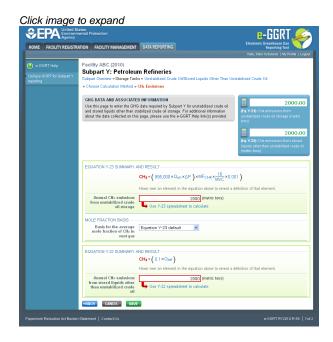
• The annual CH₄ emissions from stored liquids other than unstabilized crude oil (the output of AP-42 or Equation Y-22, in metric tons)

For assistance in calculating process CH_4 emissions from stored liquids other than unstabilized crude oil using Equation Y-22, access the optional calculation spreadsheet by clicking the link located below the red emissions entry box titled "Use Y-22 spreadsheet to calculate" and follow the provided instructions.

Step 4: Save Your Data

When you have finished entering all storage tank emissions information and additional data, click SAVE.

After you save the data on this page, the next time you open the page, the calculator on the top of the page will display the CH₄ emissions for stored liquids other than unstabilized crude oil and unstabilized crude oil storage, rounded to the nearest 0.01 of a metric ton. The value displayed is for informational purposes only.



Updating Sour Gas Sent Off-Site

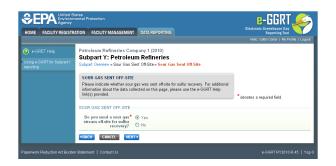
Petroleum refineries must report annual CO2 emissions from sour gas sent off-site.

Step 1: Indicate if sour gas stream is off-site for sulfur recovery

Subpart Y requires you to report whether or not your facility sent a sour gas stream off-site for sulfur recovery during the reporting year by selecting one of the following two options:

- Yes
- No

When finished, click NEXT



Step 2: Enter emissions information and additional data (if applicable)

If the facility indicates that a sour gas stream was sent off-site for sulfur recovery during the reporting year, Subpart Y requires you to report:

- The annual CO₂ emissions from sour gas sent off-site (the output of Equation Y-12, in metric tons)
- If measured, specific consensus-based standard method or describe the procedure specified by the flow meter manufacturer used to measure annual volume of sour gas fed (from the facility to the off-site sulfur recovery plant)
- If measured, the number of hours missing data procedures were used for annual volume of sour gas fed (from the facility to the off-site sulfur recovery plant)
 - If measured, the method used to measure the annual average mole fraction of carbon in the sour gas:
 - Method 18 at 40 CFR part 60, appendix A-6
 - ASTM D1945-03
 - ASTM D1946-90 (Reapproved 2006)
 - GPA 2261-00
 - UOP539-97
 - ASTM D2503-92 (Reapproved 2007)
 - Chromatographic analysis: manufacturer's instructions
 - Other (specify)
- If measured, the number of hours missing data procedures were used for annual average mole fraction of carbon in the sour gas

For assistance in calculating process CH_4 emissions from sour gas sent off-site using Equation Y-12, access the optional calculation spreadsheet by clicking the link located below the red emissions entry box titled "Use Y-12 spreadsheet to calculate" and follow the provided instructions.

Step 3: Save Your Data

When you have finished entering all sour gas emissions information and additional data, click SAVE.

After you save the data on this page, the next time you open the page, the calculator on the top of the page will display the CO₂ emissions for sour gas sent off-site, rounded to the nearest 0.1 of a metric ton. The value displayed is for informational purposes only.

Click image to expand

HOME FACILITY REGIST	mental Protection	T DATA REPORTING	Electronic Greenbosse Gas Reporting Tool Helo, Caltin Carter My Profile Logod
e-GRET Help		um Refineries Sent Off-Site = Eq. Y-12	(Eq.Y-12) CO2 emissions (metric tens)
	EQUATION Y-12 SUMMARY	AND RESULT CO2=FSG×44 MVC×MFc×0.001 Hover over an element in the equation above to reveal a d	efinition of that element
	Annual CO2 emissions from sour gas sent off-site	500 (metric tons)	
	ANNUAL VOLUME OF SOUR If measured, specific consensus-based standard method or describe the procedure specified by the flow meter manufacturer used to measure annual volume of sour gas fed	GAS FED TO THE SULFUR RECOVERY PLANT	
	If measured, number of hours missing data procedures were used for annual volume of sour gas fed	10 (hours)	
	ANNUAL AVERAGE MOLE F	RACTION OF CARBON IN THE SOUR GAS	
	If measured, method used to measure the annual average mole fraction of carbon in the sour gas	GPA 2261-00	V
	If measured, number of hours missing data procedures were used for annual average mole fraction of carbon in the sour gas	10 (hours)	
	CANCEL		
Paperwork Reduction Act Burd	en Statement Contact Us		e-GGRT RY2010.R.45 Ysg-1

Updating Delayed Coking

Petroleum refineries must report the cumulative CH₄ emissions from all delayed coking units at the facility.

Data reporting for delayed coking is not limited to this section. Data for delayed coking processes must be entered in BOTH the "Facility-Level Emissions Summary" section of Subpart Y and the "Delayed Coking Units" section of Subpart Y.

Step 1: Enter emission information and additional data

Subpart Y requires you to report:

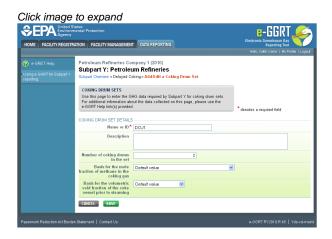
- The cumulative CH₄ emissions from all delayed coking units at the facility
- · For each coking drum set at your facility, Subpart Y also requires you to report
 - A unique unit name or identifier and an optional description or label (see also About Unique Unit Names)
 - The number of coking drums in the set
 - The basis for the mole fraction of methane in the coking gas
 - The basis for the volumetric void fraction of the coke vessel prior to steaming

Click image to expand

A

HOME FACILITY REGISTR	ATION FACILITY MANAGEMENT DATA REPORTING	Electronic Greenhouse Gas Reporting Tool
		Helio, Peter Kotrylanek My Profile Logo
e-GGRT Help Jsing e-GGRT for Subpart Y eporting	Facility ABC (2010) Subpart Y: Petroleum Refineries Subpart Overview = Delayed Coking = Cumulative CH1 Emissions	
	GHG DATA AND ASSOCIATED INFORMATION Use this page to enter the GHG data sequence for delayed coking. Please note the you are using the methodology in 82 32(1)(), the cumulative GH4 emissions for delayed coking entered have include include the total emissions face not bot [Equal emission data enter page or accessed have the total emission data enter emission data enter page or accessed have plant the MA short (Pleas and or do coking duru sets at the facility. For additional information about the data collect this page, places use the A-GBHT the planck (provided	m CH4 emissions (metric tons) ons
	DELAYED CORING EMISSIONS INFORMATION $\label{eq:charge} {charge} CHar \left(N \times H \times \frac{(Pcu+14.7)}{14.7} \times f \text{ value } x \; \frac{\pi \times D^2}{4} \right)$	$\times \frac{18}{MVC} \times MF_{CHV} \times 0.001$)
	Hover over an element in the equation above to rev	eal a definition of that element.
	Cumulative CH4 emissions from all delayed coking units at the facility Use Y-18 (and Y-19, if neces	(metric tons) sary) spreadsheet to calculate
	COKING DRUM SETS	
	Name Number of Coking Dru None entered ADD a Coking Drum Set	ums in Set Delete
	Note: In addition to the above information, you must also add delayed coking unit(information register of for each delayed coking unit and coke drum.	s) on the subpart overview page to report additional

To add a coking drum set, click the link titled "ADD a Coking Drum Set" below the COKING DRUM SETS table, enter the required information, then click SAVE. Repeat for each coking drum set at your facility.



Step 2: Save Your Data

When you have finished entering all delayed coking unit emissions information and additional data, click SAVE.

After you save the data on this page, the next time you open the page, the calculator on the top of the page will display the cumulative CH₄ emissions from all delayed coking units at the facility, rounded to the nearest 0.01 of a metric ton. The value displayed is for informational purposes only.

Click image to expand



Back to Top

See Also

Screen Errors Using e-GGRT to Prepare Your Subpart Y Report Subpart Y Summary Information for this Facility Subpart Y Delayed Coking Unit Information Subpart Y Asphalt Blowing Unit Information Subpart Y Coke Calcining Unit Information Subpart Y Catalytic Cracking, Fluid Coking, and Catalytic Reforming Unit Information Subpart Y Flares Unit Information Subpart Y Process Vents Unit Information Subpart Y Sulfur Recovery Plant Information Subpart Y Emissions Information for Process Units Monitored by CEMS Subpart Validation Report

Subpart Y Delayed Coking Unit Information

This topic provides a step-by-step description of how to enter Subpart Y Delayed Coking unit information about this facility.

Data reporting for delayed coking is not limited to this section. Data for delayed coking processes must be entered in BOTH the "Facility-Level Emissions Summary" section of Subpart Y and the "Delayed Coking Units" section of Subpart Y.

	es Ital Protection				2-iii	KI 🖊
GISTRAT	ON FACILITY MANAGEM	ENT DATA REPORTING		E	lectronic Greenhou: Reportin	se Gas Ig Tool
					Hello, Catlin Cartere	My Profile L
	CITY ELECTRIC SYST					
	Subpart Y: Petrol Subpart Overview	eum Refineries (2	011)			
_					has finalized a rule th	
		T Y REPORTING REQUIRE d facilities to report Greenho		use use	dine for reporting cert d as inputs to emission	equations for
	from flares, catalytic crack	king units, traditional fluid co	king units, fluid coking	units are	ct emitters until March 3057 (published Aug	
	with flexicoking design, de recovery units, coke calcii	alayed coking units, catalytic ning units, asphalt blowing, e	: reforming units, sultur equipment leaks, stored		ordance with the rule,	e-GGRT is not
	tanks, uncontrolled blowde	own systems, loading operat	ions, process vents, ar	nd 💦	ently collecting this au ision equations.	bset of inputs I
	please use the e-GGRT H	lants. For additional informat lelp link(s) provided.	ion about Subpart 1 rej	sorung,		
				1	Subpart Y: View	 Validation
				_		
	FACILITY-LEVEL EMISSIC			au	1 1	
	Uncontrolled Blowdown	CO2 (met	to tons)	CH4 (metric to	ns) Status' .00 Complete	OPE
	Systems					
	Equipment Leaks		N/A		.00 Complete	OPE
	Loading Operations		N/A		.00 Complete	OPE
	Storage Tanks	Facility did not receive uns unstabilized crude oil	tabilized crude oil/ston	ed liquids other th	ian Complete	OPE
	Sour Gas Sent Off-Site	Facility does not send sou	r gas off-site		Complete	OPER
	Delayed Coking		N/A	54	.00 Complete	OPEN
		-				_
	DELAYED COKING UNITS					
	Unit Name/Identifier				Status ¹	De
	None entered					
	ADD a Delayed Coking	Jnit				
	ASPHALT BLOWING UNIT	IS EMISSIONS SUMMARY				
	Unit Name/Identifier	C02	(metric tons)	CH4 (metric to	ns) Status ¹	De
	None entered					
	ADD an Asphalt Blowing	j Unit				
	COKE CALCINING UNITS	ENICCIONS CUMMADY				
	Unit Name/Identifier		CH4 (metric tons)	NoO (matric to	no) Status ¹	De
	None entered	COL (mente teno)	diff (includion (only))	neo (mono to	(is) Status	
	+ ADD a Coke Calcining U	Init				
	CATALYTIC CRACKING U	NITS, TRADITIONAL FLUID XICOKING DESIGN, AND C	COKING UNITS, FLU	ID NG		
	UNITS EMISSIONS SUMM	IARY				
		CO2 (metric tons)	CH4 (metric tons)	N2O (metric to	ns) Status ¹	De
	None entered	A.1. 11.5				
	ADD a Catalytic Crackin	g or Coking Unit				
	FLARES UNITS EMISSION	IS SUMMARY				
	Unit Name/Identifier	CO2 (metric tons)	CH4 (metric tons)	N2O (metric to	ns) Status ¹	D
	None entered					
	💠 ADD a Flare					
	PROCESS VENTS UNITS I	EMISSIONS SUMMARY				
	Unit Name/Identifier		CH4 (metric tons)	N2O (metric to		De
	None entered	CO2 (metric tons)	Cha (metric tons)	nzo (marric to	(is) Status	
	+ ADD a Process Vent					
	SULFUR RECOVERY UNIT	S EMISSIONS SUMMARY				
				CO2 (metric to	ns) Status ¹	De
	Unit Name/Identifier					
	None entered					
	None entered ADD a Sulfur Recovery F					
	None entered ADD a Sulfur Recovery F Facility Overview	Plant				
	None entered ADD a Sulfur Recovery R Facility Overview Status of "Incomplete" mea		data elements are incon	nplete. For details	, refer to the Data C	ompleteness

Adding or Updating Delayed Coking Unit Information

To add or update Subpart Y Delayed Coking Unit Information for this Facility, click the link titled "ADD a Delayed Coking Unit" below the DELAYED COKING UNITS table on the Subpart Y Overview page.

To edit an existing Delayed Coking Unit, click on the edit icon or the Name/ID link in the first column in the DELAYED COKING UNITS table.

To delete an existing Delayed Coking Unit, click on the delete icon in the last column in the DELAYED COKING UNITS table.

	tates nental Protection			e-GGRT 🔑
HOME FACILITY REGISTR	ATION FACILITY MANAGEMENT	DATA REPORTING		Electronic Greenhouse Gas Reporting Tool
				Helio, Caltin Cartere My Profile Logour
e-GGRT Help Jsing e-GGRT for Subpart Y reporting	CITY ELECTRIC SYSTEM Subpart Y: Petroleu Subpart Overview » Add a Dela	m Refineries (2011)		
	the information described beli used to calculate CH4 emissi	ING UNITS o uniquely identify each delayed ow for each unit. Also use this p ons from delayed coking units. I llected on this page, please use	age to enter the method or additional the e-GGRT Help	notes a required field
	UNIT INFORMATION			
	Name or ID*	Unit1	(40 characters ma	ximum)
	Description (optional)			
	Туре	Delayed Coking Unit		
	EMISSIONS CALCULATION M	ETHOD		
	Method used to calculate * the CH₄ emissions			
		O 98.253(i)(2) - Equation Y-18		

Subpart Y requires you to report the following data for each delayed coking unit at your facility:

- A unique name or identifier, plus optional description. See also About Unique Unit Names
 - Method used to calculate the CH_{4} emissions:
 - 98.253(i)(1) Equation Y-18 and Y-19, or
 98.253(i)(2) Equation Y-18

Note: If you select 98.253(i)(1) - Equation Y-18 and Y-19, you must also add the process vent associated with this delayed θ coking unit to the process vent section on the Subpart Overview page. The emissions that you enter in the process vent unit page should be zero, because those emissions should be included in the facility-level emissions reported for delayed coking units. Be sure to select "delayed coking" for the "operation type" on the process vent information page. Click this link to access instructions for entering Subpart Y Process Vents Unit Information

When you are finished entering the required information, click SAVE.

	tates nental Protection					e-GG	RT 🚅
OME FACILITY REGISTR	ATION FACILITY MANAGE!	IENT DATA REPORTING				onic Greenhous Reportin	e Gas g Tool
					Helic	o, Catlin Cartere	My Profile Log
	CITY ELECTRIC SYS Subpart Y: Petro Subpart Overview	TEM TEST leum Refineries (20	11)				
porting	Subpart Y requires affect from flares, catalytic cran with flexicoking design, of recovery units, coke cata tanks, uncontrolled blow	RT Y REPORTING REQUIRE/ ed facilities to report Greenhou- king units, traditional fluid cok- lelayed coking units, catalytic lelayed coking units, catalytic ining units, asphalt blowing, e down systems, loading operati Jants. For additional informati- telp link(s) provided.	use gas (GHG) emis ing units, fluid cokin reforming units, sulf guipment leaks, stor ons, process vents,	g units ur age and	deadline t used as it direct em FR S3057 accordan currently emission	Inalized a rule the for reporting certs puts to emission thers until March 3 (published Augu collecting this sul equations. (bp art Y: View	in data elements equations for 31, 2015. See 76 st 25, 2011). In e-GGRT is not seet of inputs to
					<u> </u>	apart	· · · · · · · · · · · · · · · · · · ·
	FACILITY-LEVEL EMISSI	ONS SUMMARY CO2 (metri		<i>eu</i> (tric tons)	m 1	
	Uncontrolled Blowdown	CO2 (metri	n/A	CH4 (me		Status' Complete	OPEN
	Systems						
	Equipment Leaks		N/A			Complete	OPEN
	Loading Operations Storage Tanks	Facility did not receive unst	N/A abilized crude oil/str	ared liquids o		Complete Complete	OPEN
		unstabilized crude oil		neu aquius u			_
	Sour Gas Sent Off-Site Delayed Coking	Facility does not send sour	gas off-site N/A		54.00	Complete	OPEN
	Delayed Coxing		N/A		54.00	Complete	OPEN
	DELAYED COKING UNITS	;					
	Unit Name/Identifie				Status ¹		Del
	ADD a Delayed Coking	11-5			Incomple	ete 🖸	PEN X
		TS EMISSIONS SUMMARY					
	Unit Name/Identifie	r CO2	(metric tons)	CH4 (me	tric tons)	Status ¹	Deli
	None entered ADD an Asphalt Blowing	a linit					
	COKE CALCINING UNITS						
	Unit Name/Identifie None entered	r CO2 (metric tons)	CH4 (metric tons)	N20 (me	itric tons)	Status ¹	Dela
	ADD a Coke Calcining	Unit					
	CATALYTIC CRACKING	INITS, TRADITIONAL FLUID EXICOKING DESIGN, AND C	COKING UNITS, FL ATALYTIC REFORM	.UID 11NG			
	Unit Name/Identifie	r CO2 (metric tons)	CH4 (metric tons)	N20 (me	tric tons)	Status ¹	Dele
	None entered ADD a Catalytic Crack	and a California Mark					
	ADD a Catalytic Crack	ng or coking one					
	FLARES UNITS EMISSIO						_
	Unit Name/Identifie None entered	r CO2 (metric tons)	CH4 (metric tons)	N20 (me	tric tons)	Status ¹	Dela
	ADD a Flare						
	PROCESS VENTS UNITS	EMISSIONS SUMMARY					
	Unit Name/Identifie		CH+ (metric tons)	N20 (me	tric tons)	Status ¹	Dela
	None entered						
	None entered ADD a Process Vent	TS EMISSIONS SUMMARY					
	None entered ADD a Process Vent			CO 2 (me	etric tons)	Status ¹	Delo
	None entered ADD a Process Vent SULFUR RECOVERY UNI Unit Name/Identific None entered			CO 2 (me	tric tons)	Status ¹	Dela
	None entered ADD a Process Vent SULFUR RECOVERY UNI Unit Name/Identifie			CO2 (me	itric tons)	Status ¹	Dela
	None entered ADD a Process Vent SULFUR RECOVERY UNI Unit Name/Identific None entered			CO2 (me	itric tons)	Status ¹	Deic
	None entered ADD a Process Vent SULFUR RECOVERY UNI Unit Name/Identifie None entered ADD a Sulfur Recovery Executiv Overview ¹ A status of "incomplete" mr	r Plant sans that one or more required o Validation Report by clicking th	lata elements are inc. "View Validation" lini	omplete. For c	fetails, refe	r to the Data Co	Impleteness

Adding or Updating Coking Drum Information

To add or update Coking Drum Information for a delayed coking unit, locate the unit in the DELAYED COKING UNITS table on the Subpart Y Overview page, and click OPEN.



To add a Coking Drum for a delayed coking unit, click the link labeled "ADD a Coking Drum".

	tates nental Protection	
HOME FACILITY REGISTR	ATION FACILITY MANAGEMENT DATA REPORTING	Reporting Tool Helio, Catlin Cartere My Profile Log
e-GGRT Help Using e-GGRT for Subpart Y reporting	CITY ELECTRIC SYSTEM TEST Subpart Y: Petroleum Refineries (2011) Subpart Overview = Unit = Add/Edit a Coking Drum	roed concrete (in) roue (io)
	DELAYED COKING DRUM DETAILS Use this page to identify each coke drum for this delayed coking page to provide supporting information for each coke drum. For about the data collected on this page, please use the e-GGRT F	additional information
	COKING DRUM DETAILS	
	Description	
	Typical drum outage, i.e. unfilled distance from the top of the drum	(feet)
	CANCEL SAVE	

Subpart Y requires you to report the following data for each coking drum at your facility:

- A unique name or identifier, plus optional description. See also About Unique Unit Names
- Typical drum outage in feet (i.e. unfilled distance from the top of the drum)

When you are finished entering the required information, click SAVE.

	States mental Protecti					GRT 🚄
IOME FACILITY REGIST	RATION FACI	LITY MANAGEMENT	DATA REPORTING		Electronic Green Rep	orting Tool
					Hello, Caltin Car	tere My Profile Loj
e-GGRT Help sing e-GGRT for Subpart Y porting	Subpar		TEST n Refineries (20 ' ing Units = Unit1 = Coking			
	Use this p	n about the data colle	e drum for this delayed co cted on this page, please			
	COKING DR					
		ng Drum 1		Drum Out	age (feet)	Delete 12 🗙
	+ ADD a	Coking Drum				

Repeat this step until you have entered information for all coking drums for this delayed coking unit.

When finished, click SAVE.

Back to Top

See Also

Screen Errors Using e-GGRT to Prepare Your Subpart Y Report Subpart Y Summary Information for this Facility Subpart Y Delayed Coking Unit Information Subpart Y Asphalt Blowing Unit Information Subpart Y Coke Calcining Unit Information Subpart Y Catalytic Cracking, Fluid Coking, and Catalytic Reforming Unit Information Subpart Y Flares Unit Information Subpart Y Process Vents Unit Information Subpart Y Sulfur Recovery Plant Information Subpart Y Emissions Information for Process Units Monitored by CEMS Subpart Validation Report

Subpart Y Asphalt Blowing Unit Information

This topic provides a step-by-step description of how to enter Subpart Y Asphalt Blowing unit information about this facility

ates nental Protection ATION FACILITY MANAGEN	IENT DATA REPORTING			E-GG ronic Greenhous Reportin	e Gas g Tool
			Hel	lo, Catlin Cartere	My Profile Lo
CITY ELECTRIC SYST Subpart Y: Petrol Subpart Overview	EM TEST Ieum Refineries (20	11)			
OVERVIEW OF SUBPAR Subpart Y requires affecte from flares, catalytic crac with flexicoking design, d recovery units, coke calci tanks, uncontrolled blowd	RT Y REPORTING REQUIRE/ dd facilities to report Greenhou king units, traditional fluid co- elayed coking units, catalytic inig units, asphalt blowing, e own systems, loading operati lants. For additional informati telp link(s) provided.	use gas (GHG) emissio ing units, fluid coking reforming units, sulfur quipment leaks, storaç ons, process vents, ar	ons used as units PR 5305 ge currently nd currently portring,	finalized a rule the for reporting certa inputs to emission titlers until March 3 7 (published Augu nose with the rule, n r collecting this sul equations.	in data elements equations for 31, 2015. See 76 st 25, 2011). In a-GGRT is not aset of inputs to
			<u> </u>	aspart r. riew	vanuación
FACILITY-LEVEL EMISSI					
	CO2 (metri		CH4 (metric tons)	Status ¹	
Uncontrolled Blowdown Systems		N/A	56.00	Complete	OPEN
Equipment Leaks		N/A	21.00	Complete	OPEN
Loading Operations		N/A		Complete	OPEN
Storage Tanks	Facility did not receive uns unstabilized crude oil	abilized crude oil/store	ad liquids other than	Complete	OPEN
Sour Gas Sent Off-Site	Facility does not send sour	gas off-site		Complete	OPEN
Delayed Coking		N/A	54.00	Complete	OPEN
					-
DELAYED COKING UNITS					
Unit Name/Identifier None entered				Status ¹	Del
ADD a Delayed Coking	Unit				
	TS EMISSIONS SUMMARY				
Unit Name/Identifier None entered	C02	(metric tons)	CH4 (metric tons)	Status ¹	Del
ADD an Asphalt Blowing					
ADD an Aspriat Diowini	g Onit				
COKE CALCINING UNITS	EMISSIONS SUMMARY				
Unit Name/Identifier	CO2 (metric tons)	CH4 (metric tons)	N2O (metric tons)	Status ¹	Dei
None entered					
ADD a Coke Calcining U	Joit				
CATALYTIC CRACKING U COKING UNITS WITH FLU UNITS EMISSIONS SUMM	NITS, TRADITIONAL FLUID EXICOKING DESIGN, AND C IARY	COKING UNITS, FLU ATALYTIC REFORMI	ID NG		
Unit Name/Identifier	CO2 (metric tons)	CH4 (metric tons)	N2O (metric tons)	Status ¹	Del
None entered					
ADD a Catalytic Crackin	ng or Coking Unit				
FLARES UNITS EMISSIO	NS SUMMARY				
Unit Name/Identifier		CH4 (metric tons)	N2O (metric tons)	Status ¹	Del
None entered					
ADD a Flare					
PROCESS VENTS UNITS	EMISSIONS SUMMARY				
Unit Name/Identifier		CH4 (metric tons)	N2O (metric tons)	Status ¹	Del
None entered					
ADD a Process Vent					
	IS EMISSIONS SUMMARY				
				1 .	
Unit Name/Identifier None entered			CO2 (metric tons)	Status	Del
ADD a Sulfur Recovery	Plant				
- ADD a cultur Recovery	1. 100111				
¹ A status of "incomplete" me	ans that one or more required a	lata elements are incon	nplete. For details ref	er to the Data Or	mpletenes«
¹ A status of "incomplete" me validation messages in your subpart you will not see this	ans that one or more required i Validation Report by clicking the	lata elements are incon "View Validation" link a	nplete. For details, ref above (Note: if there ar	er to the Data Co e no validation n	impleteness nessages for l

Adding or Updating Asphalt Blowing Information

To add or update Subpart Y Asphalt Blowing Information for this Facility, locate the ASPHALT BLOWING UNIT-LEVEL EMISSIONS SUMMARY table on the Subpart Y Overview page.

Click the link titled "ADD an Asphalt Blowing Unit."

To edit an existing Asphalt Blowing Unit, click on the edit icon or the Name/ID link, which is the first column in the ASPHALT BLOWING UNIT-LEVEL EMISSIONS SUMMARY table.

To delete an existing Asphalt Blowing Unit, click on the delete icon, which is the last column in the ASPHALT BLOWING UNIT-LEVEL EMISSIONS SUMMARY table.



Subpart Y requires you to report the following data about your asphalt blowing operations:

- A unique name or identifier, plus optional description for this asphalt blowing unit. See also About Unique Unit Names.
- Specify the control device used to reduce methane (and other organic) emissions from the unit. Select from Vapor scrubber, Thermal oxidizer, Flare, Other (specify), or None.

When you are finished, click SAVE.

If you selected Thermal oxidizer, Flare, or Other, an additional question will appear requiring you to select a CO_2 AND CH_4 EMISSIONS CALCULATION METHOD. The system requires you to select the method used to calculate the CO_2 and CH_4 emissions for your asphalt blowing operations from the following list:

- Equations Y-14 and Y-15 (appears only if Other was selected)
- Equations Y-16a and Y-17
- Equations Y-16b and Y-17
- Equation Y-19 (Process Vent)

When you are finished, click SAVE.

Note: if you selected Vapor scrubber or None as the asphalt blowing operations control device, you must use Equations Y-14 and Y-15 or Y-19 (Process Vent).

The emissions entry screen presented will be dependent on the type of control device selected and, if necessary, the calculation method selected.

Adding or Updating Asphalt Blowing Emissions Information

Step 1: Asphalt Blowing Operations Emissions Summary and Result

If Equation Y-14 and Y-15 is required or chosen, then you will be prompted with the Equation Y-14/Y-15 Summary and Result page.

If Equation Y-16a is chosen then you will be prompted with the Equation Y-16a/Y-17 Summary and Result page.

If Equation Y-16b is chosen then you will be prompted with the Equation Y-16b/Y-17 Summary and Result page.

If Equation Y-19 (Process Vent) is chosen then you will be prompted with the Equation Y-19 (Process Vent) Summary and Result page.

Data entry instructions for each of these pages follow:

Step 1a: Equation Y-14/Y-15 Summary and Result

ME FACILITY REGISTR	ATION FACILITY MANAGEMENT	DATA REPORTING	Electronic Greenhouse Gas Reporting Tool Helo, Catlin Cartere My Profile
e-GGRT Help ng e-GGRT for Subpart Y orting	FacilityToDelete1835-A2 Subpart Y: Petroleum Subpart Overview +Asphalt Blowing	Refineries (2011) Operations » Still » Eq. Y-14 & Y-15	
	operations. Please enter the inform	NFORMATION at a required by Subpart Y for asphalt blowing mation shown for this asphalt blowing unit. For ta collected on this page, please use the e-GGRT	(Eq. Y-14) CO2 emissions (metric tor
		$D_{D_2} = (G_{AB} \times EF_{AB,CO_2})$ ver over an element in the equation above to reveal	a definition of that element.
	Annual CO2 emission from this asphalt blowing unit	(metric tons of C	02)
	Basis for the CO2 emission factor	elect	×
		D RESULT H ₄ =(O _{AB} × EF _{AB,CH4}) ver over an element in the equation above to reveal	a definition of that element.
	Annual CH4 emission from this asphalt blowing unit	(metric tons of C	
	Basis for the CH4 Semission factor	elect	×

The annual CO_2 and CH_4 emissions from asphalt blowing operations are required. To calculate this value download the appropriate spreadsheet by clicking the link titled "Use Y-14 spreadsheet to calculate" for CO_2 or "Use Y-15 spreadsheet to calculate" for CH_4 . Fill in the spreadsheet using the instructions in the spreadsheet. After completing each respective spreadsheet, copy the values of CO_2 and CH_4 calculated by the spreadsheet to this page in the box next to "Annual CO_2 emission from this asphalt blowing unit (metric tons)" or "Annual CH_4 emission from this asphalt blowing unit (metric tons)," as appropriate.

The Equation Y-14/Y-15 Summaries are presented on the page. You can hover over an element in the equation to reveal a definition of that element.

Both the CO_2 and CH_4 emission factors require a basis:

- Used default emission factor
- Weekly or more frequent measurements
- · Periodic (less frequent than weekly) measurements
- Average of multiple source tests
- One-time source test
- Other (specify)

Step 1b: Equation Y-16a / Y-17 Summary and Result

	tates nental Protection		e-GGRT 🜽
		DATA REPORTING	Electronic Greenhouse Gas Reporting Tool
			Helio, Caltin Cartere My Profile Lo
) e-GGRT Help sing e-GGRT for Subpart Y porting	GHG DATA AND ASSOCIATI Use this page to enter the GH information shown for this asp	wing Operations + Still1 + Eq. Y-16a & Y-17	t the (Fig. Y-16a) C/2 emissions (matrix for
	EQUATION Y-16a SUMMARY	AND RESULT $O_{AB} \times CEF_{AB} \times \frac{44}{12}$ Hover over an element in the equation above to	(Fig. Y-17) CH4 emissions (metric tons
	Annual CO2 emission from this asphalt blowing unit	(metric tor	
	Basis for the carbon emission factor	Select	×
	EQUATION Y-17 SUMMARY.	AND RESULT CH4=0.02 × (QAB × EFAB, CH4) Hover over an element in the equation above to	reveal a definition of that element.
	Annual CH4 emission rate from this asphalt blowing unit	(metric for Use Y-17 spreadsheet to calculate	ns of CH4)
	Basis for the CH4 emission factor	Select	V

The annual CO₂ and CH₄ emissions from asphalt blowing operations are required. To calculate this value download the appropriate spreadsheet

Note: if you selected Vapor scrubber or None as the asphalt blowing operations control device, you must use Equations Y-14 and Y-15 or Y-19 (Process Vent).

by clicking the link titled "Use Y-16a spreadsheet to calculate" for CO_2 or "Use Y-17 spreadsheet to calculate" for CH_4 . Fill in the spreadsheet using the instructions in the spreadsheet. After completing each respective spreadsheet, copy the values of CO_2 and CH_4 calculated by the spreadsheet to this page in the box next to "Annual CO_2 emission from this asphalt blowing unit (metric tons)" or "Annual CH_4 emission from this asphalt blowing unit (metric tons)," as appropriate.

The Equation Y-16a/Y-17 Summaries are presented on the page. You can hover over an element in the equation to reveal a definition of that element.

Both the CO_2 and CH_4 emission factors require a basis:

- Used default emission factor
- · Weekly or more frequent measurements
- · Periodic (less frequent than weekly) measurements
- Average of multiple source tests
- One-time source test
- Other (specify)

Step 1c: Equation Y-16b/Y-17 Summary and Result

Click image to expand

CEPA United St Environm Agency	ates ental Protection ATION FACILITY MANAGEMENT	DATA REPORTING	Electronic Greenhouse Gas
HOME PACIEIT REGISTR	KION PROIDTT MARADEMENT	DAIA REPORTING	Helo, Catin Cartere My Profile Logou
e-GGRT Help Using e-GGRT for Subpart Y reporting		wing Operations = Still1 = Eq. Y-16b & Y-17	
	information shown for this asp	EUNFORMATION G data required by Subpart Y. Please enter the hat blowing unit. For additional information about the lease use the e-GGRT Help Ink(s) provided.	(Eq. Y-16b) CO2 emissions (metric tons)
	EQUATION Y-166 SUMMARY	AND RESULT	
		$CO_2 = O_{AB} \times (EF_{AB}, CO_2 + D.98 \times [(CEF_{AB} \times \frac{4}{12})]$ Hover over an element in the equation above to reveal	
	Annual CO2 emission from this asphalt blowing unit	(Metric tons of C	
	Basis for the CO2 emission factor	Select	×
	Basis for the carbon emission factor	Select	
	EQUATION Y-17 SUMMARY		
		CH ₄ =0.02 × (Q _{AB} × EF _{AB} ,CH ₄) Hover over an element in the equation above to reveal	a definition of that element.
	Annual CH4 emission from this asphalt blowing unit	(Metric tons of Cl	Haj
	Basis for the CH4 emission factor	Select	M
	CANCEL SAVE		

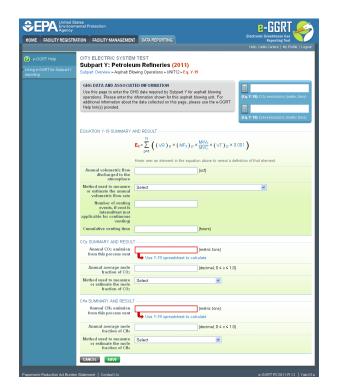
The annual CO_2 and CH_4 emissions from asphalt blowing operations are required. To calculate this value download the appropriate spreadsheet by clicking the link titled "Use Y-16b spreadsheet to calculate" for CO_2 or "Use Y-17 spreadsheet to calculate" for CH_4 . Fill in the spreadsheet using the instructions in the spreadsheet. After completing each respective spreadsheet, copy the value of CO_2 and CH_4 calculated by the spreadsheet to this page in the box next to "Annual CO_2 emission from this asphalt blowing unit (metric tons)" or "Annual CH_4 emission from this asphalt blowing unit (metric tons)," as appropriate.

The Equation Y-16b/Y-17 Summaries are presented on the page. You can hover over an element in the equation to reveal a definition of that element.

The CO₂, carbon, and CH₄ emission factors require a basis:

- Used default emission factor
- Weekly or more frequent measurements
- · Periodic (less frequent than weekly) measurements
- · Average of multiple source tests
- One-time source test
- Other (specify)

Step 1d: Equation Y-19 (Process Vent) Summary and Result



The annual CO_2 and CH_4 emissions from asphalt blowing operations are required. To calculate this value download the appropriate spreadsheet by clicking the link titled "Use Y-19 spreadsheet to calculate". Fill in the spreadsheet using the instructions in the spreadsheet. After completing the spreadsheet, copy the values of CO_2 and CH_4 calculated by the spreadsheet to this page in the box next to "Annual CO_2 emission from this process vent (metric tons)" or "Annual CH_4 emission from this process vent (metric tons)" as appropriate.

The Equation Y-19 (Process Vent) Summary is presented on the page. You can hover over an element in the equation to reveal a definition of that element.

Subpart Y collects the following data about your asphalt blowing unit process vent:

- Annual volumetric flow discharged to the atmosphere (scf)
 - Method used to measure or estimate the annual volumetric flow rate:
 - · Continuous or at least hourly measurements
 - · Routine (less frequent than hourly but at least weekly) measurements
 - · Periodic (less frequent than weekly) measurements
 - Process knowledge
 - Engineering calculation
 - Other (specify)
 - Number of venting events, if vent is intermittent (see note below)
- Cumulative venting time (hours)
- Annual average mole fraction of CO2
- Method used to measure or estimate the annual average mole fraction of CO2:
 - Engineering estimates/process knowledge
 - Direct measurement
 - Other (specify)
- Annual average mole fraction of CH4
 - Method used to measure or estimate the annual average mole fraction of CH4:
 - Engineering estimates/process knowledge
 - Direct measurement
 - Other (specify)

1. Note that number of venting events is not applicable for continuous venting in which case you may leave this field blank.

Step 2: Save Your Data

When you have finished entering Asphalt Blowing Operations Emissions Summary and Result, click SAVE.

After you save the data on this page, the next time you open the page, the calculators on the top of the page will display the CO_2 and CH_4 emissions, rounded to the nearest 0.1 and 0.01 of a metric ton, respectively. The values displayed are for informational purposes only.

See Also

Screen Errors Using e-GGRT to Prepare Your Subpart Y Report Subpart Y Summary Information for this Facility Subpart Y Delayed Coking Unit Information Subpart Y Asphalt Blowing Unit Information Subpart Y Coke Calcining Unit Information Subpart Y Coke Calcining Unit Information Subpart Y Fares Unit Information Subpart Y Flares Unit Information Subpart Y Process Vents Unit Information Subpart Y Sulfur Recovery Plant Information Subpart Y Emissions Information for Process Units Monitored by CEMS Subpart Validation Report

Subpart Y Coke Calcining Unit Information

This topic provides a step-by-step description of how to enter Subpart Y Coke Calcining unit information about this facility.

Environ Agency	States imental Protection				e-Gl	GRT 🚄
	RATION FACILITY MANAGE				lectronic Greenh	ouse Gas
PAGILITY REGISTI	RATION FACILITY MANAGER	MENT DATA REPORTING			Helo, Catin Carte	rting lool re My Profile Li
GRT Help	FacilityToDelete1835-	A2				
		leum Refineries (20	11)			
	Subpart Overview			-	has finalized a rule	
	OVERVIEW OF SUBPA	RT Y REPORTING REQUIREM	IENTS	dead	line for reporting o	ertain data elements
	Subpart Y requires affect	ed facilities to report Greenhou	ise gas (GHG) emission		t as inputs to emiss t emitters until Man	ion equations for ch 31, 2015. See 76
	with flexicoking design, a	cking units, traditional fluid cok delayed coking units, catalytic	reforming units, sulfur	100	3057 (published Au Indance with the ru	
	recovery units, coke calc tanks, uncontrolled blow	ining units, asphalt blowing, e down systems, loading operati	quipment leaks, storage	cum	ently collecting this	subset of inputs to
	non-merchant hydrogen	plants. For additional informatio	on about Subpart Y repo	orting, emis	sion equations.	
	please use the e-GGRT	Help link(s) provided.		A	Subpart Y: V	iew Velidetion
				<u>.</u>	Support II I	CH FORGUIGH
	FACILITY-LEVEL EMISSI	ONS SUMMARY				
		CO2 (metri	c tons)	CH4 (metric to	ns) Status ¹	
	Uncontrolled Blowdown		NA		.00 Complete	OPEN
	Systems Equipment Leaks		N/A	51	1.00 Complete	OPEN
	Equipment Leaks		N/A		1.00 Complete	OPEN
	Storage Tanks	Facility did not receive unst				OPEN
	, in the second s	unstabilized crude oil				
	Sour Gas Sent Off-Site	Facility does not send sour			Complete	OPEN
	Delayed Coking		N/A	54	1.00 Complete	OPEN
	DELAYED COKING UNIT					
	Unit Name/Identifie				Status ¹	De
	None entered					
	+ ADD a Delayed Coking	Unit				
		ITS EMISSIONS SUMMARY	(Inc.)	atria (ana) Pta	1	Da
	Unit Name/Identifie		tons) CH4 (m	etric tons) Sta 42.00 Con		
	Unit Name/Identifie	r CO2 (metri		etric tons) Sta 42.00 Con		
	Unit Name/Identifie	r CO2 (metri				
	Unit Name/Identifie	r CO2 (metrin Ig Unit E EMISSIONS SUMMARY	50.0	42.00 Con	nplete	OPEN
	Unit Name/Identifie Still1 ADD an Asphalt Blowin COKE CALCINING UNITS Unit Name/Identifie	r CO2 (metri ig Unit	50.0	42.00 Con	nplete	OPEN
	Unit Name/Identifie C3 Still ADD an Asphalt Blowin COKE CALCINING UNITS Unit Name/Identifie None entered	r CO2 (metri Ig Unit EMISSIONS SUMMARY r CO2 (metric tons)	50.0	42.00 Con	nplete	OPEN 1
	Unit Name/Identifie Still1 ADD an Asphalt Blowin COKE CALCINING UNITS Unit Name/Identifie	r CO2 (metri Ig Unit EMISSIONS SUMMARY r CO2 (metric tons)	50.0	42.00 Con	nplete	OPEN 1
	Unit Name/Identifie C2 Still ADD an Asphalt Blowin COKE CALCINING UNITS Unit Name/Identifie Mone entered ADD a Coke Calcining CATALYTIC CRACKING I	r CO2 (metri ig Unit : EMISSIONS SUMMARY r CO2 (metric tons) Unit	500 CHe (metric tone)	42.00 Con	nplete	OPEN
	Unit Name/Identifie C2 Still ADD an Asphalt Blowin COKE CALCINING UNITS Unit Name/Identifie Mone entered ADD a Coke Calcining CATALYTIC CRACKING I	r CO2 (metric ig Unit EMISSIONS SUMMARY r CO2 (metric tons) Unit INITS, TRADITIONAL FLUID INITS, TRADITIONAL FLUID	500 CHe (metric tone)	42.00 Con	nplete	OPEN 1
	Unit Name/Identifie (2) Still + ADD an Asphalt Blowf COKE CALCTINING UNITS Unit Name Adentifie None entered - ADD a Coke Calcining CATALYTIC CRACKING COKING UNITS FLIMING VIEW UNITS EMISSIONS SUMM UNIT Name/Identifie	r CO2 (metric ig Unit : EMISSIONS SUMMARY r CO2 (metric tons) Unit Unit Unit Unit Unit Unit Unit Unit Unit AND CO2 (metric tons)	500 CHe (metric tone)	42.00 Con N20 (metric 10 G	nplete	OPEN 1
	Unit Name/dentifie GA Shift ADD an Asphalt Blowin COKE CALCINING UNITS Unit Name/dentifie None entered ADD a Coke Calcining CATALYTIC CRACKING COKING UNITS EMISSIONS SUM UNIT REMISSIONS SUM UNIT REMISSIONS SUM	r CO2 (metric g Unit e EMISSIONS SUMMARY r CO2 (metric tons) Unit INITS, TRADITIONAL FLUID EXECOMING DESIGN, AND C MARY r CO2 (metric tons)	CHe (metric tons)	42.00 Con N20 (metric 10 G	nplete	OPEN 1
	Unit Name/Identifie (2) Still + ADD an Asphalt Blowf COKE CALCTINING UNITS Unit Name Adentifie None entered - ADD a Coke Calcining CATALYTIC CRACKING COKING UNITS FLIMING VIEW UNITS EMISSIONS SUMM UNIT Name/Identifie	r CO2 (metric g Unit e EMISSIONS SUMMARY r CO2 (metric tons) Unit INITS, TRADITIONAL FLUID EXECOMING DESIGN, AND C MARY r CO2 (metric tons)	CHe (metric tons)	42.00 Con N20 (metric 10 G	nplete	OPEN :
	Unit Name identific G2 Still ADD an Asphat Blowf CORE CALCINING UNITS Unit Name identific None enterid CATALYTIC CRACKING I CORTALYTIC CRACKING I CORTALYTIC CRACKING I UNITS EMISSIONS SUMI UNITS EMISSIONS SUMI UNITS MITS AND SUMI SUMI STATEMENTS OF SUMI STATEMENT SUMI SUMI SUMI SUMI SUMI SUMI SUMI SUMI	CD2 (matrix g Unit GUN GUN CD2 (matrix	CHe (metric tons)	42.00 Con N20 (metric 10 G	nplete	OPEN :
	Unit Kameni dentifie (2): Sini ADD an Asphat Ellowin CORE CALCIMUS UNITS Unit Kameni dentifie None attraed Unit Kameni dentifie None attraed CORING UNITS WITH SPIC CORING UNITS WITH SPIC UNITS EMISSION SUM UNITS EMISSION SUM UNITS EMISSION SUM CATALYTIC CARCHING ADD a Catalytic Carchi FLAGES UNITS EMISSION	CO2 (million Guide Guide Guide CO2 (million CO2 (500 CHe (metric tons) COKURG UNITS, FLUI ATALYTIC REFORMIN CHe (metric tons)	42.00 Con N20 (metric to G N20 (metric to	nplete (ns) Status ⁴ (ns) Status ⁴	OPEN :
	Unit Kameni dentifie (2): Sini ADD an Asphat Ellowin CORE CALCIMUS UNITS Unit Kameni dentifie None attraed Unit Kameni dentifie None attraed CORING UNITS WITH SPIC CORING UNITS WITH SPIC UNITS EMISSION SUM UNITS EMISSION SUM UNITS EMISSION SUM CATALYTIC CARCHING ADD a Catalytic Carchi FLAGES UNITS EMISSION	CD2 (matrix g Unit GUN GUN CD2 (matrix	500 CHe (metric tons) COKURG UNITS, FLUI ATALYTIC REFORMIN CHe (metric tons)	42.00 Con N20 (metric 10 G	nplete (ns) Status ⁴ (ns) Status ⁴	OPEN 4
	Unit Kamed Kentille ADD in Acapha Elberi ADD in Acapha Elberi CORE CALCINING UNITS Unit Kamed Kentille ADD a Colla Calcining CATA TYPE CORCING: UNITS CORTES UNITS ADD a Catalytic Core Rester None estered ADD a Catalytic Core FLARES UNITS EMISSION UNIT Kamed Kentille None estered ADD a Catalytic Core FLARES UNITS EMISSION UNIT Kamed Kentille	CO2 (million Guide Guide Guide CO2 (million CO2 (500 CHe (metric tons) COKURG UNITS, FLUI ATALYTIC REFORMIN CHe (metric tons)	42.00 Con N20 (metric to G N20 (metric to	nplete (ns) Status ⁴ (ns) Status ⁴	OPEN 4
	Unit Same-Mennite ADD in Apphat Blowf CORE CALCHING UNITS UNIT Same-Mennite Mone entered ADD in Cole Calching CATASYNC CARCING Calching CATASYNC CARCING Calching CATASYNC CARCING Calching Mone Mennet ADD in Cole Calching Catasync Calching Mone Mennet ADD in Calching Catasync Calching Mone Mennet ADD in Calching Monet Monet ADD in Calching Monet	r CO: (water g Unit # Ellissions SulimAry r CO: (water tens) Unit PHENE Common Select, And C Unit PHENE Common Select, And C I CO: (water tens) ing or Colong Unit ing or Colong Unit r CO: (water tens)	500 CHe (metric tons) COKURG UNITS, FLUI ATALYTIC REFORMIN CHe (metric tons)	42.00 Con N20 (metric to G N20 (metric to	nplete (ns) Status ⁴ (ns) Status ⁴	OPEN :
	Unit fame/adentife ADD in Acphal Blowin ADD in Acphal Blowin CORE CALCINING UNITS Unit Fame/adentife ADD a Cole Color Context Units Color Context Units Context None entered ADD a Calcing Context None entered None en	r CO2 (metho rg Unit EEBISSIONS SUBMARY r CO2 (metho: tona)) Unit Instructional, EUDID Unit r Unit r Instructional, EUDID EDID EDID EDID EUDIS Instructional Instreal Instructio	50.0 CHe (metric tons) CORTING UNITS, FLUD CORTING UNITS, FLUD CHE (metric tons) CHe (metric tons)	42.00 Con N2D (metric to D N2D (metric to N2D (metric to	(np) Status* (no) Status* (no) Status* (no) Status*	OPEN 1
	Unit Same-Meanline (2) Sout ADD an Acphant Bloom CORE CALCHING UNITS Unit Name/Heanline ADD a Cole Calcing CATALYTIC CRACING ADD a Cole Calcing Catalytic Crack PADD a Cole Calcing PADD	r CO: (water g Unit # Ellissions SulimAry r CO: (water tens) Unit PHENE Common Select, And C MANY r CO: (water tens) ing or Colong Unit ins SulimAry r CO: (water tens)	50.0 CHe (metric tons) CORTING UNITS, FLUD CORTING UNITS, FLUD CHE (metric tons) CHe (metric tons)	42.00 Con N2D (metric to D N2D (metric to N2D (metric to	nplete (np) Status* np) Status* np) Status*	OPEN 3
	Unit Isamel dentitie ADD in Action Isamel and Isamel ADD in Action Isamel Isamel CORE CALCINING UNITS Unit Isamel Centrific None entered ADD a Cols Cols Calcing CATALYTIC CRACING Isamel Unit Isamel Centrific None entered ADD a Catalytic Crack FLARES UNITS EMISSIO Unit Isamel Centrific None entered ADD a Faire PROCESS VEITS UNITS Unit Isamel Centrific None entered ADD a Faire PROCESS VEITS UNITS Unit Isamel Centrific None entered	r CO2 (metho rg Unit EEBISSIONS SUBMARY r CO2 (metho: tona)) Unit Instructional, EUDID Unit r Unit r Instructional, EUDID EDID EDID EDID EUDIS Instructional Instreal Instructio	50.0 CHe (metric tons) CORTING UNITS, FLUD CORTING UNITS, FLUD CHE (metric tons) CHe (metric tons)	42.00 Con N2D (metric to D N2D (metric to N2D (metric to	nplete (np) Status* np) Status* np) Status*	OPEN 3
	Unit Same-Meanline (2) Sout ADD an Acphant Bloom CORE CALCHING UNITS Unit Name/Heanline ADD a Cole Calcing CATALYTIC CRACING ADD a Cole Calcing Catalytic Crack PADD a Cole Calcing PADD	r CO2 (metho rg Unit EEBISSIONS SUBMARY r CO2 (metho: tona)) Unit Instructional, EUDID Unit r Unit r Instructional, EUDID EDID EDID EDID EUDIS Instructional Instreal Instructio	50.0 CHe (metric tons) CORTING UNITS, FLUD CORTING UNITS, FLUD CHE (metric tons) CHe (metric tons)	42.00 Con N2D (metric to D N2D (metric to N2D (metric to	nplete (np) Status* np) Status* np) Status*	OPEN 1
	Unit fame/dentife → ADD in Academic Academic → ADD in Academic Academic None extend → ADD in Cole Colored → ADD a Cole Colored → ADD a Cole Colored → ADD a Cole Colored None extend → ADD a Catalytic Crack/the None extend → ADD a Catalytic Crack None extend → ADD a Catalytic Crack None extend → ADD a Catalytic Crack None extend → ADD a Fision PROCESS VEHTS UNITS Unit Fame/dentife None extend → ADD a Fision PROCESS VEHTS UNITS Unit Fame/dentife None extend → ADD a Fision PROCESS VEHTS UNITS Unit Fame/dentife None extend → ADD a Fision → AD	r CO2 (metho rg Unit EEBISSIONS SUBMARY r CO2 (metho: tona)) Unit Instructional, EUDID Unit r Unit r Instructional, EUDID EDID EDID EDID EUDIS Instructional Instreal Instructio	50.0 CHe (metric tons) CORTING UNITS, FLUD CORTING UNITS, FLUD CHE (metric tons) CHe (metric tons)	42.00 Con N2D (metric to D N2D (metric to N2D (metric to	nplete (np) Status* np) Status* np) Status*	Del OPEN 3 Del Del Del
	Unit Same Lensitie ADD in Applicat Bloof ADD in Applicat Bloof CORE CALCIUMG UNITS Unit Name Advanced ADD in Cole Coloring CATAVITIC CRACING Coloring CATAVITIC CRACING Coloring CATAVITIC CRACING Coloring CATAVITIC CRACING Coloring ADD a Cole Coloring Coloring ADD a Cole Coloring Colorin	CO: (web)	50.0 CHe (metric tons) CORTING UNITS, FLUD CORTING UNITS, FLUD CHE (metric tons) CHe (metric tons)	42.00 Con N2D (metric to D N2D (metric to N2D (metric to	(1) Status* (1) Status* (1) Status* (1) Status* (1) Status*	OPEN 1
	Unit Iament-dentite (C) Sout ADD an Asphala Ellowin CORE CALCHING UNITS Unit Hamet Control ADD an Coale Calching CATALYTIC CRACKING Sout UNITS EMISSION UNITS EMISSION CATALYTIC CRACKING Sout UNITS EMISSION CATALYTIC CRACKING SOUT CATALYTIC	r CO: (web) g Lhit + EMISSIONS SUMMARY r CO: (web) Early HTTS: TRANTIONAL FLUTD HTTS: TRANTIONAL FLUTD r CO: (web) ESIAL AND CO HTTS: TRANTING r CO: (web) ESIAL FS: SUMMARY r CO: (web) Early r	50.0 CHe (metric tons) CORTING UNITS, FLUD CORTING UNITS, FLUD CHE (metric tons) CHe (metric tons)	42.00 Con N20 (metric to D N20 (metric to N20 (metric to	(1) Status* (1) Status* (1) Status* (1) Status* (1) Status*	OPEN 1
	Unit Same Lensitie ADD in Applicat Bloof ADD in Applicat Bloof CORE CALCIUMG UNITS Unit Name Advanced ADD in Cole Coloring CATAVITIC CRACING Coloring CATAVITIC CRACING Coloring CATAVITIC CRACING Coloring CATAVITIC CRACING Coloring ADD a Cole Coloring Coloring ADD a Cole Coloring Colorin	r CO: (web) g Lhit + EMISSIONS SUMMARY r CO: (web) Early HTTS: TRANTIONAL FLUTD HTTS: TRANTIONAL FLUTD r CO: (web) ESIAL AND CO HTTS: TRANTING r CO: (web) ESIAL FS: SUMMARY r CO: (web) Early r	50.0 CHe (metric tons) CORTING UNITS, FLUD CORTING UNITS, FLUD CHE (metric tons) CHe (metric tons)	42.00 Con N20 (metric to D N20 (metric to N20 (metric to	(1) Status* (1) Status* (1) Status* (1) Status* (1) Status*	OPEN 3
	Unit Iament-dentite (C) Sout ADD an Asphala Ellowin CORE CALCHING UNITS Unit Hamet Control ADD an Coale Calching CATALYTIC CRACKING Sout UNITS EMISSION UNITS EMISSION CATALYTIC CRACKING Sout UNITS EMISSION CATALYTIC CRACKING SOUT CATALYTIC	r CO: (web) g Lhit + EMISSIONS SUMMARY r CO: (web) Early HTTS: TRANTIONAL FLUTD HTTS: TRANTIONAL FLUTD r CO: (web) ESIAL AND CO HTTS: TRANTING r CO: (web) ESIAL FS: SUMMARY r CO: (web) Early r	50.0 CHe (metric tons) CORTING UNITS, FLUD CORTING UNITS, FLUD CHE (metric tons) CHe (metric tons)	42.00 Con N20 (metric to D N20 (metric to N20 (metric to	(1) Status* (1) Status* (1) Status* (1) Status* (1) Status*	OPEN 1
	Unit SameAffentific Carl State ADD in Arghant Bloom Cone CALCHING UNITS Unit SameAffentific ADD in Cone Carl ADD in Cone Carl Man ented ADD in Cone Carl Carl Man ented ADD in Carl Carl ADD in Carl ADD in Car	CO: (water CO: (water (water CO: (water (wate	S00 Cl4 (notice tasts)	42.00 Con NoD (metric to S NoD (metric to NoD (metric to CO2 (metric to	mplete (mp) Status*	OPPN 2
	Unit tament dentitie (C) South ADD an Asphala Ellowin CORE CALCHING UNITS Unit farmal dentitie None entered CATADE Color Color CATADE Color Color UNITS EMISSIONS SUM UNITS EMISSIONS UNITS EMISSIONS UNI	CO2 (matrix g) Unit EBIISSIONS SUBMARY CO2 (matrix tons) Unit TO Color (matrix tons) more color (matrix ton	500 CH4 (metric tests)	42.00 Con N20 (metric to G N20 (metric to N20 (metric to N20 (metric to CO2 (me	mplete (mplete (mp) Status* (mp) Status*	Corpeteness

Adding or Updating Coke Calcining Unit Information

To add or update Subpart Y Coke Calcining Unit Information for this Facility, locate the COKE CALCINING UNIT-LEVEL EMISSIONS SUMMARY table on the Subpart Y Overview page.

Click the link titled "ADD a Coke Calcining Unit."

To edit an existing Coke Calcining Unit, click on the edit icon or the Name/ID link, which is the first column in the COKE CALCINING UNIT-LEVEL

EMISSIONS SUMMARY table.

To delete an existing Coke Calcining Unit, click on the delete icon, which is the last column in the COKE CALCINING UNIT-LEVEL EMISSIONS SUMMARY table.

	tates mental Protection			e-GGRT 🔎
HOME FACILITY REGIST	RATION FACILITY MANAGEMEN	T DATA REPORTING		Electronic Greenhouse Gas Reporting Tool Hello, Callin Cartere My Profile Lo
e-GGRT Help Using e-GGRT for Subpart Y reporting	Subpart Overview » Add a Cole COKE CALCINING UNIT INF Subpart Y requires a facility t the information described bel		alcining unit and provide mation about adding and	• denotes a required field
	UNIT INFORMATION			
	Name or ID*	CCU1	(40 characte	rs maximum)
	Description (optional)			
	Туре	Coke Calcining Unit		
	CONTINUOUS EMISSIONS M	ONITORING		
	Is this unit's emissions*	O Yes		
	monitored using a CEMS?	 No 		

Subpart Y requires you to report the following data about your coke calcining unit:

- A unique name or identifier, plus optional description for this coke calcining unit. See also About Unique Unit Names
- For each unit, answer the following question: "Do you operate and maintain a Continuous Emissions Monitoring System (CEMS) that measures CO₂ emissions according to subpart C? This means you have both a flow meter and a concentration monitor installed. If so, you must use the CEMS methodology. Click either Yes or No.

When you are finished, click NEXT.

If you selected Yes for using a CEMS, Subpart Y collects the maximum rated throughput of the coke calcining unit (metric tons coke calcined per stream day)

	tates nental Protection			
HOME FACILITY REGISTR	ATION FACILITY MANAGEMENT	DATA REPORTING		Reporting Tool Hello, Catlin Cartere My Profile Li
e-GGRT Help Jsing e-GGRT for Subpart Y	FacilityToDelete1835-A2 Subpart Y: Petroleu Subpart Overview + CCU1 + Edi			
	Use this page to enter the me emissions of the coke calcini throughput of the coke calcin	ISSIONS CALCULATION MET ethod used to calculate CH4 an ing unit, respectively. Also ente ing unit. For additional informat e use the e-GGRT Help link(s)	d nitrous oxide (N2O) r the maximum rated on about the data	* denotes a required field
	UNIT INFORMATION			
	Name or ID* Description (optional)	CCUI	(40 charact	ers maximum)
	Туре	Coke Calcining Unit		
	RATED OUTPUT			
	Maximum rated throughput of the coke calcining unit		(metric tons coke ca	licined per stream day)
	EMISSIONS CALCULATION M	ETHOD		
	Method used to calculate* the CH4 emissions	 Equation Y-9 Unit-specific measurement A unit-specific emission fa 		st of the unit
	Method used to calculate* the N2O emissions	 Equation Y-10 Unit-specific measurement A unit-specific emission fa 		st of the unit
	CONTINUOUS EMISSIONS MI	ONITORING		
	ls this unit's emissions* monitored using a CEMS?	⊙ Yes ⊙ No		
	+BACK CANCEL SAV	Æ		

If you select No for using a CEMS, Subpart Y collects the following data about your coke calcining unit:

- Maximum rated throughput of the coke calcining unit (metric tons coke calcined per stream day)
- Method used to calculate the CH_{4} emissions:
 - Equation Y-9
 - Unit-specific measurement data
 - A unit-specific emission factor based on a source test of the unit
- Method used to calculate the N₂O emissions:
 - Equation Y-10
 - Unit-specific measurement data
 - A unit-specific emission factor based on a source test of the unit

When you are finished, click SAVE.

Adding or Updating Coke Calcining Emissions Information

The following provides a step-by-step description of how to enter Subpart Y Coke Calcining emissions information.

Subject Torvirolev OVERVIEW OF SUBJECT OVERVIEW OF SUBJECT Commission of Subject torvirol and the subject of Subject torvirol and subject of Subject and rendering Subject and rendering Subject Subject of Subject Subject of Subject Subject of Subject Belander Oversite Belander Oversite Subject Oversite Belander Oversite Subject Oversite	2 eum Refineries (2 et y REPORTING REOUIRE d facilites to report Greenh ing units, staditional fluid co alayed acking units, catalyit arbs. For additati blowing, arbs. For additional informat elp link(s) provided.	MENTS uuse gas (GHG) em king units, fluid col reforming units, s tions, process vert ion about Subpart N/A N/A N/A N/A N/A N/A	vissions uffur uffur torage s, and r' reporting,	Centrate Greenbe Report of the section of the secti	t My Profile Lo at defers the tain data elements nequations for 31, 2015. See 76 ust 25, 2011). In e-GGRT is not baset of inputs to
Subpart V: Petrol Subpart Overlaw OVERVEK OF SUBPAR Subpart Prevention Subpart Prevention Subpart Prevention Subpart Prevention Research Subparts Subparts Research Subparts FACILITYLEVEL EINISSIC Uncontrolled Blowdown Synthes Experiment Landing Operations Storage Tasks Delayed Coking DeLAYED COKING UNITS	eum Refineries (2 tr V REPORTING REQUIER de dacilites to report Oceanie (de dacine) (de daci	MENTS use gas (GHG) are king units, fluid color reforming units, se squipment leaks, en ion about Subpart N/A N/A N/A N/A N/A tabilized crude ol/ argas off-site	vissions uffur uffur torage s, and r' reporting,	IPA has inalized a rule the feedles for reporting cert incid entern will like on 183007 (unliked dug) coordance with the rule 183007 (unliked dug) coordance with the rule measure equations Subpart Y: Vier 19300 Status ¹ 19400 Complete 19400 Complete 19400 Complete Ir than Complete	at defers the sin data elements requirings for 11, 2015. See 76 sec3000000000000000000000000000000000000
Subpart V: Petrol Subpart Overlaw OVERVEK OF SUBPAR Subpart Prevention Subpart Prevention Subpart Prevention Subpart Prevention Research Subparts Subparts Research Subparts FACILITYLEVEL EINISSIC Uncontrolled Blowdown Synthes Experiment Landing Operations Storage Tasks Delayed Coking DeLAYED COKING UNITS	eum Refineries (2 tr V REPORTING REQUIER de dacilites to report Oceanie (de dacine) (de daci	MENTS use gas (GHG) are king units, fluid color reforming units, se squipment leaks, en ion about Subpart N/A N/A N/A N/A N/A tabilized crude ol/ argas off-site	vissions uffur uffur torage s, and r' reporting,	leadine for reporting card sed as inputs the emission thread emission emission R 50507 (unbinded Augu coordance with the relay Subpart Y: View Subpart Y: View Statuss ¹ S400 Complete S4.00 Complete r than Complete	isin data elements neguations for 31, 2015. See 78 ust 25, 2011). In e-GGRT is not e-GGRT is not ubset of inputs to w Validation OPEN OPEN OPEN
Subject Torvirolev OVERVIEW OF SUBJECT OVERVIEW OF SUBJECT Commission of Subject torvirol and the subject of Subject torvirol and subject of Subject and rendering Subject and rendering Subject Subject of Subject Subject of Subject Subject of Subject Belander Oversite Belander Oversite Subject of Subject Belander Oversite Subject of Subject Subject of Subject	TY REPORTING REDUIES for dealines to report Greenhe regruins, traditional hito, catalyti piged colong units, catalyti piged colong units, catalyti own systems, loading open weight states, for additional informat elip link(s) provided NIS SUMMARY CO2: (met Facility did not receive unit Facility did not receive unit unstabilized code of	MENTS use gas (GHG) are king units, fluid color reforming units, se squipment leaks, en ion about Subpart N/A N/A N/A N/A N/A tabilized crude ol/ argas off-site	vissions uffur uffur torage s, and r' reporting,	leadine for reporting card sed as inputs the emission thread emission emission R 50507 (unbinded Augu coordance with the relay Subpart Y: View Subpart Y: View Statuss ¹ S400 Complete S4.00 Complete r than Complete	isin data elements neguations for 31, 2015. See 76 ust 25, 2011). In e-GGRT is not e-GGRT is not ubset of inputs to w Validation OPEN OPEN OPEN
Subjant Y regioner stifter form flanse, calabytic crack with Resconting designs, code acid tanks, uncentrolled Blowd please use the a GORT FL FACILITY-LEVEL EMISSIO Uncontrolled Blowdown Systems Euclang Operations Storage Tanks Bund Gosterions Band Goste	d daclites to report Greenby ing units, traditional fluid co layed coking units, catalyti norm systems, loading opera- dates. For addicational informat elep link(s) provided.	use gas (GHG) en king units, fuid col reforming units, s quipment leaks, s ion about Subpart N/A N/A N/A N/A N/A N/A N/A N/A N/A N/A	vissions sing units ufur torage s, and Y reporting, CH4 (metric	esed as inputs to emission free cambra will March 17 5037 (jubliehd Augu coordance with the rule, jurnetty coalcing this su mission equations. Subpart Y: View Status Status Subpart Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Status Stat	n equations for 31, 2015. See 76 ust 25, 2011): In e-GGRT is not baset of inputs to W Validation OPEN OPEN OPEN
from flame, citalytic cost with flamicology rules, cole activity eccentry units, cole activity decide and activity of the series of the second please use the e-GORT in FACULTY-LEVEL EMISSIO Uncontrolled Bowdown Systems Expansion Lasks Lasking Operations Storage Tanks Delay Cassillar of OSBite Delayed Coking DELAYED COKING UNITS	king units, traditional fluid co hing units, catalytic hing units, catalytic hing units, catalytic lands, catalytic acts. For additional informat acts. For additional informat elpi link(s) pronded. NRS SUMMARY CO2 (met Facility did not receive unit unitabilized crude oil	king units, fluid co., reforming units, fluid co., squijomant leaks, sen tions, processes, sen tions, processes, sen tions, process, sen tions, process, sen N/A N/A N/A N/A N/A N/A N/A N/A N/A N/A	idesions of ing units uffur torage s, and Y reporting, CH4 (metric	Status	31, 2015. See 76 ust 25, 2011). In e-GGRT is not ubset of inputs to w Validation OPEN OPEN OPEN
with flexicoling design, diversity of the constraints of the constraint of the constraints of the constraint	Ialyed coking units, catalyit ming units, asphalt blowing, wom systems, loading opera direst. For addictual informat leip link(s) provided. NIS SUMMARY CO2 (met Facility did not receive uni unstabilized crude oil	reforming units, s quijoment leaks, s tions, process vent ion about Subpart N/A N/A N/A N/A N/A N/A v/A v/A v/A v/A v/A v/a v/a	ulfur e s, and Y reporting, CH4 (metric	coordance with the rule, unrenty coefficient as submarked equations. Subpart Y: View Status ¹ 54.00 Complete 54.00 Complete 54.00 Complete rthan Complete	e-GGRT is not ubset of inputs to w Validation OPEN OPEN OPEN
Incompruite, cole calci tante, uncentrolled Blood non-mechanitry Adoption FACUTY-LEVEL EMISSIC Uncentrolled Bloodown Systemic Euclary Devations Storage Tanks Sour Gas Sart Off-Ste Delayed Coking DELAYED COKING UNITS	ring units, sephalt bloving, units units, sephalt bloving, units of the second	equipment leaks, s inic tons) N/A N/A N/A N/A N/A stabilized crude oil/ ir gas off-site	s, and Y reporting, CH4 (metric	surrently collecting this so ministerio equations. Subpart Y: View 54.00 Complete 54.00 Complete 54.00 Complete rr than Complete	Validation Validation OPEN OPEN OPEN
non-mechant hydrogen p please use the e-GRT H FACILITY-LEVEL EMISSIC Uncontrolled Blowdown Systems Equipment Leaks Loading Operations Storage Tanks Storage Tanks Storage Tanks Delayed Coking DELAYED COKING UNITS	Intel: For additional informat leip link(s) provided NNS SUMMARY CO2 (met Facility did not receive uni unstabilized crude oil	ion about Subpart ic tone) IVA IVA IVA IVA Stabilized crude oil/ ir gas off-site	Y reporting,	Subpart Y: View 54.00 Complete 54.00 Complete 54.00 Complete 54.00 Complete r than Complete	OPEN OPEN OPEN
FACILITY LEVEL EMISSIO Uncontrolled Blowdown Systems Equipment Leaks Leading Operations Storage Tanks Sour Gas Sent Off-Site Delayed Coking DELAYED COKING UNITS	NS SUMMARY CO2 (met Facility did not receive uns unstabilized crude oil	N/A N/A N/A stabilized crude oil/ ir gas off-site	CH4 (metric	54.00 Complete 54.00 Complete 54.00 Complete 54.00 Complete rr than Complete	OPEN OPEN OPEN
Uncontrolled Blowdown Systems Equipment Leaks Leading Operations Storage Tanks Sour Gas Sent Off-Site Delayed Coking DELAYED COKING UNITS	CO2 (met	N/A N/A N/A stabilized crude oil/ ir gas off-site		54.00 Complete 54.00 Complete 54.00 Complete r than Complete	OPEN OPEN
Uncontrolled Blowdown Systems Equipment Leaks Leading Operations Storage Tanks Sour Gas Sent Off-Site Delayed Coking DELAYED COKING UNITS	CO2 (met	N/A N/A N/A stabilized crude oil/ ir gas off-site		54.00 Complete 54.00 Complete 54.00 Complete r than Complete	OPEN OPEN
Systems Equipment Leaks Loading Operations Storage Tanks Sour Gas Sent Off-Site Delayed Coking DELAYED COKING UNITS	Facility did not receive uns	N/A N/A N/A stabilized crude oil/ ir gas off-site		54.00 Complete 54.00 Complete 54.00 Complete r than Complete	OPEN OPEN
Equipment Leaks Loading Operations Storage Tanks Sour Gas Sent Off-Site Delayed Coking DELAYED COKING UNITS	unstabilized crude oil	N/A stabilized crude oil/ ir gas off-site	stored liquids othe	54.00 Complete	OPEN
Loading Operations Storage Tanks Sour Gas Sent Off-Site Delayed Coking DELAYED COKING UNITS	unstabilized crude oil	N/A stabilized crude oil/ ir gas off-site	stored liquids othe	54.00 Complete	OPEN
Storage Tanks Sour Gas Sent Off-Site Delayed Coking DELAYED COKING UNITS	unstabilized crude oil	stabilized crude oil/ Ir gas off-site	stored liquids othe	r than Complete	
Sour Gas Sent Off-Site Delayed Coking DELAYED COKING UNITS	unstabilized crude oil	ır gas off-site			
Delayed Coking DELAYED COKING UNITS	Tacing uses not serie sor				OPEN
DEERTED COMING OMITS				54.00 Complete	OPEN
DEERTED COMING OMITS					-
				Status ¹	Del
None entered				ototas	
+ ADD a Delayed Coking	Unit				
ASPHALT BLOWING UNIT	IS EMISSIONS SUMMARY				
	CO ₂ (met				Del
	. 15.2	50.0	42.00 (Jomplete	DPEN \$
					Del
Unit Name/Identifier	CO2 (metric tons) CH4	(metric tons) No			Del DPEN 3
+ADD a Coke Calcining U	Init				
COKING UNITS WITH FLE	XICOKING DESIGN, AND	COKING UNITS, ATALYTIC REFO	FLUID RMING		
		CH4 (metric ton	s) N2O (metric	tons) Status ¹	Del
None entered					
ADD a Catalytic Crackir	ig or Coking Unit				
	CO2 (metric tons)	CHs (metric ton	s) N2O (metric	tons) Status ⁴	Del
+ ADD a Flare					
PROCESS VENTS UNITS	EMISSIONS SUMMARY				
Unit Name/Identifier	CO2 (metric tons)	CH4 (metric ton	s) N2O (metric	tons) Status ¹	Del
None entered					
ADD a Process Vent					
			CO2 (metric	tons) Status ¹	Del
	Plant				
	and that one or more remained	data elemento i	ncomplete For data	allo, refer to the Date O	omplotopac
validation messages in your	Validation Report by clicking th	e "View Validation"	ink above (Note: if t	here are no validation	messages for I
	ADD a Delayed Coking ASPIALT BLOWING UNIT Mont RameAdentifier Galant Mont RameAdentifier Galant Cite Call China Units Call Call China Call China Call Call China Call China Chin China Cal	None streted	Name antered ACD a Debyse Coding Unit SPHALT BLOWING UNITS EMISSIONS SUMMARY Unit Manual Arantiler CO2 (undits trust) CR Dial 600 ACD a Aughtal Blowing Units CO2 CADE and Aughtal Blowing Units CO2 CO2 CADE and Aughtal Blowing Units CO2 (units transition of the Manual Arantiler CO2 CADE and Aughtal Blowing Units Content Units Telessions SUMMARY Unit Manual Arantiler CO2 (units transition of the Ministry Content Units Telessions Content Units ADD a Cade Calciang Units CATALYTIC CRACKING UNITS TELESUMITS CO2 (undits transition CATALYTIC CRACKING UNITS TELESUMITS CO2 (undits CO2 (undits CO2 (undits COMING None attend • ADD a Flavic CO2 (undits CO2 (undits Maint Manueldentifier CO2 (undits CO3 (un	None antend ◆ A00 a Calegyed Colong Unit Stephat El Convince Lineral (Colong Unit) Stephat El Convince Unit) Stephat El Convince Unit) Stephat El Convince Unit ADD a Colon Calegoritation ADD a Colonget Convince Unit None entend ADD a Colon Colong Unit Bunk Namondeentifier Colonget Interfer Colong None entend ADD a Colonget Colong Unit Stephat Encourde Line Colong Intetic tono)	Name attend ADD a Delayse Coxing Unit SPIALT BL OWNER UNITS EMISSIONS SUMMARY Unit Manual Kentifier CD2 (metric tent) CH2 (metric tent) Status* UPIN Manual Kentifier CD2 (metric tent) CH2 (metric tent) Status* CH2 UPIN Manual Kentifier CD2 (metric tent) CH2 (metric tent) Status* CH2 UPIN Manual Kentifier CD2 (metric tent) CH2 (metric tent) CH2 Ceremptete CH2 UPIN Manual Kentifier CD2 (metric tent) CH2 (metric tent) RxD (metric tent) Status* CH2 UPIN Manual Kentifier CD2 (metric tent) CH2 (metric tent) RxD (metric tent) Status* CM2 ADD a Cake Calcining UM3 CALL (metric tent) RxD (metric tent) Status* CM2 CALL (metric tent) Status* CM3 CM3 Status* CM3 CM3

To add or update CO_2 emissions information for a coke calcining unit that is monitored by CEMS, please refer to the Subpart Y Emissions Information for Process Units Monitored by CEMS help page (CH_4 and N_2O emissions information for coke calcining units that are monitored by CEMS are reported separately per the instructions below).

To add or update CO_2 , CH_4 , and N_2O emissions information for a coke calcining unit that is NOT monitored by CEMS **OR** CH_4 and N_2O emissions information for a coke calcining unit that is monitored by CEMS, locate the COKE CALCINING UNIT-LEVEL EMISSION SUMMARY table on the Subpart Y Overview page, and click OPEN.

FACILITY REGISTRAT	ION FACILITY MANAGEMENT	DATA REPORTING		Electronic Greenhouse Gas Reporting Tool Helo, Catlin Cartere My Profile L
GGRT Help	FacilityToDelete1835-A2			
	Subpart Y: Petroleu	m Refineries (2011)		
	Subpart Overview » Coke Calcini			
	GHG DATA AND ASSOCIATE	D INFORMATION		
	Use this page to enter the GH Please enter the information sl information about the data coll link(s) provided.	hown for this coke calcining u	nit. For additional	(Eq. Y-13) CO2 emissions (metric ton
				CH+ emissions (metric tons)
	CO2 SUMMARY AND RESUL	т		
		$CO_2 = \frac{44}{12} \times (M_{in} \times CC_{GC})$	- (Mout + Moust) × CCMF	rc)
		Hover over an element in the	equation above to reveal a de	finition of that element.
	Annual CO2 emission from this coke calcining unit	Use Y-13 spreadsheet	(metric tons) to calculate	
	Method used to measure the annual carbon content of green coke fed to the unit	Select	V	
	Method used to measure the annual carbon content of marketable coke produced	Select	<u>×</u>	
	Description of coke dust recycling for the unit	Select	<u>•</u>	
	CH4 SUMMARY (MEASUREN	IENT DATA)		
	Annual CH₄ emission from this coke calcining unit		(metric tons)	
	N2O SUMMARY (MEASUREN	MENT DATA)		
	Annual N2O emission from this coke calcining unit		(metric tons)	

Step 1. CO₂ Emissions: Equation Y-13 Summary and Result (for Units NOT Monitored by CEMS)

Step 1 does not apply to units monitored by CEMS. If you are reporting for a unit monitored by CEMS, please skip to Step 2a.

The annual CO_2 emissions from coke calcining operations is required. To calculate this value download the spreadsheet by clicking the link titled "Use Y-13 spreadsheet to calculate." Fill in the spreadsheet using the instructions in the spreadsheet. After completing each respective spreadsheet, copy the value of CO_2 calculated by the spreadsheet to this page in the box next to "Annual CO_2 emission from this coke calcining unit (metric tons)."

The Equation Y-13 Summary is presented on the page. You can hover over an element in the equation to reveal a definition of that element.

Subpart Y requires the following additional data:

- Method used to measure the annual carbon content of green coke fed to the unit:
 - ASTM D3176-89-Reapproved 2002
 - ASTM D5291-02-Reapproved 2007
 - ASTM D5373-08
 - Other (specify)
- Method used to measure the annual carbon content of marketable coke produced:
 - ASTM D3176-89-Reapproved 2002
 - ASTM D5291-02-Reapproved 2007
 - ASTM D5373-08.
 - Other (specify)
- Description of coke dust recycling for the unit:
 - All dust is recycled
 - A portion of the dust is recycled
 - None of the dust is recycled

Step 2. CH₄ and N₂O Emissions

Depending on the method selected to calculate the CH_4 and N_2O emissions for coke calcining units, some combination of the screens presented below (Steps 2a, 2b and 2c) will collect CH_4 and N_2O emissions.

Step 2a: Equation Y-9/Y-10 Summary and Result

EPA Environme Agency				💄 । अधेर - 9
E FACILITY REGISTRA	TION FACILITY MANAGEMENT	DATA REPORTING		Electronic Greenhouse Gas Reporting Tool Hello, Catlin Cartere My Profile
-GGRT Help	FacilityToDelete1835-A2			
e-GGRT for Subpart Y	Subpart Y: Petroleu Subpart Overview + Coke Calcin			
ing	GHG DATA AND ASSOCIATE Use this page to enter the GH Please enter the information s	-	For additional	(Eq. Y-13) CO2 emissions (metric to (Eq. Y-13) CO2 emissions (metric to (Eq. Y-9) CH4 emissions (metric tor
	CO2 SUMMARY AND RESUL	π		(Eq. Y-10) NaO emissions (metric to
	Equation Y-13	$CO_2 = \frac{44}{12} \times (M_{in} \times CC_{OC} - ($		·
	Annual CO2 emission from this coke calcining unit	Use Y-13 spreadsheet to	(metric tons)	
	Method used to measure the annual carbon content of green coke fed to the unit	Select	×	
	Method used to measure the annual carbon content of marketable coke produced	Select		
	Description of coke dust recycling for the unit	Select	~	
	EQUATION Y-9 SUMMARY A	ND RESULT CH4= (CO2 × EmF2 EmF1) Hover over an element in the equ	ation above to reveal a	e definition of that element.
	Annual CH4 emission from this coke calcining unit	Use Y-9 spreadsheet to c	(metric tons)	
	EQUATION Y-10 SUMMARY	AND RESULT		
		$N_2O=\left(CO_2 \times \frac{EmF_3}{EmF_1}\right)$		deficition of the talences
	Annual N2O emission from this coke calcining	Hover over an element in the equilibrium of the equ	(metric tons)	definition of that element.
	CANCEL SAVE			

The annual CH_4 and N_2O emissions from coke calcining operations are required. To calculate these values download the appropriate spreadsheet by clicking the link titled "Use Y-9 spreadsheet to calculate" for CH_4 or "Use Y-10 spreadsheet to calculate" for N_2O . Fill in the spreadsheet using the instructions in the spreadsheet. After completing each respective spreadsheet, copy the value of CH_4 and N_2O calculated by the spreadsheet to this page in the box next to "Annual CH_4 emission from this coke calcining unit (metric tons)" or "Annual N_2O emission from this coke calcining unit (metric tons)," as appropriate.

The Equation Y-9/Y-10 Summaries are presented on the page. You can hover over an element in the equation to reveal a definition of that element.

Step 2b: Unit-specific Measurement Result

	ates ental Protection			e-GGRT 🞺
HOME FACILITY REGISTRA	TION FACILITY MANAGEMENT	DATA REPORTING		Electronic Greenhouse Gas Reporting Tool
				Hello, Caldin Cartere My Profile Logout
e-GGRT Help	FacilityToDelete1835-A2			
Using e-GGRT for Subpart Y	Subpart Y: Petroleur	m Refineries (2011)	
reporting	Subpart Overview + Coke Calcini	ng Units » CCU1		
	GHG DATA AND ASSOCIATE			
	Use this page to enter the GHI Please enter the information sl information about the data coll link(s) provided.	rown for this coke cal		(Eq. Y-13) CO2 emissions (metric tons)
				CH4 emissions (metric tons)
	CO2 SUMMARY AND RESUL	т		
	Equation Y-13	$CO_2 = \frac{44}{12} \times (Min \times $	CCGC - (Mout + Mdust) × CCr	APC)
		Hover over an elemen	t in the equation above to reveal a	definition of that element.
	Annual CO2 emission from this coke calcining unit	Use Y-13 sprea	(metric tons) Idsheet to calculate	
	Method used to measure the annual carbon	Select	×	
	content of green coke fed to the unit			
	Method used to measure the annual carbon	Select	×	
	content of marketable coke produced			
	Description of coke dust recycling for the unit	Select	•	
	CH4 SUMMARY (MEASUREN	IENT DATA)		
	Annual CH4 emission from this coke calcining unit		(metric tons)	
	N2O SUMMARY (MEASUREN	(ENT DATA)		
	Annual N2O emission from this coke calcining unit		(metric tons)	
	CANCEL			

The annual CH_4 and N_2O emissions from coke calcining operations are required. Enter the value of CH_4 and N_2O in this page in the box next to "Annual CH_4 emission from this coke calcining unit (metric tons)" or "Annual N_2O emission from this coke calcining unit (metric tons)," as appropriate.

Step 2c: Unit-specific Emission Factor Based on a Source Test Result

Agency			Electronic Greenhouse Gas
E FACILITY REGISTRA	ITION FACILITY MANAGEMENT	DATA REPORTING	Reporting Tool Helo, Catlin Cartere My Profile
-GGRT Help I e-GGRT for Subpart Y ing	Please enter the information s	ing Units » CCU1	(Fq. Y-13) CO2 emissions (metric
	link(s) provided.		CH4 emissions (metric tons)
	CO2 SUMMARY AND RESUL	т	
	Equation Y-13	$CO_2 = \frac{44}{12} \times (M_{in} \times CC_{GC} - (M_{out} + M_{dust}) \times C$ Hover over an element in the equation above to reveal	,
	Annual CO ₂ emission	(metric tons)	a demición of that element.
	from this coke calcining unit	Use Y-13 spreadsheet to calculate	
	Method used to measure the annual carbon content of green coke fed to the unit	Select	
	Method used to measure the annual carbon content of marketable coke produced	Select	
	Description of coke dust recycling for the unit	Select	
	CH4 SUMMARY (EMISSION F	FACTOR BASED ON A SOURCE TEST)	
	Annual CH4 emission from this coke calcining unit	(metric tons)	
	Basis for the CH4 emission factor	Select	M
	N20 SUMMARY (EMISSION I	FACTOR BASED ON A SOURCE TEST)	
	Annual N2O emission from this coke calcining unit	(metric tons)	
	Basis for the N20 emission factor	Select	•

The annual CH_4 and N_2O emissions from coke calcining operations are required. Enter the value of CH_4 and N_2O in this page in the box next to "Annual CH_4 emission from this coke calcining unit (metric tons)" or "Annual N_2O emission from this coke calcining unit (metric tons)," as appropriate.

Both CH_4 and N_2O emissions include the basis for the emission factor:

- · Weekly or more frequent measurements
- Periodic (less frequent than weekly) measurements
- Average of multiple source tests
- One-time source test
- Other (specify)

Step 3: Save Your Data

When you have finished entering emission results, click SAVE.

After you save the data on this page, the next time you open the page, the calculators on the top of the page will display the CO_2 , CH_4 and N_2O emissions, rounded to the nearest 0.1, 0.01, and 0.001 of a metric ton, respectively. The value displayed is for informational purposes only.

Back to Top

See Also

Screen Errors Using e-GGRT to Prepare Your Subpart Y Report Subpart Y Summary Information for this Facility Subpart Y Delayed Coking Unit Information Subpart Y Asphalt Blowing Unit Information Subpart Y Coke Calcining Unit Information Subpart Y Catalytic Cracking, Fluid Coking, and Catalytic Reforming Unit Information Subpart Y Flares Unit Information Subpart Y Process Vents Unit Information

Subpart Y Catalytic Cracking, Fluid Coking, and Catalytic Reforming Unit Information

This page provides a step-by-step description of how to enter Subpart Y Catalytic Cracking, Fluid Coking, or Catalytic Reforming unit information about this facility.

Adding or Updating Catalytic Cracking, Fluid Coking, or Catalytic Reforming Unit Information

To add or update Subpart Y Catalytic Cracking, Fluid Coking, or Catalytic Reforming unit information for this Facility, locate the CATALYTIC CRACKING UNITS, TRADITIONAL FLUID COKING UNITS, FLUID COKING UNITS WITH FLEXICOKING DESIGN, AND CATALYTIC REFORMING UNITS EMISSIONS SUMMARY table on the Subpart Y Overview page.

Click the link titled "ADD a Catalytic Cracking or Coking Unit."

To edit an existing Catalytic Cracking, Fluid Coking, or Catalytic Reforming Unit, click on the edit icon or the Name/ID link, which is the first column in the CATALYTIC CRACKING UNITS, TRADITIONAL FLUID COKING UNITS, FLUID COKING UNITS WITH FLEXICOKING DESIGN, AND CATALYTIC REFORMING UNITS EMISSIONS SUMMARY table.

To delete an existing Catalytic Cracking, Fluid Coking, or Catalytic Reforming Unit, click on the delete icon, which is the last column in the CATALYTIC CRACKING UNITS, TRADITIONAL FLUID COKING UNITS, FLUID COKING UNITS WITH FLEXICOKING DESIGN, AND CATALYTIC REFORMING UNITS EMISSIONS SUMMARY table.

Click image to expand

	ION FACILITY MANAGEM	ENT DATA REPORTING			tronic Greenhou Reporti	
FACILITY REGISTRAT	ION FACILITY MANAGEM	ENI DAIA REPORTING			Reporti slo, Catin Cartere	
GRT Help	FacilityToDelete1835-A	2				
· · · · ·	Subpart Y: Petrol		011)			
	Subpart Overview					
9	OVERVIEW OF SURRAR	T Y REPORTING REQUIRE	MENTC		s finalized a rule th s for reporting cert	
		d facilities to report Greenhi		used at	inputs to emission	n equations for
	from flares, catalytic crack	ing units, traditional fluid co	king units, fluid coki	na units	mitters until March 57 (published Aug	
	with flexicoking design, de	layed coking units, catalyti	c reforming units, sul	lfur	ance with the rule,	e-GGRT is not
	tanks, uncontrolled blowde	ning units, asphalt blowing, own systems, loading opera	equipment leaks, sto dions, process vents	and current	ly collecting this su n equations.	bset of inputs to
	non-merchant hydrogen pl	ants. For additional informat	tion about Subpart Y	reporting,	n equatoris.	
	please use the e-GGRT H	elp link(s) provided.		A .	Subpart Y: Vie	u Molidation
					support r. vier	* valuation
	FACILITY J EVEL EMISSIO	NC CUMMADY				
	PACIEITY-LEVEL EMISSIC	CO2 (met	in anna)	CH4 (metric tons	. e 1	
	Uncontrolled Blowdown	CO2 (met	N/A		Complete	OPEN
	Systems		10A	54.0	5 Complete	OPEN
	Equipment Leaks		N/A	54.0	Complete	OPEN
	Loading Operations		N/A	54.0	Complete	OPEN
	Storage Tanks	Facility did not receive un	stabilized crude oil/s	tored liquids other than	Complete	OPEN
		unstabilized crude oil				
	Sour Gas Sent Off-Site	Facility does not send so			Complete	OPEN
	Delayed Coking		N/A	64.0	3 Complete	OPEN
	DELAYED COKING UNITS					
	Unit Name/Identifier				Status ¹	Del
	None entered					
	+ ADD a Delayed Coking (Jnit				
	ASPHALT BLOWING UNIT	'S EMISSIONS SUMMARY				
	Unit Name/Identifier	CO2 (met	ric tons) CH	4 (metric tons) Status		
	🕼 Still		50.0	42.00 Compl		PEN 🗯
		Linit				OPEN 🔋
	ADD an Asphalt Blowing	Unit				DPEN 🔰
						DPEN 30
	ADD an Asphalt Blowing		50.0	42.00 Compl	ete 🧧	
	ADD an Asphalt Blowing	EMISSIONS SUMMARY	50.0	42.00 Compl	ete 🤇	Del
	ADD an Asphalt Blowing COKE CALCINING UNITS I Unit Name/Identifier	EMISSIONS SUMMARY CO2 (metric tons) CH 50.0	50.0 4 (metric tons) Nat	42.00 Compl	ete 🤇	Del
	ADD an Asphalt Blowing COKE CALCINING UNITS Unit Name/Identifier	EMISSIONS SUMMARY CO2 (metric tons) CH 50.0	50.0 4 (metric tons) Nat	42.00 Compl	ete 🤇	Del
	ADD an Asphalt Blowing COKE CALCINING UNITS I Unit Name/Identifier C2 CCU1 ADD a Coke Calcining U CATALYTIC CRACKING UI	EMISSIONS SUMMARY CO2 (metric tons) CH 50.0 nit	50.0 4 (metric tons) N20 54.00 0 COKING UNITS, F	42.00 Compl D (metric tons) Status 24.000 Compl	ete 🤇	Del
	ADD an Asphalt Blowing COKE CALCINING UNITS I Unit Name/Identifier Unit Name/Identifier C2 CCU1 ADD a Coke Calcining U	EMISSIONS SUMMARY CO2 (metric tons) CH 50.0 mt NITS, TRADITIONAL FLUII XICOKING DESIGN, AND (50.0 4 (metric tons) N20 54.00 0 COKING UNITS, F	42.00 Compl D (metric tons) Status 24.000 Compl	ete 🤇	Del
	ADD an Asphalt Blowing COKE CALCINING UNITS I Unit Name/identifier COLU ADD a Coke Calcining U CATALYTIC CRACKING UI COKING UNITS WITH FLE UNITS EMISSIONS SUMM	EMISSIONS SUMMARY CO2 (metric tons) CH 50.0 mt mt NTS, TRADITIONAL FLUII XICOKING DESIGN, AND O ARY	50.0 • (metric tons) N20 54.00 D COKING UNITS, F CATALYTIC REFOR	42.00 Compl D (metric tons) Status 24.000 Compl CUID MING	ete 🤇	Deli PPEN X
	ADD an Asphalt Blowing COKE CALCINING UNITS Unit Name/identifier Date Color Content of the Color of the C	EMISSIONS SUMMARY CO2 (metric tons) CH 50.0 mt NITS, TRADITIONAL FLUII XICOKING DESIGN, AND (50.0 • (metric tons) N20 54.00 D COKING UNITS, F CATALYTIC REFOR	42.00 Compl D (metric tons) Status 24.000 Compl CUID MING	ete 🤇	Deli PPEN X
	ADD an Asphall Blowing COKE CALCINING UNITS: Unit Name/dentifier Cocus ADD a Coke Calcining U CATALYTIC CRACKING VITH FLE UNITS EMISSIONS SUMM Unit Name/dentifier None entered	EMISSIONS SUMMARY CO2 (metric tons) CHI 500 mit HTS, TRADITIONAL FLUI XICOKING DESIGH, AND ARY CO2 (metric tons)	50.0 • (metric tons) N20 54.00 D COKING UNITS, F CATALYTIC REFOR	42.00 Compl D (metric tons) Status 24.000 Compl CUID MING	ete 🤇	Deli PPEN X
	ADD an Asphalt Blowing COKE CALCINING UNITS Unit Name/identifier Date Color Content of the Color of the C	EMISSIONS SUMMARY CO2 (metric tons) CHI 500 mit HTS, TRADITIONAL FLUI XICOKING DESIGH, AND ARY CO2 (metric tons)	50.0 • (metric tons) N20 54.00 D COKING UNITS, F CATALYTIC REFOR	42.00 Compl D (metric tons) Status 24.000 Compl CUID MING	ete 🤇	Deli PPEN X
	ADD an Asphall Blowing COKE CALCINING UNITS: Unit Name/dentifier Cocus ADD a Coke Calcining U CATALYTIC CRACKING VITH FLE UNITS EMISSIONS SUMM Unit Name/dentifier None entered	CO2 (metric tons) CH CO2 (metric tons) CH CO2 mit NITS, TRADITIONAL FLUII XICOXING DESIGN, AND IA ARY CO2 (metric tons) g or Coking Unit	50.0 • (metric tons) N20 54.00 D COKING UNITS, F CATALYTIC REFOR	42.00 Compl D (metric tons) Status 24.000 Compl CUID MING	ete 🤇	Deli PPEN X
	ADD an Asphalt Blowing COKE CALCINING UNITS : Unit Name/Identifies COKE CALCINING UNITS : COXING COXING U COXING COXING U COXING UNITS WITH FLE COXING UNITS WITH FLE COXING UNITS UNITS COXING UNITS UNITS COXING UNITS COXING UNITS COXING COXING UNITS COXING C	EMISSIONS SUMMARY CO2 (metric tone) CH 500 mt WITS, TRADITIONAL FLUI XICOKING DESIGN, AND / ARY CO2 (metric tone) g or Coking Unit IS SUMMARY	50.0 s (metric tons) N20 54.00 D COKING UNITS, F CATALYTIC REFOR CHs (metric tons)	42.00 Compl 24.000 Compl 24.000 Compl MING 0) N2:0 (metric tons	ete 🤇 🤇	Dela IPEN 3 Dela
	ADD an Asphalt Blowing COKE CALCINING UNITS : Unit Name/Identifies COKE CALCINING UNITS : COXING COXING U COXING COXING U COXING UNITS WITH FLE COXING UNITS WITH FLE COXING UNITS UNITS COXING UNITS UNITS COXING UNITS COXING UNITS COXING COXING UNITS COXING C	CO2 (metric tons) CH CO2 (metric tons) CH CO2 mit NITS, TRADITIONAL FLUII XICOXING DESIGN, AND IA ARY CO2 (metric tons) g or Coking Unit	50.0 s (metric tons) N20 54.00 D COKING UNITS, F CATALYTIC REFOR CHs (metric tons)	42.00 Compl 24.000 Compl 24.000 Compl MING 0) N2:0 (metric tons	ete 🤇 🤇	Deli
	◆ ADD an Asphalt Blowing CORE CALCINING UNITS Unit Name.identifier CG2 COUI	EMISSIONS SUMMARY CO2 (metric tone) CH 500 mt WITS, TRADITIONAL FLUI XICOKING DESIGN, AND / ARY CO2 (metric tone) g or Coking Unit IS SUMMARY	50.0 s (metric tons) N20 54.00 D COKING UNITS, F CATALYTIC REFOR CHs (metric tons)	42.00 Compl 24.000 Compl 24.000 Compl MING 0) N2:0 (metric tons	ete 🤇 🤇	Dela IPEN 3 Dela
	ADD an Asphalt Blowing CORE CALCHING UNITS Unit NumeIdentifier G2 COUT CALAYTIC CRACKING U CARAYTIC	EMISSIONS SUMMARY CO2 (metric tone) CH 500 mt WITS, TRADITIONAL FLUI XICOKING DESIGN, AND / ARY CO2 (metric tone) g or Coking Unit IS SUMMARY	50.0 s (metric tons) N20 54.00 D COKING UNITS, F CATALYTIC REFOR CHs (metric tons)	42.00 Compl 24.000 Compl 24.000 Compl MING 0) N2:0 (metric tons	ete 🤇 🤇	Dela IPEN 3 Dela
	ADD an Asphalt Blowing CORE CALCHING UNITS Unit NumeIdentifier G2 COUT CALAYTIC CRACKING U CARAYTIC	ENISSIONS SUMMARY C02 (metric tonp) CH 60.0 me enistic tonp) CH 100 CO 100 CO 1	50.0 s (metric tons) N20 54.00 D COKING UNITS, F CATALYTIC REFOR CHs (metric tons)	42.00 Compl 24.000 Compl 24.000 Compl MING 0) N2:0 (metric tons	ete 🤇 🤇	Dela IPEN 3 Dela
	AOD an Asphalt Blowing CORE CALCINING UNITS Unit NameSidentifier; Core Out NameSidentifier; Core Out NameSidentifier; Core Core	ENISSIONS SUMMARY CD2 (oracle stress) CHL SOD CO2 (oracle stress) CHL SOD CO2 (oracle stress) CHL CO2 (oracle stress) CO2 (ora	500 (metric tons) NoCo 5400 D COKING UNITS, F CATALYTIC REFOR CIL: (metric tons) CIL: (metric tons)	42.00 Compl 2 (metric toos) Status 24.000 Compl 4UID MINO NLO (metric tons 0) NLO (metric tons	ete () status') Status'	Dela IPEN 3 Dela
	AOD an Asphalt Blowing CORE CALCINING UNITS Unit NameSidentifier; Core Out NameSidentifier; Core Out NameSidentifier; Core Core	ENISSIONS SUMMARY C02 (metric tonp) CH 60.0 me enistic tonp) CH 100 CO 100 CO 1	500 (metric tons) NoCo 5400 D COKING UNITS, F CATALYTIC REFOR CIL: (metric tons) CIL: (metric tons)	42.00 Compl 2 (metric toos) Status 24.000 Compl 4UID MINO NLO (metric tons 0) NLO (metric tons	ete () status') Status'	Deli Den Deli
	AOD an Asphalt Blowing COKE CALCINING UNITS Unit Nama/dentifier Cacobi AOD a Coke Calcining U CACLA YEL Cacobi CACLA YEL CACALATIC CARCHING U CACLA YEL Unit Nama/dentifier Nose attend AOD a Files PROCESS VEHTS LINESSION Unit Nama/dentifier Nose attend CACD a Files PROCESS VEHTS UNITS I	ENISSIONS SUMMARY CD2 (oracle stress) CHL SOD CO2 (oracle stress) CHL SOD CO2 (oracle stress) CHL CO2 (oracle stress) CO2 (ora	500 (metric tons) NoCo 5400 D COKING UNITS, F CATALYTIC REFOR CIL: (metric tons) CIL: (metric tons)	42.00 Compl 2 (metric toos) Status 24.000 Compl 4UID MINO NLO (metric tons 0) NLO (metric tons	ete () status') Status'	Deli Den Deli
	ADD an Asphalt Blowing COKE CALCINING UNITS Unit Name/Identifier; Coke Calcining U Unit Name/Identifier; Cocut ADD a Coke Calcining U CATALYTIC CRACKING U COKING UNITS VISITS CASHIGH CRACKING Unit Name/Identifier; None entered ADD a Calving Cracking Unit Name/Identifier; None entered PADD a Calving Cracking PROCESS VIETS UNITS I Unit Name/Identifier; None entered	ENISSIONS SUMMARY CD2 (oracle stress) CHL SOD CO2 (oracle stress) CHL SOD CO2 (oracle stress) CHL CO2 (oracle stress) CO2 (ora	500 (metric tons) NoCo 5400 D COKING UNITS, F CATALYTIC REFOR CIL: (metric tons) CIL: (metric tons)	42.00 Compl 2 (metric toos) Status 24.000 Compl 4UID MINO NLO (metric tons 0) NLO (metric tons	ete () status') Status'	Deli Den Deli
	ADD an Asphalt Blowing COKE CALCINING UNITS Unit Name/Identifier; Coke Calcining U Unit Name/Identifier; Cocut ADD a Coke Calcining U CATALYTIC CRACKING U COKING UNITS VISITS CASHIGH CRACKING Unit Name/Identifier; None entered ADD a Calving Cracking Unit Name/Identifier; None entered PADD a Calving Cracking PROCESS VIETS UNITS I Unit Name/Identifier; None entered	ENISSIONS SUMMARY CD2 (metric time) CH CD2 (metric time) CH CD2 (metric time) CD3	500 (metric tons) NoCo 5400 D COKING UNITS, F CATALYTIC REFOR CIL: (metric tons) CIL: (metric tons)	42.00 Compl 2 (metric toos) Status 24.000 Compl 4UID MINO NLO (metric tons 0) NLO (metric tons	ete () status') Status'	Deli Den Deli
	ADD an Aaphait Bioning COKE CALCINING UNITS Unit Name Identifier; Court Unit Name Identifier; Court ADD a Coke Calcining U CALAVIC CRACKING U CONING UNITS VICTO CRACKING UI UNITS LEASISONS SUMM UNIT XimmAldentifier None entered ADD a Calving Cracking ADD a Solid State PROCESS VEHTS UNITS I Unit NameAldentifier None enteref ADD a Calving Cracking ADD a Process Vett	ENISSIONS SUMMARY CD2 (metric time) CH CD2 (metric time) CH CD2 (metric time) CD3	500 (metric tons) NoCo 5400 D COKING UNITS, F CATALYTIC REFOR CIL: (metric tons) CIL: (metric tons)	42.00 Compl 2 (metric toos) Status 24.000 Compl 4UID MINO NLO (metric tons 0) NLO (metric tons	ete	Deli Den Deli
	AOD an Asphalt Bowing CORE CALCINING UNITS Unit Anamoldentitier Quest Cancel and anamoldentitier Quest Cancel and anamoldentitier Cancel and anamoldentitier Cancel anamoldentitier AOD a Cocke Calcining U Cancel anamoldentitier AOD a Cocke Calcining Cocke Calcining Cancel anamoldentitier Mone endened AOD a Socialitie Cancelin Cancel Anamoldentitier None endened Mone Anamoldentitier None A	ENISSIONS SUMMARY CD2 (metric time) CH CD2 (metric time) CH CD2 (metric time) CD3	500 (metric tons) NoCo 5400 D COKING UNITS, F CATALYTIC REFOR CIL: (metric tons) CIL: (metric tons)	42.00 Compl 24.00 Compl 24.00 Compl MING MING) Rc0 (metric tons) Rc0 (metric tons	ete	Deta
	AOD an Aaphait Blowing COKE CALCINING UNITS Unit Named dentifier: Coke Calcining U Unit Named dentifier: Cocol AOD a Coke Calcining U CATALYTIC CRACKNOW WITE LE COUNTS ELBISSIONS SUMME U Int Named dentifier None antered AOD a Calving Crackin AOD a Plave PROCESS VEHTS UNITS I Unit Name (dentifier None antered Mone antered	ENISSIONS SUMMARY CD2 (metric time) CHL SOD OC SUMMARY CD2 (metric time) CHL SOD CD2 (metric terre) S EMISSIONS SUMMARY CD2 (metric terre)	500 (metric tons) NoCo 5400 D COKING UNITS, F CATALYTIC REFOR CIL: (metric tons) CIL: (metric tons)	42.00 Compl 24.00 Compl 24.00 Compl MING MING) Rc0 (metric tons) Rc0 (metric tons	ete	Deta
	AOD an Asphalt Bowing CORE CALCHING UNITS Unit AtomAtdentitier Carcoll Could AtomAtdentitier Carcoll AOD o Colde Calching Unit AtomAtdentitier CATAL YTIC CORACHING UNITS Callsolitor Corackin Mone antifare AOD a Catalytic Crackin Mone antifare Mone Mone Ant	ENISSIONS SUMMARY CD2 (metric time) CHL SOD OC SUMMARY CD2 (metric time) CHL SOD CD2 (metric terre) S EMISSIONS SUMMARY CD2 (metric terre)	500 (metric tons) NoCo 5400 D COKING UNITS, F CATALYTIC REFOR CIL: (metric tons) CIL: (metric tons)	42.00 Compl 24.00 Compl 24.00 Compl MING MING) Rc0 (metric tons) Rc0 (metric tons	ete	Deta
	AOD an Asphalt Bowing CORE CALCHING UNITS Unit AtomAtdentitier Carcoll Could AtomAtdentitier Carcoll AOD o Colde Calching Unit AtomAtdentitier CATAL YTIC CORACHING UNITS Callsolitor Corackin Mone antifare AOD a Catalytic Crackin Mone antifare Mone Mone Ant	ENISSIONS SUMMARY CD2 (metric time) CHL SOD OC SUMMARY CD2 (metric time) CHL SOD CD2 (metric terre) S EMISSIONS SUMMARY CD2 (metric terre)	500 (metric tons) NoCo 5400 D COKING UNITS, F CATALYTIC REFOR CIL: (metric tons) CIL: (metric tons)	42.00 Compl 24.00 Compl 24.00 Compl MING MING) Rc0 (metric tons) Rc0 (metric tons	ete	Deta
	AOD an Asphalt Bowing COKE CALCINING UNITS Unit Annualdemitter Cocket Calculu AOD a Coke Calculuing U AOD a Coke Calculuing U AOD a Coke Calculuing U CATALYTE CARCKING U Unit Remarkdemitter None Method AOD a Coket Calculuing AOD a Solution Recovery INIT Suiter Recovers Vesters Coket Calculuing Coket Calculuing Coket Calculuing AOD a Solution Recovery INIT Suiter Recovers Coket Calculuing Coket Coket Calculuing Coket	EMISSIONS SUMMARY CO2 (metric tons) CH S00 Th TH THIS, TRADITIONA, FLUU THS, TRADITIONA, FLUU THS, TRADITIONA, FLUU CO2 (metric tons) CO3 (metric tons) CO3 (metric tons) CO3 (metric tons) CO3 (metric tons) S EMISSIONS SUMMARY S EMISSIONS SUMMARY S EMISSIONS SUMMARY	50.0 4 (minis tans) No 54.00 54.00 CONTROL MITES CONTROL MITES CIL (matrix tans) CIL (matrix tans) CIL (matrix tans) CIL (matrix tans)	42.00 Compl 2 (1997 5110) Sinduce 24.000 Compl 1000 (1997 510) Nr.0 (Institut Ional (1997 510) Nr.0 (Institut Ional (1997 510) Nr.0 (Institut Ional (1997 510) Nr.0 (Institut Ional (1997 510) Sinduce Ional (1997 510) Sindu	ete	Dela PPEN 30 Dela Dela
	ADD an Asphalt Blowing COKE CALCINING UNITS Unit AnnumAdentifier; Coke Calcining U Unit AnnumAdentifier; Cocol ADD a Coke Calcining U CATALYTIC CRACKING U CONING UNITS VIENTIS Unit XenandAdentifier None antered ADD a Coke Calcining U Unit XenandAdentifier None antered Modia Calcining U Unit XenandAdentifier None antered Modia Calcining U Unit XenandAdentifier None antered Modia Place Vertice Vertice	ENISSIONS SUMMARY CD2 (matric trans) CH CD SO CD2 (matric trans) CH CD SO CD2 (matric trans) CH CD2 CD2 (matric trans) CD2 (mat	50.0 a (metric tang) NG 54.00 54.00 COLING UNITS, F. COLING COLING, COLING COLING, COLING COLING, COLING COLING, CO	42.00 Compl 0 (NETIC 1011) Status 24.00 Compl 1000	ete	Dela pren 3 Dela Dela Dela
	ADD an Asphalt Bowing CORE CALCHING UNITS Unit NameAdentitier Careau Control of the ADD on Color of the A	ENISSIONS SUMMARY CD2 (matric trans) CH CD SO CD2 (matric trans) CH CD SO CD2 (matric trans) CH CD2 CD2 (matric trans) CD2 (mat	50.0 a (metric tang) NG 54.00 54.00 COLING UNITS, F. COLING COLING, COLING COLING, COLING COLING, COLING COLING, CO	42.00 Compl 0 (NETIC 1011) Status 24.00 Compl 1000	ete	Dela pren 3 Dela Dela Dela

Subpart Y collects the following data about your Catalytic Cracking, Fluid Coking, or Catalytic Reforming unit:

- A unique name or identifier, plus optional description for this unit (see also About Unique Unit Names)
- Specify the type of unit:
 - Fluid Catalytic Cracking Unit
 - Thermal Catalytic Cracking Unit
 - Traditional Fluid Coking Unit
 - Catalytic Reforming Unit
 - Fluid Coking Unit with Flexicoking Design (see note below)
- For each unit, answer the following question: Do you operate and maintain a CEMS that measures CO₂ emissions according to subpart C? This means that both a flow meter and a concentration monitor need to be installed. If so, you must use the CEMS methodology for measuring CO₂ emissions from this unit. Click either Yes or No.

For Fluid Coking Units with Flexicoking Design, you will be asked if the GHG emissions from the low heat value gas are accounted for in Subpart C.

- If your answer to this question is 'yes', you are only required to report maximum rated throughput of the fluid coking unit with flexicoking design
- If your answer to this question is 'no', you are required to report maximum rated throughput of the fluid coking unit with flexicoking design and the methods used to calculate emissions per the sections below

When you are finished entering the required information, click NEXT.

HOME FACILITY REGIST	RATION FACILITY MANAGEMENT DATA REPORTING	Reporting Tool Hello, Peter Koty/wek My Profile Logo
e-GGRT Help Using e-GGRT for Subpart Y reporting	FacIlity ABC (2010) Subpart Y: Petroleum Refineries Subpart Overview = FCU1 = Edit	
	CATALYTIC CRACKING WITH, FUID COMING WITH, OR CATALYTIC WITH INFORMATION Subpart 7 measures a facility cumpinity identify each catalytic cardiag caving using catalytic informing unapproved the information descri each for additional information allow adding and edining a catalytic car- be provided with the catalytic informing unapplexes uses the a GORT Map provided.	unit, fluid ibed below for cloing unit,
	Name or ID* FCU1	(40 characters maximum)
	Description (optional)	
	Type* Fluid Coking Unit with Fleeicoking Des	iign 💌
	CONTINUOUS EMISSIONS MONITORING	
	Is this unit's emissions [®] ○ Yes monitored using a CEMS? ⊛ No	

For Catalytic Cracking or Coking units that are NOT monitored by CEMS, Subpart Y also collects the following data:

- Maximum rated throughput of the unit (bbl per stream day)
- Method used to calculate CO₂ emissions (only appears if you select No for using a CEMS):
 - 98.253(c)(2) Equation Y-6 and continuous monitor for flow (but not meeting the CEMS monitoring requirements of 98.253(c)(1);
 - e.g., not meeting the full CEMS quality assurance requirements)
 - 98.253(c)(2) Equation Y-6 and Y-7a
 - 98.253(c)(2) Equation Y-6 and Y-7b
 - 98.253(c)(3) Equation Y-8 (option appears only for Catalytic Cracking or Coking units; available only for catalytic cracking units and fluid coking units with rated capacities of 10,000 barrels per stream day (bbls/sd) or less that do not use a continuous CO₂ CEMS for the final exhaust stack)
 - 98.253(e)(3) Equation Y-11 (option appears only for Catalytic Reforming units)
- Method used to calculate CH₄ emissions:
 - Equation Y-9
 - Unit-specific measurement data
 - A unit-specific emission factor based on a source test of the unit
- Method used to calculate N₂O emissions:
 - Equation Y-10
 - Unit-specific measurement data
 - A unit-specific emission factor based on a source test of the unit

When you are finished entering the required information, click SAVE.



For Catalytic Cracking or Coking units that are monitored by CEMS, Subpart Y also collects the following data:

- Maximum rated throughput of the unit (bbl per stream day)
- Method used to calculate CH₄ emissions:
 - Equation Y-9
 - Unit-specific measurement data
 - A unit-specific emission factor based on a source test of the unit
- Method used to calculate N₂O emissions:
 - Equation Y-10
 - Unit-specific measurement data
 - · A unit-specific emission factor based on a source test of the unit

When you are finished entering the required information, click SAVE.

Adding or Updating Catalytic Cracking or Coking Unit Emissions Information

This section provides a step-by-step description of how to enter Subpart Y Catalytic Cracking or Coking unit emissions information.

To add or update CO_2 emissions information for a catalytic cracking or coking unit that is monitored by CEMS, please refer to the Subpart Y Emissions Information for Process Units Monitored by CEMS help page. CH_4 and N_2O emissions information for catalytic cracking or coking units that are monitored by CEMS are reported separately per the instructions below.

To add or update CO_2 , CH_4 , and N_2O emissions information for a catalytic cracking or coking unit that is NOT monitored by CEMS **OR** CH_4 and N_2O emissions information for a catalytic cracking or coking unit that is monitored by CEMS, locate the CATALYTIC CRACKING UNITS, TRADITIONAL FLUID COKING UNITS, FLUID COKING UNITS WITH FLEXICOKING DESIGN, AND CATALYTIC REFORMING UNITS EMISSIONS SUMMARY table on the Subpart Y Overview page, and click OPEN.

Note that Fluid Coking Units with Flexicoking Design for which the GHG emissions from the low heat value gas are accounted for in Subpart C require no emissions or additional data under Subpart Y thus the OPEN button is black and has no function.

	ates nental Protection				8-	GGRT	6
	ATION FACILITY MANAGEM	ENT DATA REPORTING			Electronic Gr	eenhouse Gas	
HOME PACIEIT REGISTR	ATION PACIEITT MANAGEM				Hello, Caltin	Cartere My Pr	ofile Logout
😧 e-GGRT Help	FacilityToDelete1835-A	2					
		eum Refineries (20	011)				
Using e-GGRT for Subpart Y reporting	Subpart Overview				EPA has finalized	a rule that defe	rs the
		T Y REPORTING REQUIRE			deadline for report		
		d facilities to report Greenho king units, traditional fluid col			direct emitters un	H March 31, 20	15. See 78
	with flexicoking design, de	elayed coking units, catalytic	reforming units, sulf	fur	FR 53057 (publis) accordance with	the rule, e-GGR	T is not
	recovery units, coke calci tanks, uncontrolled blowd	ning units, asphalt blowing, e own systems, loading operat	quipment leaks, stor ions, process vents,	and and	currently collectin emission equation	g this subset of	l'inputs to
	non-merchant hydrogen p please use the e-GGRT H	lants. For additional informati	on about Subpart Y	reporting,			
	presse use me e oortrin	eip min(o) pronoco.		_	A Subpart	Y: View Valid	lation
					-		
	FACILITY-LEVEL EMISSIO	INS SUMMARY					
		CO2 (metr		CH4 (met	ric tons) Status		
	Uncontrolled Blowdown Systems		N/A		54.00 Compl	ete	OPEN
	Equipment Leaks		N/A		54.00 Compl	ete	OPEN
	Loading Operations		N/A		54.00 Compl	ete	OPEN
	Storage Tanks	Facility did not receive uns unstabilized crude oil	tabilized crude oiVst	ored liquids ot	her than Compl	ete	OPEN
	Sour Gas Sent Off-Site	Facility does not send sou	r gas off-site		Compl	ete	OPEN
	Delayed Coking		N/A		54.00 Compl	ete	OPEN
					i de la companya de l		
	DELAYED COKING UNITS						
	Unit Name/Identifier				Status	1	Delete
	None entered						
	ADD a Delayed Coking	Unit					
	ASPHALT BLOWING UNIT	S EMISSIONS SUMMARY					
	Unit Name/Identifier	CO2 (metri	c tons) CHa	(metric tons)	Status ¹		Delete
	Dja Still		60.0		Complete	OPEN	×
	+ADD an Asphalt Blowing	Unit					
	COKE CALCINING UNITS						
		CO2 (metric tons) CH4	((metric tons)	e 1		Delete
	CCU1	50.0	54.00		Complete	OPEN	Delete
	ADD a Coke Calcining U						
	CATALYTIC CRACKING U	NITS, TRADITIONAL FLUID XICOKING DESIGN, AND C	COKING UNITS, FI	LUID			
	UNITS EMISSIONS SUMM	ARY	ATACITIC REPORT	ano			
		CO2 (metric tons) CH4					Delete
	D CRU	50.0	34.00	36.000	Complete	OPEN	×
	ADD a Catalytic Crackin	ig or Coking Unit					
	FLARES UNITS EMISSION						
	Unit Name/Identifier		Cille (motris tone)	NoO (mot	ric tons) Status	.1	Delete
	None entered	CO2 (metric tons)	Ciric (metric tons)	M20 (met	ne tona) status		Delete
	+ ADD a Flare						
	PROCESS VENTS UNITS						
	Unit Name/Identifier None entered	CO2 (metric tons)	CH4 (metric tons)	N2O (met	ric tons) Status		Delete
	ADD a Process Vent						
	TADD & HOUSES TEM						
	SULFUR RECOVERY UNIT	S EMISSIONS SUMMARY					
	Unit Name/Identifier			CO2 (met	ric tons) Status	1	Delete
	None entered						
	ADD a Sulfur Recovery I	Plant					
	★ Facility Overview						
					1.1.1		
	validation messages in your'	ans that one or more required Validation Report by clicking th					
	subpart you will not see this I	inių.					

Depending on the methods selected to calculate CO₂, CH₄ and N₂O emissions (see previous section titled "Adding or Updating Catalytic Cracking, Fluid Coking, or Catalytic Reforming Unit Information"), you will be presented with screens to collect the respective CO₂, CH₄ and N₂O emission results and additional data. Each specific screen is discussed below.

CO2 Emissions Calculation: 98.253(c)(2) - Equation Y-6 and Flow

The annual CO_2 emission rate from the unit operations is required. To calculate this value download the spreadsheet by clicking the link titled "Use Y-6 spreadsheet to calculate." Fill in the spreadsheet using the instructions in the spreadsheet. After completing the spreadsheet, copy the value of CO_2 calculated by the spreadsheet to this page in the box next to "Annual CO_2 emission from this *unit type* unit (metric tons)."

Subpart Y also collects the following CO₂ emission data:

- Annual average flow rate of exhaust gas (dscfh)
- Manufacturer's recommended method used for annual average flow rate of exhaust gas
- Number of hours missing data procedures were used for annual average flow rate of exhaust gas (hours)
- Annual average percent CO₂ in exhaust gas stream (percent by volume dry basis; 0 ? x ? 100)
- Manufacturer's recommended method used for annual average percent CO₂ in exhaust gas stream
- Number of hours missing data procedures were used for annual average percent CO₂ in exhaust gas stream (hours)
- Annual average percent CO in exhaust gas stream (percent by volume dry basis; 0 ? x ? 100)
- Manufacturer's recommended method used for annual average percent CO in exhaust gas stream
- Number of hours missing data procedures were used for annual average percent CO in exhaust gas stream (hours)

The Equation Y-6 Summary and monitored flow requirements are presented in the screenshot below. You can hover over an element in the equation to reveal a definition of that element.

nental Protection	DATA REPORTING	Electronic Greenhouse Gi
ATION PACIEIT MANAGEMEN	DAIA REPORTING	Helio, Catlin Carter My
Petroleum Refineries Co		
Subpart Y: Petroleu Subpart Oveniew y Catalytic C	IM Refineries racking and Coking Units <u>× CRU1</u>	
GHG DATA AND ASSOCIAT Use this page to enter the Gi	ED INFORMATION IG data required by Subpart Y. Please enter the	
information shown for this cat	alytic cracking unit, fluid coking unit, or catalytic information about the data collected on this page,	(Eq. Y-6) CO2 emissions (m
please use the e-GGRT Help	link(s) provided.	
		CH4 emissions (metric tons
		N2O emissions (metric ton:
EQUATION Y-6 SUMMARY		
	$CO_2 = \sum_{n=1}^{n} \left[(Q_i)_p \times \frac{(\% CO_2 + \% CO)_p}{100\%} \times \frac{44}{MVC} \times 0.1 \right]$	101
	p=1	
	Hover over an element in the equation above to reveal	a definition of that element.
Annual CO2 emission from this catalytic	200000 (metric tons)	
reforming únit	Use Y-6 spreadsheet to calculate	
	ETRIC FLOW RATE OF EXHAUST GAS	
Annual average volumetric flow rate of	34 (dscfh)	
exhaust gas from this catalytic reforming unit prior to the combustion of		
prior to the combustion of other fossil fuels		
Describe the manufacturer's		
recommended method		
that was used for annual average volumetric flow rate of exhaust gas		
Number of hours missing data procedures were	0 (hours)	
used for annual average volumetric flow rate of		
exhaust gas		
ANNUAL AVERAGE CO2 CO	INCENTRATION IN EXHAUST GAS STREAM	
Annual average percent CO2 in exhaust gas	24 (percent by volur	ne - dry basis; $0 \le x \le 100$)
stream Describe the		
recommended method that was used for annual average percent CO2 in		
exhaust gas stream		
Number of hours missing data procedures were used for annual average	1 (hours)	
used for annual average percent CO2 in exhaust gas stream		
ANNUAL AVERAGE CO CO Annual average percent CO in exhaust gas stream	43 (percent by volur	ne - dry basis; 0 ≤ x ≤ 100)
CO in exhaust gas stream Describe the	· · · ·	
manufacturer's recommended method		
that was used for annual average percent CO in		
exhaust gas stream		
Number of hours missing data procedures were used for annual average	1 (hours)	
percent CO in exhaust gas stream		
3.0.070		
CH4 SUMMARY (MEASURE	MENT DATA)	
Annual CH4 emission from this catalytic	50 (metric tons)	
reforming unit		
N20 SUMMARY (MEASURE	MENT DATA)	
Annual N20 emission	10 (metric tons)	
from this catalytic reforming unit		

CO₂ Emissions Calculation: 98.253(c)(2) - Equation Y-6 and Y-7a

The annual CO_2 emissions from the unit operations is required. To calculate this value download the spreadsheet by clicking the link titled "Use Y-6 and Y-7a spreadsheet to calculate." Fill in the spreadsheet using the instructions in the spreadsheet. After completing the spreadsheet, copy the value of CO_2 calculated by the spreadsheet to this page in the box next to "Annual CO_2 emission from this *unit type* unit (metric tons)."

The Equation Y-6 and Y-7a Summaries are presented on the page. You can hover over an element in the equation to reveal a definition of that element.

Subpart Y also collects the following $\rm CO_2$ emission data:

- Annual CO₂ emission from this unit (metric tons)
- Annual average percent CO₂ in exhaust gas stream (percent by volume dry basis; 0 ? x ? 100)
- Describe the manufacturer's recommended method that was used for annual average percent CO2 in exhaust gas stream
- Number of hours missing data procedures were used for annual average percent CO₂ in exhaust gas stream (hours)
- Annual average percent CO in exhaust gas stream (percent by volume dry basis; 0 ? x ? 100)
- Describe the manufacturer's recommended method that was used for annual average percent CO in exhaust gas stream
- Number of hours missing data procedures were used for annual average percent CO in exhaust gas stream (hours)
- Annual average volumetric flow rate of exhaust gas from this unit prior to the combustion of other fossil fuels (dscfh)
- Annual average flow rate of inlet air (dscfh)
- Annual average flow rate of oxygen enriched air (a value of "0" may be entered if inlet air is not oxygen enriched to avoid validation errors) (dscfh)
- Annual average percent O₂ in exhaust gas stream (percent by volume dry basis; 0 ? x ? 100)
- Describe the manufacturer's recommended method that was used for annual average percent O₂ in exhaust gas stream
- Number of hours missing data procedures were used for annual average percent O₂ in exhaust gas stream (hours)

Annual average percent O₂ in oxygen-enriched gas stream inlet (a value of "0" may be entered if inlet air is not oxygen enriched to avoid validation errors) (percent by volume - dry basis; 0 ? x ? 100)

The Equation Y-6 and Y-7a Summaries are presented in the screenshot below. You can hover over an element in the equation to reveal a definition of that element.

IE FACILITY REGISTR	itates nental Protection	E-GUKI
	RATION FACILITY MANAGEMENT	DATA REPORTING Electronic of Personals & Gas Reporting Tool Holo, Peter Kabylarek My Profile La
a-GGRT Help	Facility ABC (2010)	
	Subpart Y: Petroleu	
g e-GGRT for Subpart Y ting		acking and Coking Units » Unit XYZ
	GHG DATA AND ASSOCIATE	
	Use this page to enter the GHI information shown for this cata	G data required by Subpart Y. Please enter the lytic cracking unit, fluid coking unit, or catalytic formation about the data collected on this page, please
	reforming unit. For additional in use the e-GGRT Help link(s) pr	
		(Eq. Y-9) CH4 emissions (metric tons)
		0.000
		(Eq.Y.10) NzO emissions (metric tons)
	COUNTRY YO COMPANY	NO DECUMIT
	EQUATION Y-6 SUMMARY A	
		$CO_{2} = \sum_{p=1}^{n} \left[\langle G_{1} \rangle_{p} \times \frac{(\frac{1}{2} GO_{2} + \frac{9}{2} GO_{2})_{p}}{100\%} \times \frac{44}{MVC} \times 0.001 \right]$
		Hover over an element in the equation above to reveal a definition of that element.
	Annual CO ₂ emission from this fluid catalytic	500 (metric tons)
	cracking únit	Use Y-6 spreadsheet to calculate
		ICENTRATION IN EXHAUST GAS STREAM
	Annual average percent CO2 in exhaust gas	15 (percent by volume - dry basis; 0 ≤ x ≤ 100)
	stream	
	Describe the manufacturer's recommended method	
	recommended method that was used for annual	
	that was used for annual average percent CO2 in exhaust gas stream	
	Number of hours mirring	1 (hours)
	data procedures were used for annual average percent CO2 in exhaust	
	percent CO2 in exhaust gas stream	
		CENTRATION IN EVANIOT CAR OTDEAM
	Annual average percent	CENTRATION IN EXHAUST GAS STREAM 7 (percent by volume - dry basis; 0 ≤ x ≤ 100)
	Annual average percent CO in exhaust gas stream	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
	Describe the manufacturer's	
	that was used for annual	
	recommended method that was used for annual average percent CO in exhaust gas stream	
	Number of hours missing data procedures were used for annual average percent CO in exhaust gas stream	1 (hours)
	used for annual average	
	stream	
	EQUATION Y-78 SUMMARY -	(70 × 0; + (100, MO;) × 0;)
		$O_{f} = \frac{(79 \times G_{0} + (100 - \% G_{00Y}) \times G_{00Y})}{100 - \% G_{02} - \% G_{02}}$
		Hover over an element in the equation above to reveal a definition of that element.
	Annual average	5000 (dscfh)
	Annual average volumetric flow rate of exhaust gas from this fluid catalytic cracking unit prior to the combustion of other fossil fuels	Use Y-7a spreadsheet to calculate
	prior to the combustion of	
	ANNUAL AVERAGE FLOW R	
	Annual average flow rate of inlet air	12 (dscft)
	Annual average flow rate	12 (dscfh)
	Annual average flow rate of oxygen enriched air (a value of "0" may be entered if inlet air is not	
	entered if inlet air is not	
	oxygen enficient to avoid	
	oxygen enriched to avoid validation errors)	
	ANNUAL AVERAGE O2 CON	CENTRATION IN EXHAUST GAS STREAM
	ANNUAL AVERAGE O2 CON Annual average percent O2 in exhaust gas stream	CENTRATION IN EXHAUST GAS STREAM 12 (gercent by volume - dry basis; 0 ≤ x ≤ 100)
	ANNUAL AVERAGE O2 CON Annual average percent O2 in exhaust gas stream	
	ANNUAL AVERAGE O2 CONC Annual average percent O2 in exhaust gas stream Describe the manufacturer's recommended method	
	ANNUAL AVERAGE O2 CONC Annual average percent O2 in exhaust gas stream Describe the manufacturer's recommended method	
	ANNUAL AVERAGE 02 CONO Annual average percent 02 in exhaust gas stream Describe the manufacturer's recommended method that was used for annual average percent 02 in exhaust gas stream	12 (percent by volume - dry basis; 0 ≤ x ≤ 100)
	ANNUAL AVERAGE 02 CONO Annual average percent 02 in exhaust gas stream Describe the manufacturer's recommended method that was used for annual average percent 02 in exhaust gas stream	
	ANNUAL AVERAGE O2 CONC Annual average percent O2 in exhaust gas stream Describe the manufacturer's recommended method	12 (percent by volume - dry basis; 0 ≤ x ≤ 100)
	ANNUAL AVERAGE 02 CON Annual average percent 02 in exhaust gas stream Describe the recommended tarbind that was used for annual average percent 02 in exhaust gas stream Number of hours missing data procedures were used for annual average percent 02 in exhaust gas stream ANNUAL AVERAGE 02 CON	12 (parcent by volume - dry basis; 0 & x & 100)
	ANNUAL AVERAGE 02 CON Annual average percent 02 in exhaust gas stream Describe the recommended tarbind that was used for annual average percent 02 in exhaust gas stream Number of hours missing data procedures were used for annual average percent 02 in exhaust gas stream ANNUAL AVERAGE 02 CON	12) (percent by volume - dry basic, 0 4 x 4 (00)
	ANNUAL AVERAGE 02 CON Annual average percent 02 in exhaust gas stream Describe the recommended tarbind that was used for annual average percent 02 in exhaust gas stream Number of hours missing data procedures were used for annual average percent 02 in exhaust gas stream ANNUAL AVERAGE 02 CON	12] (servent by volume - dy basis, 0 & x & 100) 2) (servent by volume - dy basis, 0 & x & 100) 2) (server) EXHIFACTION IN OXY/GENERATION CASS STREAM NUET
	ANNUAL AVERAGE Do CON Annual average percent Ci le chaint gas stream Describe the encode of the chain stream the chaint gas stream exhant gas stream faits procedures were been stream to the chaint gas stream percent O in exhant gas stream of the chaint gas stream to the chaint gas stream to the chaint gas stream stream the chaint gas stream to the chaint gas stream to	12] (servent by volume - dy basis, 0 & x & 100) 2) (servent by volume - dy basis, 0 & x & 100) 2) (server) EXHIFACTION IN OXY/GENERATION CASS STREAM NUET
	ANNUAL AVERAGE OS CON Annual average percent Os ne chean ges sitesan Describe tite recommenden method that was med for annual exheat ges sitesan Humber of hears: missing data procedures were percent 0.5 in coloand gas tesan ANNUAL AVERAGE OS COM	12] (servent by volume - dy basis, 0 & x & 100) 2) (servent by volume - dy basis, 0 & x & 100) 2) (server) EXHIFACTION IN OXY/GENERATION CASS STREAM NUET
	ANNUL AVERAGE OG COM Annual average percent för ar erhange sitteam Beschlichte average percent recommendel method bat vas med for annual en generation for the sitteam average data proceeders were seef for annual average percent og i average average percent og i average average average average average average average average average average average for mag be senteed at average average average of "" mag be senteed at average av	12) (percent by vilume - dy basis, 0 & x & 100) 2) (blows) EINTRATION IN OXYCEIN EXPRICICED GAS STITESAM INLET 30) (percent by vilume - dry basis, 0 & x < 100)
	ANNUAL AVERAGE Do CON Annual average percent Ci le chaint gas stream Describe the encode of the chain stream the chaint gas stream exhant gas stream faits procedures were been stream to the chaint gas stream percent O in exhant gas stream of the chaint gas stream to the chaint gas stream to the chaint gas stream stream the chaint gas stream to the chaint gas stream to	12 gencent by volume - dy basis, 0 ≤ x ≤ 100) 2 gencent 2 gencent 30 gencent by volume - dy basis, 0 ≤ x ≤ 100) 30 gencent by volume - dy basis, 0 ≤ x ≤ 100) NO RESULT Contract
	ANNUL AVERAGE OG COM Annual average percent för ar erhange sitteam Beschlichte average percent recommendel method bat vas med for annual en generation for the sitteam average data proceeders were seef for annual average percent og i average average percent og i average average average average average average average average average average average for mag be senteed at average average average of "" mag be senteed at average av	12 gencent by volume - dy basis, 0 ≤ x ≤ 100) 2 gencent 2 gencent 30 gencent by volume - dy basis, 0 ≤ x ≤ 100) 30 gencent by volume - dy basis, 0 ≤ x ≤ 100) NO RESULT Contract
	ANNUL AVERAGE OG COM Annual average percent för ar erhange sitteam Beschlichte average percent recommendel method bat vas med for annual en generation for the sitteam average data proceeders were seef for annual average percent og i average average percent og i average average average average average average average average average average average for mag be senteed at average average average of "" mag be senteed at average av	12 gencent by volume - dry basis, 0 ≤ x ≤ 100) 2 (bours) 2 (bours) 30 (bours) 30 (bours) CH1FATION IN OKYGEN-ENRICHED GAS STREAM BLET 30 (bours) CH1FATION IN OKYGEN-ENRICHED GAS STREAM BLET 30 (bours) CH1FATION IN OKYGEN-ENRICHED GAS STREAM BLET CH1 (CO1 × Enrife)
	ARUNA AVERAGE OC COM Mutal overage percent for in exheat sets and the exheat sets and the exheat sets and exheat sets and exheat sets and mutal overage sets and mutal	12) (servent by volume - dy basis, 0 & x ≤ 100) 2) (Nourci) ENTRATION IN OUT/GENERINCHED GAS STREAM INLET 30) (servent by volume - dy basis; 0 & x ≤ 100) NO RESULT CHL=C (CO2x Emr); Hear (CO2x Emr); Hear (CO2x Emr); Hear over an element (the equation above to reveal a subfection of that element.
	ANNUL AVERAGE OC COM Montal average percent of the other and the other and the mean of the other and the mean of the other and the mean of the other and the other and the other and the other and the other and the percent of the other and the percent of the other and the other and the other and the Annual other and the other and the other and the other and the Annual other and the other and the other and the other and the Annual other and the other and	12) Spercent by volume - dry basis, 0 & x & 100) 2) (board) 2) (board) EXTRATION N OXYGENENRCHED GAS STREAM BLET 30) (percent by volume - dry basis, 0 & x < 100)
	ARUNA AVERAGE OC COM Mutal overage percent for in exheat sets and the exheat sets and the exheat sets and exheat sets and exheat sets and mutal overage sets and mutal	12) (servent by volume - dy basis, 0 & x ≤ 100) 2) (Nourci) ENTRATION IN OUT/GENERINCHED GAS STREAM INLET 30) (servent by volume - dy basis; 0 & x ≤ 100) NO RESULT CHL=C (CO2x Emr); Hear (CO2x Emr); Hear (CO2x Emr); Hear over an element (the equation above to reveal a subfection of that element.
	ANNUL AVERAGE OC COM Annual average percent Cit in exhange significant Cit in exhange significant in exhange of the annual in exhange of heart missing exhange and the annual exhange and the annual exhange and the annual exhange and the annual constraints and the annual areas Annual AVERAGE OC COM Annual average percent Oc in exystem setting the air net exystem in exponential and the annual exhange and the annual Annual Othe emission from this flind catalytic cataling inthe	12) (servent by volume - dy basis, 0 & x ≤ 100) 2) (bound) 2) (bound) ENTRATION IN DOMOBILE INFORMATION OF AND STITEAM INLET 30) (servent by volume - dy basis; 0 & x ≤ 100) NO RESULT CHL= (CO2 × Emily:) Hoter over an element (the equation above to reveal a soleholton of that element. S0) (served to trave) Use Y3 spread/baset to calculate
	ANNUL AVERAGE OC COM Montal average percent of the other and the other and the mean of the other and the mean of the other and the mean of the other and the other and the other and the mean of the other and the mean of the other and the mean of the other and the percent of the other and the other and the other and the Annual other and the other and the other and the other and the other and the and the other and the other and the Annual Other and the other and the other and the other and the other and the other and the other and the other and the other and the other and the other and the other and the other and the other and the other and the other and the other and the other a	12) generant by volume - dry basis, 0 ≤ x ≤ 100) 2) (block) 2) (block) EXTRATION N OXYCEN EXERCISED GAS STITESAM NEET 30) (percent by volume - dry basis, 0 ≤ x ≤ 100) CH12 (CD2 x Emr) CH12 (CD2 x Emr) Hore constrained a definition of that element. 30) (percent by volume - dry basis, 0 ≤ x ≤ 100) Uncessful - CD2 x Emr) (CH12 (CD2 x Emr)) Uncessful - CD2 x Emr) NO RESULT
	ANNUL AVERAGE OC COM Annual average percent Cit in exhange significant Cit in exhange significant in exhange of the annual in exhange of heart missing exhange and the annual exhange annual e	12) (servent by volume - dy basis, 0 & x ≤ 100) 2) (bound) 2) (bound) ENTRATION IN DOMOBILE INFORMATION OF AND STITEAM INLET 30) (servent by volume - dy basis; 0 & x ≤ 100) NO RESULT CHL= (CO2 × Emily:) Hoter over an element (the equation above to reveal a soleholton of that element. S0) (served to trave) Use Y3 spread/baset to calculate
	ANNUL AVERAGE OC COM Annual average percent Cit in exhange significant Cit in exhange significant in exhange of the annual in exhange of heart missing exhange and the annual exhange annual e	12) generant by volume - dry basis, 0 ≤ x ≤ 100) 2) (block) 2) (block) EXTRATION N OXYCEN EXERCISED GAS STITESAM NEET 30) (percent by volume - dry basis, 0 ≤ x ≤ 100) CH12 (CD2 x Emr) CH12 (CD2 x Emr) Hore constrained a definition of that element. 30) (percent by volume - dry basis, 0 ≤ x ≤ 100) Uncessful - CD2 x Emr) (CH12 (CD2 x Emr)) Uncessful - CD2 x Emr) NO RESULT
	ANNUL AVERAGE OC COM Annual average percent of a exhemit systems Respectively and annual recemental systems and annual average percent annual average percent average percent	12) Specient by volume - dry basis, 0 ≤ x ≤ 100) 2) (bourd) 2) (bourd) EXITEATION IN OVINGEN ENRICHED GAS SITEAM RLET 30) (becret by volume - dry basis, 0 ≤ x ≤ 100) 30) (becret by volume - dry basis, 0 ≤ x ≤ 100) 40 RESULT CH ₄ = (CO2 × Emr) (bur row are a demont in the equation above to rewal a definition of that element. 50) (metric trans) (brar Y3 spread/test to calculates NOP RESULT NOP RESULT 10 (metric trans) 10 (metric trans)
	Annual AVERAGE OC CON Annual average percent Of the chean gest stream Of the chean gest stream of the chean gest stream recommended method shift was used for annual exhaust gest stream Number of hearns missing data proceeding wave percent 0; in exhaust gas stream ANNUAL AVERAGE OC COM Annual average percent 0; in expanse intricked et 0; intricked et 0; intricked et 0; intricked et 0; intricked et 0; intricked et 0; intricked et 0; intricked et 0; intricked et 0; intricked et 0; intricked et 0; intricked et 0; intricked e	12) (percent by volume - dry basis, 0 ≤ x ≤ 100) 2) (bourd) CHIRATON N OVYCEN ENRICHED GAS STREAM NLET 30) (percent by volume - dry basis, 0 ≤ x ≤ 100) CHIRATON N OVYCEN ENRICHED GAS STREAM NLET 30) (percent by volume - dry basis, 0 ≤ x ≤ 100) CHIRATON N OVYCEN ENRICHED GAS STREAM NLET 30) (percent by volume - dry basis, 0 ≤ x ≤ 100) WO RESULT Up the Y-3 specialized to calculate NOP RESULT NOP RESULT NOP RESULT NOP RESULT NOP RESULT NOP RESULT NOP RESULT NOP RESULT
	ANNUL AVERAGE OC COM Annual average percent of a exhemit systems Respectively and annual recemental systems and annual average percent annual average percent average percent	12) generant by volume - dry basis, 0 ≤ x ≤ 100) 2) (boxr) 2) (boxr) ENTRATION IN OUYGENERINCHED GAS STREAM BLEFT 30) (becreant by volume - dry basis, 0 ≤ x ≤ 100) CHLT2 GB(percent by volume - dry basis, 0 ≤ x ≤ 100) WD RESULT

CO2 Emissions Calculation: 98.253(c)(2) - Equation Y-6 and Y-7b

The annual CO_2 emissions from the unit operations is required. To calculate this value download the spreadsheet by clicking the link titled "Use Y-6 and Y-7b spreadsheet to calculate." Fill in the spreadsheet using the instructions in the spreadsheet. After completing the spreadsheet, copy the value of CO_2 calculated by the spreadsheet to this page in the box next to "Annual CO_2 emission from this *unit type* unit (metric tons)."

Subpart Y also collects the following CO₂ emission data:

- Annual CO₂ emission from this unit (metric tons)
- Annual average percent CO₂ in exhaust gas stream (percent by volume dry basis; 0 ? x ? 100)
- Describe the manufacturer's recommended method that was used for annual average percent CO₂ in exhaust gas stream
- Number of hours missing data procedures were used for annual average percent CO₂ in exhaust gas stream (hours)
- Annual average percent CO in exhaust gas stream (percent by volume dry basis; 0? x ? 100)
- Describe the manufacturer's recommended method that was used for annual average percent CO in exhaust gas stream
- Number of hours missing data procedures were used for annual average percent CO in exhaust gas stream (hours)
- · Annual average volumetric flow rate of exhaust gas from this unit prior to the combustion of other fossil fuels (dscfh)
- Annual average flow rate of inlet air (dscfh)
- Annual average flow rate of oxygen enriched air (a value of "0" may be entered if inlet air is not oxygen enriched to avoid validation errors) (dscfh)
- Annual average percent N₂ in exhaust gas stream (percent by volume dry basis; 0 ? x ? 100)
- Describe the method that was used to measure annual average percent N₂ in exhaust gas stream:
 - Method 18 at 50 CFR part 60, appendix A-6
 - ASTM D1945-03
 - ASTM D1946-90-Reapproved 2006
 - GPA 2261-00
 - UOP539-97
 - ASTM D2503-92-Reapproved 2007
 - Chromatographic analysis: manufacturer's instructions
 - Maximum N₂ impurity specification
 - Other (specify)
- Number of hours missing data procedures were used for annual average percent N₂ in exhaust gas stream (hours)
- Annual average percent N₂ in oxygen-enriched gas stream inlet (a value of "0" may be entered if inlet air is not oxygen enriched to avoid validation errors) (percent by volume dry basis; 0 ? x ? 100)
- Describe the method that was used to measure annual average percent N₂ in oxygen-enriched gas stream inlet:
 - Method 18 at 50 CFR part 60, appendix A-6
 - ASTM D1945-03
 - ASTM D1946-90-Reapproved 2006
 - GPA 2261-00
 - UOP539-97
 - ASTM D2503-92-Reapproved 2007
 - Chromatographic analysis: manufacturer's instructions
 - Maximum N₂ impurity specification
 - Other (specify)
- Number of hours missing data procedures were used for annual average percent N₂ in oxygen-enriched gas stream inlet (a value of "0" may be entered if inlet air is not oxygen enriched to avoid validation errors) (hours)

If the gas stream in question does not contain any oxygen-enrichment, then a value of zero may be entered for questions related to oxygen-enrichment.

The Equation Y-6 and Y-7b Summaries are presented in the screenshot below. You can hover over an element in the equation to reveal a definition of that element.

	etes ental Protection		e-GGRT 🔑
	TION FACILITY MANAGEMENT	DATA REPORTING	Reporting Tool
😧 e-GGRT Help	Facility ABC (2010)	Held	, Peter Kobylanek My Profile Logout
Using e-GGRT for Subpart Y reporting	Subpart Y: Petroleu	m Refineries acking and Coking Units + Unit XYZ	
reporting	GHG DATA AND ASSOCIATE		
	Use this page to enter the GH	G data required by Subpart Y. Please enter the	CO2 emissions (metric tons)
	reforming unit. For additional in use the e-GGRT Help link(s) p	formation about the data collected on this page, please	
			50.00 CH4 emissions (metric tons)
			10.000
		(Eq. Y-1	0) NzO emissions (metric tons)
	EQUATION Y-6 SUMMARY A	ND RESULT	
		$CO_2 = \sum_{n=1}^{n} \left[(O_r)_p \times \frac{(\% CO_2 + \% CO)_p}{100\%} \times \frac{44}{MVC} \times 0.001 \right]$	
		p=1	
	Annual CO2 emission from	Hover over an element in the equation above to reveal a definition of 500 (metric tons)	that element.
	this fluid catalytic cracking unit	Use Y-6 spreadsheet to calculate	
		ICENTRATION IN EXHAUST GAS STREAM	
	Annual average percent CO2 in exhaust gas	15 (percent by volume - dry basis	0 ≤ x ≤ 100)
	stream		
	Describe the manufacturer's recommended method		
	that was used for annual average percent CO ₂ in exhaust gas stream		
	Number of hours missing data procedures were	1 (hours)	
	Number of hours missing data procedures were used for annual average percent CO ₂ in exhaust		
	gas stream	CENTRATION IN EXHAUST GAS STREAM	
	ANNUAL AVERAGE CO CON Annual average percent CO in exhaust gas stream	12 (percent by volume - dry basis)	0 ≤ x ≤ 100)
	Departing the		
	manufacturer's recommended method that was used for annual		
	exhaust gas stream		
	Number of hours missing data procedures were used for annual worage	1 (hours)	
	data procedures were used for annual average percent CO in exhaust gas stream		
	EQUATION Y-75 SUMMARY		
		$\mathbf{O}_{\mathbf{f}} = \frac{(78.1 \times \mathbf{G}_{0} + (96N_{2,oxy}) \times \mathbf{G}_{oxy})}{96N_{2,oxhoust}}$	
		Hover over an element in the equation above to reveal a definition of	that element.
	Annual average	32 (dscfh)	
	Annual average volumetric flow rate of exhaust gas from this fluid catalytic cracking unit prior to the combustion of other fossil fuels	Use Y-7b spreadsheet to calculate	
	prior to the combustion of other fossil fuels		
	ANNUAL AVERAGE FLOW R		
	Annual average flow rate of inlet air	12 (dscfh)	
	Annual average flow rate of exygen enriched air (a value of "0" may be	12 (dscfh)	
	of oxygen enriched air (a value of "0" may be entered if inlet air is not oxygen enriched to avoid validation errors)		
		ENTRATION IN EXHAUST GAS STREAM	
	Annual average percent N2 in exhaust gas stream	21 (percent by volume - dry basis;	: 0 ≤ x ≤ 100)
	Describe the method that	Method 18 at 40 CFR part 60, appendix A-6	
	was used to measure annual average percent N2 in exhaust gas stream		
	Number of hours missing data procedures were	4 (hours)	
	Number of hours missing data procedures were used for annual average percent N2 in exhaust gas		
	stream	ENTRATION IN OXYGEN-ENRICHED GAS STREAM INLET	
	Annual average percent	5 (percent by volume - dry basis)	0 ≤ x ≤ 100)
	Annual average percent N₂ in oxygen-enriched gas stream inlet (a value of "0" may be entered if inlet air is not oxygen enriched to avoid validation errors)		
	inlet air is not oxygen enriched to avoid validation avoid		
	Describe the method that was used to measure annual average percent	Method 18 at 40 CFR part 60, appendix A-6	
	was used to measure annual average percent N2 in oxygen-enriched gas stream inlet		
		(hours)	
	data procedures were used for annual average percent N2 in oxygen		
	enriched gas stream inlet (a value of "0" may be		
	Number of hours missing data procedures were used for annual average percent Rc in oxygen- enriched gas stream inlet (a value of "0" may be entered if inlet air is not oxygen enriched to avoid validation errors)		
	EQUATION Y-9 SUMMARY A	CH4=(CO2×EmF2)	
		CH4= (CO2 × EmF1) Hover over an element in the equation above to reveal a definition of	that element
	Annual CH4 emission from	Hover over an element in the equation above to reveal a detinition of 50 (metric tons)	and settinging
	this fluid catalytic cracking unit	Use Y-9 spreadsheet to calculate	
	EQUATION Y-10 SUMMARY	SND DESILLT	
	COMMANY / TO SUMMARY /	$N_2O=\left(CO_2 \times \frac{EmF_3}{EmF_1}\right)$	
		Hover over an element in the equation above to reveal a definition of	that element.
	Annual N20 emission from	10 (metric tons)	
	this fluid catalytic cracking unit	Use Y-10 spreadsheet to calculate	
	CANCEL SAVE		
	Statement Contact Us		e-00RT RY2010.R.60 Yok-1

CO2 Emissions Calculation: 98.253(c)(3) – Equation Y-8

The annual CO_2 emissions from the unit operations is required. To calculate this value download the spreadsheet by clicking the link titled "Use Y-8 spreadsheet to calculate." Fill in the spreadsheet using the instructions in the spreadsheet. After completing the spreadsheet, copy the value of CO_2 calculated by the spreadsheet to this page in the box next to "Annual CO_2 emission from this *unit type* unit (metric tons)."

For this method, Subpart Y also collects the basis for the carbon content value:

- Weekly or more frequent measurements
- · Periodic (less frequent than weekly but at least quarterly) measurements
- Semi-annual or annual measurements
- Historical measurement value
- Engineering estimate
- Default value
- Other (specify)

The Equation Y-8 Summary is presented in the screenshot below. You can hover over an element in the equation to reveal a definition of that element

Click image to expand

	States nmental Protection		e-GGRT 🚄
ME FACILITY REGIS	TRATION FACILITY MANAGEMENT	DATA REPORTING	Electronic Greenhouse Gas Reporting Tool Helio, Catlin Carter My Profile L
e-GRET Help ing e-GGRT for Subpart Y orting	Petroleum Refineries Con Subpart Y: Petroleu Subpart Overview » Catalytic Cr		
	information shown for this cata	G data required by Subpart Y. Plea alytic cracking unit, fluid coking unit nformation about the data collected	t, or catalytic (Eq. Y-8) CO2 emissions (metric tons)
			1 N2O emissions (metric tons)
	EQUATION Y-8 SUMMARY A	CO2 = Qunit × (CBF × 0.001) >	$\times \text{CC} \times \frac{44}{12}$ tion above to reveal a definition of that element.
	Annual CO2 emission from this fluid catalytic cracking unit	50 Use Y-8 spreadsheet to calc	() (metric tons) culate
	Basis for the carbon content value	Weekly or more frequent measu	rements 💌
	CH4 SUMMARY (MEASURE)	MENT DATA)	
	Annual CH4 emission from this fluid catalytic cracking unit	51	(metric tons)
	N20 SUMMARY (MEASURE)	MENT DATA)	
	Annual N2O emission from this fluid catalytic cracking unit	11	g (metric tons)
	CANCEL SAVE		

CO₂ Emissions Calculation: 98.253(c)(3) - Equation Y-11

The annual CO_2 emissions from the unit operations is required. To calculate this value download the spreadsheet by clicking the link titled "Use Y-11 spreadsheet to calculate." Fill in the spreadsheet using the instructions in the spreadsheet. After completing the spreadsheet, copy the value of CO_2 calculated by the spreadsheet to this page in the box next to "Annual CO_2 emission from this catalytic reforming unit (metric tons)."

For this method, Subpart Y also collects the total number of regeneration cycles or measurement periods, as well as the average coke burn-off quantity per cycle or measurement period.

The Equation Y-11 Summary is presented in the screenshot below. You can hover over an element in the equation to reveal a definition of that element.

	Agency			Electronic Greenhouse Gas
Subject Y: Periodeum Refineries (2011) Unit the page outer the fold gate requed by Subject Y. Perse enter the provideum regime (1000) Space and the GOST frep langt provide. EDUATION Y: 11 SUMMARY AND RESULT EDUATION Y: 11 SUMMARY AND RESULT EDUATION Y: 11 SUMMARY AND RESULT State of the calleging context in the space of the calledue of the space of the calledue of the space of the spa	OME FACILITY REGISTRATI	ION FACILITY MANAGEMENT	DATA REPORTING	Reporting Tool Helio, Catlin Cartere My Profile Logo
Subpart Y: Petroleum Refineries (2011) Use View David Code Units (2014) Use David Code Units (2014)	A-GGRT Hele	CITY ELECTRIC SYSTEM	TEST	
CHICATAN AND ASSOCIATE Device including and using under Control to State Con		Subpart Y: Petroleu	m Refineries (2011)
Use the page is exter the QCB data required by Stapar Y. Prese enter the information to find a called call information alout the data called call on this page. Image: Comparison of Comparison o		Subpart Overview » Catalytic Cr	acking and Coking Units = CA	RTER TEST
Use the page is which and the device of a scalar device of a scalar three which and the device of a scalar		GHG DATA AND ASSOCIATI	D INFORMATION	
Information yours, For additional information allocate data collected in this pige. Image: Second		Use this page to enter the GH	G data required by Subpart Y	. Please enter the
$\begin{array}{c} \hline \\ \hline $				
EOUNTION Y-11 SUMMARY AND RESULT $Cog = \sum_{1}^{n} \left[(CB0) + x + CC + \frac{44}{3} \times 0.01 \right]$ Here over an element in the regulation above to reveal a definition of that element. Ansmall CO2 emission Tegeneration cyclics Tegeneration cyclics		please use the e-GGRT Help I	ink(s) provided.	
EDUATION Y-11 SUMMARY AND RESULT $c_{02} = \sum_{1}^{n} \left[(CB_0) + x \cdot C \times \frac{41}{12} \times 0.001 \right]$ How row an element in the equation above to reveal a definition of that element. Annual C0; entering out Table Tables catalytic CH+ SUMMARY (MEASUREMENT DATA) Annual C14: emission GOUNTION Y-10 SUMMARY AND RESULT EDUATION Y-10 SUMMARY AND RESULT Report (C C02 × $\frac{EmF3}{DT}$) How row an element in the equation above to reveal a definition of that element. Annual R0; emission Quest C C C02 × $\frac{EmF3}{DT}$) How row an element in the equation above to reveal a definition of that element.				CH4 emissions (metric tons)
EDUATION Y-11 SUMMARY AND RESULT $c_{02} = \sum_{1}^{n} \left[(CB_0) + x \cdot C \times \frac{41}{12} \times 0.001 \right]$ How row an element in the equation above to reveal a definition of that element. Annual C0; entering out Table Tables catalytic CH+ SUMMARY (MEASUREMENT DATA) Annual C14: emission GOUNTION Y-10 SUMMARY AND RESULT EDUATION Y-10 SUMMARY AND RESULT Report (C C02 × $\frac{EmF3}{DT}$) How row an element in the equation above to reveal a definition of that element. Annual R0; emission Quest C C C02 × $\frac{EmF3}{DT}$) How row an element in the equation above to reveal a definition of that element.				
EDUATION Y-11 SUMMARY AND RESULT $c_{02} = \sum_{1}^{n} \left[(CB_0) + x \cdot C \times \frac{41}{12} \times 0.001 \right]$ How row an element in the equation above to reveal a definition of that element. Annual C0; entering out Table Tables catalytic Table Tables Tables catalytic CH+ SUMMARY (MEASUREMENT DATA) Annual C14: emission Group C1C C2 × $\frac{Emis^2}{10}$) EDUATION Y-10 SUMMARY AND RESULT EDUATION Y-10 SUMMARY AND RESULT Manual R0; emission Manual R0; emission Tables Catalytic Annual R0; emission				
$c_{02} = \sum_{1}^{n} \left[\left(CB_{0} \right) n \times CC \times \frac{44}{12} \times 0.01 \right]$ To resource an element in the equation above to reveal a definition of that element. Ansual CO2 emission Use Y-11 spreadsheet to calculate Total number of yells of measurement partial Over an element to the equation above to reveal a definition of that element. CH: SUMMARY (MEASUREMENT DATA) Ansual CH: emission (for static cardyle reforming use CH: SUMMARY (MEASUREMENT DATA) Ansual CH: emission (for static cardyle reforming use) EDUATION Y-10 SUMMARY AND RESULT N2O-($CO2 \times \frac{Emis}{Emis}$) Hore over an element in the equation above to reveal a definition of that element. Annual RB: or emission (for static cardyle reforming use) (for static cardyle reforming reforming reforming reforming reforming reforming refo				(Eq. Y-10) NOU emissions (metric tons)
How rows a detend in the equation above to reveal a defention of that element. From the catalytic From a moment of respectation cycles From the catalytic From the		EQUATION Y-11 SUMMARY.	AND RESULT	
How rows a detend in the equation above to reveal a defention of that element. From the catalytic From a moment of respectation cycles From the catalytic From the			n	
How rows a detend in the equation above to reveal a defention of that element. From the catalytic From a moment of respectation cycles From the catalytic From the			$CO_2 = \sum \left[(CB_Q) n \times C \right]$	C × 44/12 × 0.001
Annual CO; enables from the scalapic reforming unit Tegeneration cycles Average cole lamost Average cole lamost Average cole lamost Che SURMARY MEASUREMENT DATA Annual CHe enables EOUNTON Y-IO SUMMARY AND RESULT EOUNTON Y-IO SUMMARY AND RESULT Hour over an element in the equation above to reveal a definition of that element. Annual Right emission Support Cole 2x Emission Hour over an element in the equation above to reveal a definition of that element. Annual Right emission Support Cole 2x E			1.	-
from this catabylic regeneration cycles or measurement particle Average color burnet measurement particle CHs SUMMARY (MEASUREMENT DATA) Annual CH emission FOUNTION Y-10 SUMMARY AND RESULT EDUATION Y-10 SUMMARY AND RESULT N2O* (CO2 × Enr.) Hour over an element in the equation shows to seval a definition of that element. Annual RGs emission (prestic tors)			Hover over an element in the	equation above to reveal a definition of that element.
reforming unit Use V-11 spreadbaset to calculate Testembar of regression cycles of measurement period Regression cycles to the test of				(metric tons)
regress ratios cycles or measurement particle (kg coketrycle or kg coketrycles or kg coketrycles (kg coketrycle or kg coketrycles or kg coketrycles or kg coketrycles (kg coketrycles or kg coketrycles or kg coketrycles or kg coketrycles (kg coketrycles or kg coketrycles or kg coketrycles or kg coketrycles (kg coketrycles or kg coketrycles) CHs SUMARY ADERSURENT DATA) (find cols)/kg reforming unit EOUATION Y-10 SUMARY ADERSULT (find cols)/kg reforming unit EOUATION Y-10 SUMARY ADERSULT (kg cols)/kg cols cols) Hour over an element in the squadron above to reveal a definition of that element. Annual Rg0 emission (prate: ton)		from this catalytic reforming unit	Use Y-11 spreadsheet	to calculate
minisaurement jeriolo Average dock burnedit quantity per cycles CHs SUMMARY (MEASUREMENT DATA) Annual CHe envision Genetic torol Ferritrian Genetic torol Ferritrian Ng/O = (CO2 × Emrit) Hour over a temperation to the quantitor above to reveal a definition of that element. Annual Rijo eministra Genetic torol				
CH4 SUMMARY (MEASUREMENT DATA) Annual CH4 emission Generation Hour over an element in the equation above to reveal a definition of that element. Annual Rob emission Generation				
measurement period CHs SUMMARY (MEASUREMENT DATA) Annual (CH emblain from this catalytic reforming and EOUATION Y-10 SUMMARY AND RESULT EOUATION Y-10 SUMMARY AND RESULT Nz0* (CC2 × EmF1) How row an element in the equation above to reveal a definition of that element. Annual RE0 emiliation		Average coke burn-off		(kg coke/cycle or kg coke/measurement period)
Annual CNs enablish (Institution) EOUATION Y-10 SUMMARY AND RESULT EOUATION Y-10 SUMMARY AND RESULT Hore over an element in the equation above to reveal a definition of that element. Annual Rod emission Constrained		quantity per cycle or measurement period		
Annual (R) enables (Institution) EOUATION Y-10 SUMMARY AND RESULT N≥0 < (C02 × EmP3)				
from this catalytic		CH4 SUMMARY (MEASURE)	(ENT DATA)	
reforming unit EOUATION Y-ID SUMMARY AND RESULT Ngo ⊂ (Co2 y Emps) Hower over an element in the equation above to reveal a definition of that element. Annual Rod emission 				(metric tons)
N2O* (CO2 × EmPs) EmPr) Howe over an element in the equation above to reveal a definition of that element.				
N2O* (CO2 × EmPs) EmPr) Howe over an element in the equation above to reveal a definition of that element.		EQUATION V 10 SUMMARY		
Hover over an element in the equation above to reveal a definition of that element. Annual RCO emission (metric tons)		LOOKING THU SUMMART.		
Annual N2O emission (metric tons)			$N_2O=\left(CO_2 \times \frac{CO_1}{EmF_1}\right)$	
from this catabric			Hover over an element in the	equation above to reveal a definition of that element.
from this catabilic			[(metric tons)
		from this catalytic	Use Y-10 spreadsheet	
CANCEL SAVE		CANCEL CANE		

CH₄ Emissions Calculation: Equation Y-9

The annual CH_4 emissions from the unit operations is required. To calculate this value download the spreadsheet by clicking the link titled "Use Y-9 spreadsheet to calculate." Fill in the spreadsheet using the instructions in the spreadsheet. After completing the spreadsheet, copy the value of CH_4 calculated by the spreadsheet to this page in the box next to "Annual CH_4 emission from this *unit type* unit (metric tons)."

The Equation Y-9 Summary is presented in the screenshot below. You can hover over an element in the equation to reveal a definition of that element.

ning + 0.081 for Subpart Y gooling	acility ABC (2010) ubpart Y: Petroleum ubpart Overview = Catalytic Ci GHG DATA AND ASSOCIATE Use this page to enter the GH information shown for this ca	Volte: Peter Johnson (1 Ar Peter) Lo Refineries Tracing and Coking Units -654zxovel Editoria and Coking Units -654zxovel DerGebMATION HO data regarder by Subpart Y. Please enter the Market crashing unit (docking unit, or catalytic Information about the data collected on this page, plank() provided. SU Editor Y 1) COL examines (meter bard) Editor Y 1) COL examines (meter bard) Editor Y 1) COL examines (meter bard) NO RESULT
ing e 0.00T for Subpart Y gring e 0.00T for Subpart Y	ubpart Y: Petroleum ubpart Overview – Catalyte Cr GHG DATA AND ASSOCIATED Use bits page to enter the GH information shown for this ca reforming unit. For additional please use the e-GORT Help	Th Refineries Refineries Sectors and Colory UNIs + 55 tzcovet Hick data residue of the Colory unit, or citaly Hick data residue of the Colory unit, or citaly Hindky) provided. Sectors and the data colorided on this page, Jim (4) provided. Sectors and the data colorided on this page, Jim (4) provided. Sectors and the data colorided on this page, Jim (4) provided. Sectors and the data colorided on this page, Jim (4) provided. Sectors and the data colorided on this page, Jim (4) provided. Sectors and the data colorided on this page, Jim (4) provided. Sectors and the data colorided on this page, Jim (4) provided on the data colorided on this page. Jim (4) provided on the data colorided on this page. Jim (4) provided on the data colorided on this page. Jim (4) provided on the data colorided on this page. Jim (4) provided on the data colorided on this page. Jim (4) provided on the data colorided on the data colorid
	Use this page to enter the GH Information shown for this ca reforming unit. For additional please use the e-GORT Help	High data required by Subject / Pieses enter the information about the data collected on this page, plink(s) provided.
ſ	EQUATION Y-8 SUMMARY AN	
		$\begin{array}{l} \text{CO}_2 = \Omega_{unit} \times \left(\text{ CBF } \times 0.001 \right) \times \mathbb{CC} \times \frac{44}{12} \\ \\ \text{Hover over an element in the equation above to reveal a definition of that element.} \end{array}$
	Annual CO2 emission from this fluid catalytic cracking unit Basis for the carbon	500 (metric tons) Use Y-8 spreadsheet to calculate Weekly or more frequent measurements
	Content value	
	Annual CH4 emission from this fluid catalytic cracking unit	Hover over an element in the equation above to reveal a definition of that element. 50] (metric tons) Use Y-9 spreadsheet to calculate
	EQUATION Y-10 SUMMARY A	ND RESULT $\frac{EmF_{2}}{EmF_{1}}$ (CO ₂ × $\frac{EmF_{2}}{EmF_{1}}$) How over an element in the equation above to reveal a definition of that element.
	Annual N2O emission from this fluid catalytic cracking unit	Prover over an element in the equation adove to reveal a delimitation of an element. 10 (metric tons) Use Y-10 spreadsheet to calculate

CH₄ Emissions Calculation: Unit-Specific Measurement Data

For the unit-specific measurement data method, Subpart Y collects the annual CH₄ emission from this unit (metric tons).

The CH₄ Summary (Measurement Data) is presented in the screenshot below.

	tates nental Protection		e-GGRT 🔎
HOME FACILITY REGISTR	ATION FACILITY MANAGEMENT	DATA REPORTING	Electronic Greenhouse Gas Reporting Tool
			Hello, Peter Kobylarek My Profile Log-
e-GRET Help Using e-OORT for Subpart Y	Facility ABC (2010) Subpart Y: Petroleum Subpart Overview « Catalytic C	Refineries racking and Coking Units = 654zxcvsdf	
	information shown for this ca	HG data required by Subpart Y. Please enter the talytic cracking unit, fluid coking unit, or catalytic information about the data collected on this page,	(Eq. V-8) CC2 xmissions (medic tens) (Eq. V-8) CC2 xmissions (medic tens) (CC2 xmissions (medic tens)) (CH1 xmissions (medic tens))
			N20 emissions (metric tons)
	EQUATION Y-8 SUMMARY AV	CO2= Cunt × (CBF × 0.001) × CC × $\frac{44}{12}$ Hover over an element in the equation above to reve 500 (metric tons) Use Y-8 spreadsheat to calculate	bal a definition of that element.
	Basis for the carbon content value	Weekly or more frequent measurements	
	CH4 SUMMARY (MEASUREM	ENT DATA)	
	Annual CH4 emission from this fluid catalytic cracking unit	50 (metric tons)	
	N20 SUMMARY (MEASUREM	ENT DATA)	
	Annual N2O emission from this fluid catalytic cracking unit	10 (metric tons)	
	CANCEL SAVE		

CH4 Emissions Calculation: A Unit-Specific Emission Factor Based on a Source Test of the Unit

For the unit-specific emission factor based on a source test of the unit method, Subpart Y collects annual CH₄ emission from this unit (metric tons).

For this method Subpart Y also collects the basis for the CH_4 emission factor:

- Weekly or more frequent measurements
- Periodic (less frequent than weekly) measurements
- Average of multiple source tests
- One-time source test
- Other (specify)

The CH_4 Summary (Emission Factor Based on a Source Test) is presented in the screenshot below.

FACILITY REGISTRAT	10N FACILITY MANAGEMENT	DATA REPORTING	Electronic Greenhouse Gas Reporting Tool
			Hello, Peter Kobylarek My Profile Lo
GRET Help GORT for Subpart Y	Facility ABC (2010) Subpart Y: Petroleum Subpart Overview » Catalytic C	Refineries racking and Coking Units = 654zxcvsdf	
	information shown for this ca	HG data required by Subpart Y. Please enter the talytic cracking unit, fluid coking unit, or catalytic information about the data collected on this pag	Fe SO (Fig. Y4) CC2 emissions (metric box) S CH4 emissions (metric box) E SC emissions (metric box)
	EQUATION Y-8 SUMMARY AP	ID RESULT CO2= Q _{init} × (CBF × 0.001) × CC × $\frac{44}{12}$ Hover over an element in the equation above to 500 (metric tons	
	this fluid catalytic cracking unit	Use Y-8 spreadsheet to calculate	,
	Basis for the carbon content value	Weekly or more frequent measurements	×
	CH4 SUMMARY (EMISSION F	ACTOR BASED ON A SOURCE TEST)	
	Annual CH4 emission from this fluid catalytic cracking unit	50 (metric tons	3)
	Basis for the CH4 emission factor	Weekly or more frequent measurements	×
	N2O SUMMARY (EMISSION F	ACTOR BASED ON A SOURCE TEST)	
	Annual N2O emission from this fluid catalytic cracking unit	10 (metric tons	3)
	Basis for the N2O emission factor	Weekly or more frequent measurements	×
	CANCEL SAVE		

N₂O Emissions Calculation: Equation Y-10

The annual N_2O emissions from the unit operations is required. To calculate this value download the spreadsheet by clicking the link titled "Use Y-10 spreadsheet to calculate." Fill in the spreadsheet using the instructions in the spreadsheet. After completing the spreadsheet, copy the value of N_2O calculated by the spreadsheet to this page in the box next to "Annual N_2O emission from this *unit type* unit (metric tons)."

The Equation Y-10 Summary is presented in the screenshot below. You can hover over an element in the equation to reveal a definition of that element.

	itates mental Protection		e-GGRT 🔎
HOME FACILITY REGIST	RATION FACILITY MANAGEMENT	DATA REPORTING	Electronic Greenhouse Gas Reporting Tool Hello, Peter Kobylarek My Profile Logo
י - ORET Help אוויק - OORT for Subpad Y אוויק - OORT for Subpad Y	GHG DATA AND ASSOCIATED Use this page to enter the GH information shown for this ca	racking and Coking Units = 654zxcvsdf DINFORMATION HG data required by Subpart Y. Please enter the datytic cracking unit, fluid coking unit, or catatytic Information about the data collected on this page,	500 (Eq. V4) COL emissions (invelor bane) (Eq. V1) COL emissions (invelor bane)
	EQUATION Y-8 SUMMARY AP Annual CO2 emission from this fluid catalytic	CO ₂ = Q _{unit} × (CBF × 0.001) × CC × $\frac{44}{12}$ Hover over an element in the equation above to rew 500 (metric tons)	eal a definition of that element.
	cracking unit Basis for the carbon content value	Use Y-8 spreadsheet to calculate Weekly or more frequent measurements	×
	EQUATION Y-9 SUMMARY AN Annual CHc emission from this fluid catalytic cracking unit	ND RESULT CHIP(CC2 × EmF2 Hover over an element in the equation above to reve 50 (metric tons) Use Y-9 spreadsheetto calculate	eal a definition of that element.
	EQUATION Y-10 SUMMARY A	ND RESULT $N_2 O= \left(CO_2 \times \frac{EmF_3}{EmF_1} \right)$ Hover over an element in the equation above to rew	eal a definition of that element.
	Annual N2O emission from this fluid catalytic cracking unit	10 (metric tons)	
	CANCEL		

N₂O Emissions Calculation: Unit-Specific Measurement Data

For the unit-specific measurement data method, Subpart Y collects the annual N₂O emission from this unit (metric tons).

The $\rm N_2O$ Summary (Measurement Data) is presented in the screenshot below.

Click	image	to	expand
Onon	mage	w	onpuna

	tates nental Protection		e-GGRT 🔑
HOME FACILITY REGISTR	ATION FACILITY MANAGEMENT	DATA REPORTING	Electronic Greenhouse Gas Reporting Tool Hello, Peter Kobylarek My Profile Logou
e-GRET Help Using e-OORT for Subpart Y reporting	Facility ABC (2010) Subpart Y: Petroleum Subpart Overview = Catalytic C	racking and Coking Units = 654zxcvsdf	
	Use this page to enter the Gi information shown for this ca	IG data required by Subpart Y. Please a talytic cracking unit, fluid coking unit, or information about the data collected on	catalytic (Eq. Y-8) CO2 emissions (metric tons)
	EQUATION Y-8 SUMMARY AP		N2O emissions (metric tons)
			above to reveal a definition of that element.
	Annual CO2 emission from this fluid catalytic cracking unit	500 (me	etric tons) e
	Basis for the carbon content value	Weekly or more frequent measureme	nts 💌
	CH4 SUMMARY (MEASUREM		
	Annual CH4 emission from this fluid catalytic cracking unit	50 (m	etric tons)
	N20 SUMMARY (MEASUREM	ENT DATA)	
	Annual N2O emission from this fluid catalytic cracking unit	10 (m	etric tons)
	CANCEL SAVE		
operwork Reduction Act Burde	n Statement Contact Us		

N2O Emissions Calculation: A Unit-Specific Emission Factor Based on a Source Test of the Unit

For the unit-specific emission factor based on a source test of the unit method, Subpart Y collects annual N₂O emission from this unit (metric tons).

For this method Subpart Y also collects the basis for the $\mathrm{N_2O}$ emission factor:

- Weekly or more frequent measurements
- Periodic (less frequent than weekly) measurements
- Average of multiple source tests
- One-time source test
- Other (specify)

The N₂O Summary (Emission Factor Based on a Source Test) is presented in the screenshot below.

E FACILITY REGISTR	ATION FACILITY MANAGEMENT	DATA REPORTING	Electronic Greenhouse Gas Reporting Tool
-GRET Help e-GGRT for Subpart Y	Facility ABC (2010) Subpart Y: Petroleum Subpart Overview » Catalytic C	Refineries acking and Coking Units = 654zxcvsdf	
	information shown for this ca	IG data required by Subpart Y. Please enter talytic cracking unit, fluid coking unit, or cata information about the data collected on this	htic (Eq. Y-8) CO2 emissions (metric tors)
	EQUATION Y-8 SUMMARY AP	$CO_2 = O_{unit} \times (CBF \times 0.001) \times CC \times \frac{44}{12}$ Hover over an element in the equation above	ve to reveal a definition of that element.
	Annual CO2 emission from this fluid catalytic cracking unit	500 (metric to 500) Use Y-8 spreadsheet to calculate	tons)
	Basis for the carbon content value	Weekly or more frequent measurements	v
	CH4 SUMMARY (EMISSION F	ACTOR BASED ON A SOURCE TEST)	
	Annual CH4 emission from this fluid catalytic cracking unit	50 (metric	tons)
	Basis for the CH4 emission factor	Weekly or more frequent measurements	v
	N2O SUMMARY (EMISSION F	ACTOR BASED ON A SOURCE TEST)	
	Annual N2O emission from this fluid catalytic cracking unit	10 (metric	tons)
	Basis for the N2O emission factor	Weekly or more frequent measurements	×
	CANCEL SAVE		

Back to Top

See Also

Screen Errors

Using e-GGRT to Prepare Your Subpart Y Report Subpart Y Summary Information for this Facility Subpart Y Delayed Coking Unit Information Subpart Y Asphalt Blowing Unit Information Subpart Y Coke Calcining Unit Information Subpart Y Catalytic Cracking, Fluid Coking, and Catalytic Reforming Unit Information Subpart Y Flares Unit Information Subpart Y Process Vents Unit Information Subpart Y Sulfur Recovery Plant Information Subpart Y Emissions Information for Process Units Monitored by CEMS Subpart Validation Report

Subpart Y Flares Unit Information

This topic provides a step-by-step description of how to enter Subpart Y Flares unit information about this facility.

States mental Protection					e-G	GRT	
RATION FACILITY MANAGEM	ENT DATA REPORTING				tronic Green Rep	house Gas orting Tool	V
				He	llo, Caitlin Carl	tere My Pr	ofile Logout
FacilityToDelete1835-A							
	eum Refineries (20	011)					
Subpart Overview				ERA has	finalized a ru	le that defer	s the
	T Y REPORTING REQUIRE			used as	for reporting inputs to emis	ssion equation	ins for
from flares, catalytic crack	d facilities to report Greenho ing units, traditional fluid col	king units, fluid coki	ina units		nitters until Ma 7 (oublished A		
with flexicoking design, de	layed coking units, catalytic ning units, asphalt blowing, e	reforming units, su	ilfür	accorda	nce with the r	rule, e-OGRT	is not
tanks, uncontrolled blowde	own systems, loading operat	ions, process vents	, and		equations.	is subset of	nputs to
non-merchant hydrogen pl please use the e-GGRT H	ants. For additional informati eln link(s) provided	on about Subpart Y	reporting,				
	-+			1 5	iubpart Y: ¹	View Valid	ation
				_			
FACILITY-LEVEL EMISSIO	NS SUMMARY						
	CO ₂ (metr		CH4 (me		Status ¹	_	
Uncontrolled Blowdown Systems		N/A		54.00	Complete	·	OPEN
Equipment Leaks		N/A		54.00	Complete		OPEN
Loading Operations		N/A		54.00	Complete		OPEN
Storage Tanks	Facility did not receive uns	tabilized crude oil/s	tored liquids o	ther than	Complete		OPEN
Sour Gas Sent Off-Site	unstabilized crude oil Facility does not send sou	r nas officia			Complete		OPEN
Delayed Coking	r senty does not send sou	N/A		54.00	Complete Complete		OPEN
Condyce coning				04.00	- compiete		on ch
DELAYED COKING UNITS							
Unit Name/Identifier					Status ¹		Delete
None entered							
ADD a Delayed Coking U	Jnit						
ASPHALT BLOWING UNIT							
Unit Name/Identifier	CO2 (metri	c tons) CH 50.0	42 (metric tons)	3 Status 3 Comple		OPEN	Delete
ADD an Asphalt Blowing	15.5	00.0	42.00	o o o mpo		Of En	
ADD an Asphalt Blowing	Onic						
COKE CALCINING UNITS	EMISSIONS SUMMARY						
Unit Name/Identifier	CO2 (metric tons) CH4	(metric tons) N2	O (metric tons) Status			Delete
🕼 cour	50.0	54.00	24.000	0 Comple	ete	OPEN	×
+ADD a Coke Calcining U	nit						
CATALOTIC CRACKING II	NITS, TRADITIONAL FLUID	COMPLE INTE					
COKING UNITS WITH FLE	XICOKING DESIGN, AND C	ATALYTIC REFOR	MING				
UNITS EMISSIONS SUMM							
Unit Name/Identifier	CO2 (metric tons) CH4	(metric tons) N2 34.00) Status D Comple		OPEN	Delete
ADD a Catalytic Crackin		34.00	30.000	o compo	510	UPEN	•
ADD a Catalytic Crackin	g or Coking Unit						
FLARES UNITS EMISSION	IS SUMMARY						
Unit Name/Identifier	CO2 (metric tons)	CH4 (metric tons) N2O (me	stric tons	Status ¹		Delete
None entered							
+ADD a Flare							
PROGEOGUENES							
PROCESS VENTS UNITS						1	
Unit Name/Identifier None entered	CO2 (metric tons)	Cris (metric tons) N2O (me	stric tons;	Status		Delete
ADD a Process Vent							
SULFUR RECOVERY UNIT	S EMISSIONS SUMMARY						
Unit Name/Identifier			CO 2 (me	stric tons;	Status ¹		Delete
None entered							
ADD a Sulfur Recovery F	Plant						
★ Facility Overview							
"A status of "Incomplete" mea validation messages in your?	ins that one or more required (/alidation Report by clicking th	data elements are in e "View Validation" li	complete. For in nk above (Ninte	details, re ; if there a	fer to the Dat re no validat	ta Complet ion messa	eness des for this
subpart you will not see this li	nių.						
				_	_	_	_
an Statement Contact Lie						PT PV201	

Step 1. Adding or Updating Flares Unit Information

To add or update Subpart Y Flares Unit Information for this Facility, locate the FLARES UNITS EMISSIONS SUMMARY table on the Subpart Y Overview page, click the link titled "ADD a Flare."

To edit an existing Flare Unit, click on the edit icon or the Name/ID link, which is the first column in the FLARES UNITS EMISSIONS SUMMARY table.

To delete an existing Flare Unit, click on the delete icon, which is the last column in the FLARES UNITS EMISSIONS SUMMARY table.



Subpart Y collects the following data about your flare unit:

- A unique name or identifier, plus optional description for this flare unit (see also About Unique Unit Names)
- Type of flare:
 - Steam assisted
 - Air assisted
 - Unassisted
 - Other (specify)
- Flare service type:
 - General facility flare
 - Unit flare
 - Emergency only flare
 - Back-up flare
 - Other (specify)
 - Method used to calculate the CO₂ emissions:
 - 98.253(b)(1)(ii)(A) Equation Y-1a Gas Composition Monitored (Equation Y-1a or Y-1b must be used if you have a continuous
 gas composition monitor on the flare or if you measure it at least weekly)
 - 98.253(b)(1)(ii)(A) Equation Y-1b Gas Composition Monitored (Equation Y-1a or Y-1b must be used if you have a continuous
 gas composition monitor on the flare or if you measure it at least weekly)
 - 98.253(b)(1)(ii)(B) Equation Y-2 Heat Content Monitored (Equation Y-2 must be used if you have a continuous higher heating value monitor or measure it at least weekly and the heating value monitor or measurement is not based on compositional analyses; if compositional analyses are used, you must use Equation Y-1a or Y-1b)
 - 98.253(b)(1)(iii) Equation Y-3 Start-up, Shutdown, Malfunction (Equation Y-3 must be used if you do not measure gas composition or heating value at least weekly.)

When you are finished, click SAVE.

Step 2. Adding or Updating Flare Unit Emissions Information

This page provides a step-by-step description of how to enter Subpart Y Flares unit emissions information.

Step 2a: Select a flare

To add or update Subpart Y flare emissions information, locate the FLARES UNITS EMISSION SUMMARY table on the Subpart Y Overview page, and click OPEN.

itates nental Protection					e-G	GRT	<u>s</u>
RATION FACILITY MANAGEME	NT DATA REPORTING					iouse Gas rting Tool	V
				He	lo, Caltin Carte	are My Pi	ofile Logoul
FacilityToDelete1835-A2							
Subpart Y: Petrole	eum Refineries (20)11)					
Subpart Overview					finalized a rule		
	Y REPORTING REQUIRE				for reporting o inputs to emist		
Subpart Y requires affected	facilities to report Greenhor	ise gas (GHG)	emissions	direct en	itters until Mar	ch 31, 201	5. See 76
with flexicoking design, del	ng units, traditional fluid col ayed coking units, catalytic	reforming units	coxing units , sulfur	FR 5305	(published A nos with the ru	ligust 25, 2	011). In Tile ant
recovery units, coke calcini	ayed coking units, catalytic ing units, asphalt blowing, e wn systems, loading operati	quipment leaks	, storage	currently	collecting this	subset of	inputs to
non-merchant hydrogen pla	ints. For additional informati	on about Subpa	art Y reporting,	emission	equations.		
please use the e-GGRT He	Ip link(s) provided.			A	ubpart Y: V		
				<u> </u>	uppart r. v	iew valid	acion
EACH ITY LEVEL EMISSION	IC CUMMADY						
PACIEITT-LEVEL EMISSION	CO2 (metri		C11. (m)	stric tons)	Ft-1		
Uncontrolled Blawdown	CO2 (meth	C tons) N/A	CH4 (m)		Complete		OPEN
Systems		1995		04.00	Complete		OPEN
Equipment Leaks		N/A		54.00	Complete		OPEN
Loading Operations		N/A		54.00	Complete		OPEN
Storage Tanks	Facility did not receive unst	abilized crude	oil/stored liquids o	ther than	Complete		OPEN
Sour Gas Sent Off-Site	unstabilized crude oil Facility does not send sour				Complete	_	OPEN
Delayed Coking	Pacifity does not send sour	N/A		£4.00			OPEN
Delayed Coking		N/A		54.00	Complete		OPEN
DELAYED COKING UNITS							
Unit Name/Identifier					Status		Delete
None entered					Status		Defete
ADD a Delayed Coking U							
Unit Name/Identifier	CO2 (metri	c tons) 60.0	CH4 (metric tons 42.0) Status) Comple		OPEN	Delete X
ADD an Asphalt Blowing	Unit	i.					
COKE CALCINING UNITS E	MISSIONS SUMMARY						
	CO2 (metric tons) CH4					_	Delete
Ca cour	50.0	54.00	24.00	D Comple	ite	OPEN	×
ADD a Coke Calcining Un	it						
CATALYTIC CRACKING UN COKING UNITS WITH FLEX	ITS, TRADITIONAL FLUID (ICOKING DESIGN, AND C	ATALYTIC REF	S, FLUID FORMING				
UNITS EMISSIONS SUMMA	ARY						
	CO2 (metric tons) CH4						Delete
🛱 CRU	60.0	34.00	36.00	O Comple	te	OPEN	×
ADD a Catalytic Cracking	or Coking Unit						
FLARES UNITS EMISSIONS							_
	CO2 (metric tons) CH4	(metric tons)	N2O (metric tons				Delete
D Flare1				Incomp	lete	OPEN	×
ADD a Flare							
PROCESS VENTS UNITS F	MISSIONS STUMMARY						
	CO2 (metric tons)	CH. Institute	lone) No O-free	utria tarana	Status!		Delet
Unit Name/Identifier	CO2 (metric (ons)	Cru (metric)	roms) n20 (mi	and tons)	Status.		Delete
ADD a Process Vent				-		-	
ar ab ar locess vent							
SULFUR RECOVERY UNITS	EMISSIONS SUMMARY						
Unit Name/Identifier			C02 (m)	atric torns)	Status ¹		Delete
None entered							
+ ADD a Sulfur Recovery PI	lant						
★ Facility Overview							
¹ A status of "Incomplete" mean	ns that one or more required o	iata elements a	re incomplete. For	details, ref	er to the Data	Complet	eness
validation messages in your V subpart you will not see this lin	alidation Report by clicking the	"View Validatio	n" link above (Note	if there an	re no validatio	on messa	ges for this
soopertype will not see this in	ery.						
n Statement Contact Us							

Step 2b: Equation Summary and Results

The Equation Summary is presented on this page. You can hover over an element in the equation to reveal a definition of that element.

For each flare at your facility, Subpart Y requires you to enter the following emissions information:

- The annual CO₂ emissions from flare unit operations (the output of Equation Y-1a, Y-1b, Y-2, or Y-3 depending on the calculation method used for this flare, in metric tons) [98.256(e)(4)]
- used for this flare, in metric tons) [98.256(e)(4)] The annual CH₄ emissions from flare unit operations (the output of Equation Y-4, in metric tons) [98.256(e)(4)]
- The basis for the fraction of carbon in the flare gas contributed by methane value:
 - Method 18 at 40 CFR part 60, appendix A-6
 - ASTM D1945-03
 - ASTM D1946-90-Reapproved 2006
 - GPA 2261-00
 - UOP539-97
 - ASTM D2503-92-Reapproved 2007
 - Chromatographic analysis: manufacturer's instructions
 - Engineering calculations
 - Other (specify)
- The annual N₂O emissions from flare unit operations (the output of Equation Y-5, in metric tons) [98.256(e)(4)]

The e-GGRT system provides links to optional worksheets that may be used to perform the calculations; use of the spreadsheet is entirely optional and is provided for your assistance. To calculate annual CO_2 emissions using the optional spreadsheets, download the calculation spreadsheet by clicking the link titled "Use Y-x spreadsheet to calculate" (where 'x' represents 1a, 1b, 2, or 3 depending on the CO_2 calculation method used for this flare). Fill in the spreadsheet using the instructions in the spreadsheet. After completing the spreadsheet, copy the value of CO_2 calculated by the spreadsheet to this page in the red box next to "Annual CO_2 emission from this flare (metric tons)."

To calculate annual CH_4 and N_2O emissions using the optional spreadsheets, download the calculation spreadsheets by clicking the links titled "Use Y-4 spreadsheet to calculate" and "Use Y-5 spreadsheet to calculate," respectively. Fill in the spreadsheets using the instructions in each spreadsheet. After completing the spreadsheets, copy the values of CH_4 and N_2O calculated by the spreadsheets to this page in the red box next to "Annual CH₄ emission from this flare (metric tons)" and "Annual N₂O emission from this flare (metric tons)," respectively.

If using a mass flow meter to measure flow, molecular weights may be estimated instead of measured.

Step 2c: Enter supplemental emissions information

For each flare using the Equation Y-1a calculation method, Subpart Y requires you to enter the following supplemental emissions information:

- An indication of whether daily or weekly measurement periods are used [98.256(e)(6)]
- The annual volume of flare gas combusted (in scf) [98.256(e)(6)]
- The specific consensus-based standard method number or description of the procedure specified by the flow meter manufacturer [98.256(q)]
- The number of days during the reporting year missing data procedures were used to determine the volume of flare gas combusted
- The annual average molecular weight (in kg/kg-mole) [98.256(e)(6)]
- The method used to measure molecular weight [98.256(q)]
 - Method 18 at 40 CFR part 60, appendix A-6
 - ASTM D1945-03
 - ASTM D1946-90 (Reapproved 2006)
 - GPA 2261-00
 - UOP539-97
 - ASTM D2503-92 (Reapproved 2007)
 - Chromatographic analysis: manufacturer's instructions
 - Other (specify)
- The number of days during the reporting year missing data procedures were used to determine molecular weight
- The annual average carbon content of the flare gas (kg carbon/kg flare gas) [98.256(e)(6)]
- The method used to measure carbon content [98.256(q)]
 - Method 18 at 40 CFR part 60, appendix A-6
 - ASTM D1945-03
 - ASTM D1946-90 (Reapproved 2006)
 - GPA 2261-00
 - UOP539-97
 - ASTM D2503-92 (Reapproved 2007)
 - Chromatographic analysis: manufacturer's instructions
 - Other (specify)
- The number of days during the reporting year missing data procedures were used to determine carbon content



For each flare using the Equation Y-1b calculation method, Subpart Y requires you to enter the following supplemental emissions information:

- An indication of whether daily or weekly measurement periods are used [98.256(e)(7)]
- The annual volume of flare gas combusted (in scf) [98.256(e)(7)]
- The specific consensus-based standard method number or description of the procedure specified by the flow meter manufacturer [98.256(q)]
- The number of days during the reporting year missing data procedures were used to determine the volume of flare gas combusted
- The annual average CO₂ concentration (in percent by volume or mole) [98.256(e)(7)]
- The method used to measure CO₂ concentration [98.256(q)]
 - Method 18 at 40 CFR part 60, appendix A-6
 - ASTM D1945-03
 - ASTM D1946-90 (Reapproved 2006)
 - GPA 2261-00
 - UOP539-97
 - ASTM D2503-92 (Reapproved 2007)
 - · Chromatographic analysis: manufacturer's instructions
 - Other (specify)
- The number of days during the reporting year missing data procedures were used to determine CO₂ concentration

- For each carbon containing compound other than CO₂ in the flare gas stream identified by the facility, and for each flare using Equation Y-1b, the system shall require the facility to identify: The annual average concentration of the compound (in percent by volume or mole) [98.256(e)(7)(i)]

, ссот 🥕

- The method used to measure concentration of the compound [98.256(q)] ٠
 - Method 18 at 40 CFR part 60, appendix A-6
 - ASTM D1945-03
 - ASTM D1946-90 (Reapproved 2006)
 - GPA 2261-00
 - UOP539-97
 - ASTM D2503-92 (Reapproved 2007)
 - Chromatographic analysis: manufacturer's instructions
 - Other (specify)
- The number of days during the reporting year missing data procedures were used to determine the concentration of the compound

Click	ima	ge t	o exp	band	

			Electronic Greenhouse Gas Reporting Tool
HOME FACILITY REGISTRA	TION FACILITY MANAGEMENT	DATA REPORTING	Reporting Tool Hello, Catlin Carter My Profile Log
e-GRET Help	Petroleum Refineries Com	1pany 1 (2010)	
	Subpart Y: Petroleu	m Refineries	
sing e-GGRT for Subpart Y sporting	Subpart Overview + Flares + Flar	e2 = Eq. Y-1b	
	GHG DATA AND ASSOCIATE	ED INFORMATION	
	Use this page to enter the GH	G data required by Subpart Y. Please enter the	500
	information shown for this flare this page, please use the e-GI	. For additional information about the data collected on GRT Help link(s) provided.	(Eq. Y-1b) CO2 emissions (metric tons)
			50
			(Eq. Y-4) CH4 emissions (metric tons)
			10
			(Eq. Y-5) NzO emissions (metric tons)
	EQUATION Y-15 SUMMARY	AND RESULT	
	<u>n</u>	(Score) 44	(%Cx)e
	CO2 = 2	$\left[(Flare)_p \times \frac{44}{MVC} \times 0.001 \times \left(\frac{(\% CO_2)_p}{100\%} + \sum_{y=1}^{y} \left\{ 0.98 \times \right. \right) \right]$	100% ×CMMx })
		Hover over an element in the equation above to reveal a	definition of that element.
	Annual CO ₂ emission	500 (metric tons)	
	from this flare	Use Y-1b spreadsheet to calculate	
	MEASUREMENT FREQUENO	Y	
	Frequency of measurement data	Daily	
	incusive meat data	O Weekly	
	VOLUME OF FLARE GAS		
	Annual volume of flare gas combusted	58 (scf)	
	Specific consensus-based		
	standard method or describe the procedure		
	standard method or describe the procedure specified by the flow meter manufacturer		
	Number of days missing	2 (days)	
	data procedures were used for annual volume		
	of flare gas combusted		
	ANNUAL AVERAGE CO2 CO	NCENTRATION	
	Annual average CO2 concentration	g (percent by volume	or mole; 0 ≤ x ≤ 100)
	Method used to	Method 18 at 50 CFR part 60, appendix A-6	×
	determine the annual average CO2	The second se	
	concentration		
	Number of days missing data procedures were	1 (days)	
	used for annual average CO2 concentration		
	CARBON CONTAINING COM	POUNDS (OTHER THAN CO2) IN THE FLARE GAS STR	FAM
	Carbon Containing Compound	Annual Average Method(s) Used t Concentration C	o Measure Annual Average Delet
	None entered ADD a Compound		
	 Applies composite 		
	EQUATION Y-4 SUMMARY A	ND RESULT	
		$CH_4 = \left(CO_2 \times \frac{EmF_{CH_4}}{EmF} \right) + CO_2 \times \frac{0.02}{0.98} \times \frac{16}{44} \times f_{CH_4}$	
	Annual City on Lat	Hover over an element in the equation above to reveal a	ummuon of that element.
	Annual CH4 emission from this flare	50 (metric tons)	
		Use Y-4 spreadsheet to calculate	
	FRACTION OF CARBON IN T		
	Basis for the fraction of carbon in the flare gas	Method 18 at 50 CFR part 60, appendix A-6	×
	contributed by methane		
		ND 050117	
	EQUATION Y-5 SUMMARY A		
		$N_2O = \left(CO_2 \times \frac{EmFN_{2O}}{EmF} \right)$	
		Hover over an element in the equation above to reveal a	definition of that element.
	Annual N2O emission	10 (metric tons)	
	from this flare	Use Y-5 spreadsheet to calculate	
	CANCEL		

To add a non-CO2 carbon-contain compound for the flare, click the "ADD a Compound" link in the CARBON CONTAINING COMPOUNDS (OTHER THAN CO2) IN THE FLARE GAS STREAM section on the Equation Summary and Result page and enter the required information.

When finished entering the required compound information, click SAVE.



For each flare using the **Equation Y-2** calculation method, Subpart Y requires you to enter the following supplemental emissions information:

- An indication of whether daily or weekly measurement periods are used [98.256(e)(8)]
- The annual volume of flare gas combusted (in MMscf) [98.256(e)(8)]
- The specific consensus-based standard method number or description of the procedure specified by the flow meter manufacturer [98.256(q)]
- The number of days during the reporting year missing data procedures were used to determine the volume of flare gas combusted
- The annual average higher heating value of the flare gas (MMBtu/MMscf) [98.256(e)(8)]
- The method used to measure higher heating value of the flare gas [98.256(q)]
 - ASTM D4809-06
 - ASTM D240-02 (Reapproved 2007)
 - ASTM D1826-94 (Reapproved 2003)
 - ASTM D3588-98 (Reapproved 2003)
 - ASTM D4891-89 (Reapproved 2006)
 - Chromatographic analysis: manufacturer's instructions
 - Other (specify)
- The number of days during the reporting year missing data procedures were used to determine the higher heating value of the flare gas
- An indication of whether the annual volume of flare gas combusted was determined using standard conditions of 68 °F and 14.7 psia or 60 °F and 14.7 psia [98.256(e)(8)]
- An indication of whether the annual average higher heating value of the flare gas was determined using standard conditions of 68 °F and 14.7 psia or 60 °F and 14.7 psia [98.256(e)(8)]

FACILITY REGISTRATION F	ACILITY MANAGEMENT	DATA REPORTING	Electronic Greenhouse Gas Reporting Tool
			Helio, Catlin Carter My Profile
Subn	eum Refineries Com art Y: Petroleu		
	Overview » Flares » Flar		
GHG I	DATA AND ASSOCIATE	D INFORMATION	
inform	ation shown for this flare	G data required by Subpart Y. Please enter the For additional information about the data collected on	200
this pa	ige, please use the e-G	GRT Help link(s) provided.	
			(Eq. Y-4) CH4 emissions (metric to
			(Eq. Y-5) N2O emissions (metric to
FOUA	TION Y-2 SUMMARY A	ND RESULT	
		$CO_2 = 0.98 \times 0.001 \times \sum_{p=1}^{n} [(Flare)_p \times (HHV)_p \times (En$	ηF)]
		Hover over an element in the equation above to reveal	a definition of that element.
1	Annual CO2 emission from this flare	500 (metric tons)	
		Use Y-2 spreadsheet to calculate	
MEAS	UREMENT FREQUENC	Υ	
	Frequency of measurement data	Daily	
		O Weekly	
	ME OF FLARE GAS — nual volume of flare	58 (MMscf)	
	gas combusted ific consensus-based	50 (((())))	
Speci	standard method or scribe the procedure specified by the flow		
	specified by the flow meter manufacturer		
Nun	nber of days missing ata procedures were d for annual volume	1 (days)	
use of	d for annual volume flare gas combusted		
Con	ditions on which the nual volume of flare	68 °F and 14.7 psia	
an	gas was determined	O 60 °F and 14.7 psia	
	ER HEATING VALUE OF	THE FLARE GAS	
An heati	nual average higher ing value of the flare gas combusted	23 (MMBtu/MMscf)	
	Method used to etermine the annual	ASTM D4809-06	×
dave	etermine the annual trage higher heating value		
Nun	nber of days missing	1 (days)	
dused	nber of days missing ata procedures were I for annual average higher heating value		
Con	ditions on which the	O 68 *F and 14.7 psia	
an	nual average higher heating value was determined	● 60 °F and 14.7 psia	
	determined		
EQUA	TION Y-4 SUMMARY A		
		$CH_4 = \left(CO_2 \times \frac{EmFOH}{EmF} \right) + CO_2 \times \frac{0.02}{0.98} \times \frac{16}{44} \times for$	14
		Hover over an element in the equation above to reveal	
1	Annual CH4 emission from this flare	50 (metric tons)	
		Use Y-4 spreadsheet to calculate	
	TION OF CARBON IN T		
Ba	sis for the fraction of rbon in the flare gas tributed by methane	Method 18 at 50 CFR part 60, appendix A-6	¥
con	anouted by methane		
EQUA	TION Y-5 SUMMARY A		
		$N_2O = \left(CO_2 \times \frac{EmF_{N_2O}}{EmF} \right)$	
		Hover over an element in the equation above to reveal	a definition of that element.
1	Annual N2O emission from this flare	10 (metric tons)	
		Use Y-5 spreadsheet to calculate	

For each flare using the **Equation Y-3** calculation method, Subpart Y requires you to enter the following supplemental emissions information:

• The total number of start-up, shutdown, or malfunction (SSM) events exceeding 500,000 scf/day [98.256(e)(9)]

OME FACILITY REGISTR	tates nental Protection ATION FACILITY MANAGEMENT	DATA REPORTING	Electronic Greenhouse Gas Reporting Teol Helio, Caldin Carter My Profile Log
e-GRET Help sing e-GGRT for Subpart Y porting	Petroleum Refineries Com Subpart Y: Petroleum Subpart Overview » Flares » Flar	m Refineries	
		3 data required by Subpart Y. Please enter the For additional information about the data collected on	500 (Eq. Y.3) CO2 emissions (metric tons) 50 CH4 emissions (metric tons)
	EQUATION Y-3 SUMMARY A	ND RESULT 001×(FlareNorm×HH-f/×EmF + $\sum_{n=1}^{n} \left[\frac{44}{12}$ ×(Flares)	National and the second
	CO2 = U.98 × U Annual CO2 emission from this flare	UUTX (FioreNorm XHHV XEmit + 2 [172X(FioreS pert) Hover over an element in the equation above to reveal a 500 (metric tons) Use Y-3 spreadsheet to calculate	
	START-UP, SHUTDOWN, OR Total number of start-up, shutdown, or malfunction (SSM) events exceeding 500,000 scf/day		
	EQUATION Y-4 SUMMARY A	ND RESULT $CH_1 = (CO_2 \times \frac{EmF_{CH_1}}{EmF}) + CO_2 \times \frac{0.02}{0.98} \times \frac{16}{44} \times f_{CH_1}$ Hover over an element in the equation above to reveal a	
	Annual CH4 emission from this flare	50 (metric tons)	
	FRACTION OF CARBON IN TH Basis for the fraction of carbon in the flare gas contributed by methane	HE FLARE GAS Method 18 at 50 CFR, part 60, appendix A-6	×
	EQUATION Y-5 SUMMARY A	ND RESULT $N_2O = (CO_2 \times \frac{EmF_{MOO}}{EmF})$ Hover over an element in the equation above to reveal a	definition of that element
	Annual N2O emission from this flare	10 (metric tons)	semmer e ne ovribit.
	CANCEL SAVE		

Step 2d: Save Your Data

When you have finished entering emission results, click SAVE.

After you save the data on this page, the next time you open the page, the calculator on the top of the page will display the CO_2 , CH_4 , and N_2O emissions, rounded to the nearest 0.1, 0.01, and 0.001 of a metric ton, respectively. The value displayed is for informational purposes only.

Step 3. Repeat Steps 1-2

Repeat Steps 1-2 until you have entered emissions information for all flares at your facility.

Back to Top

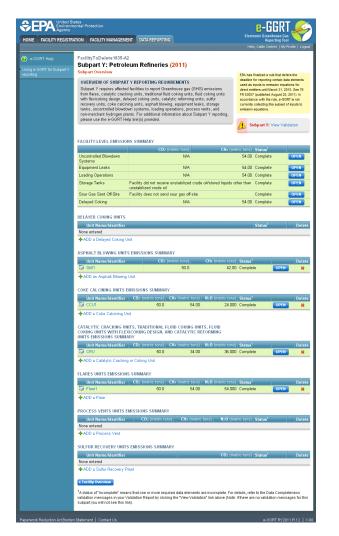
See Also

Screen Errors Using e-GGRT to Prepare Your Subpart Y Report Subpart Y Summary Information for this Facility Subpart Y Delayed Coking Unit Information Subpart Y Asphalt Blowing Unit Information Subpart Y Coke Calcining Unit Information Subpart Y Catalytic Cracking, Fluid Coking, and Catalytic Reforming Unit Information Subpart Y Flares Unit Information Subpart Y Process Vents Unit Information Subpart Y Sulfur Recovery Plant Information Subpart Y Emissions Information for Process Units Monitored by CEMS Subpart Validation Report

Subpart Y Process Vents Unit Information

This topic provides a step-by-step description of how to enter Subpart Y Process Vents unit information about this facility.

Adding or Updating Process Vents Unit Information



To add or update Subpart Y Process Vents unit information for this Facility, locate the PROCESS VENTS UNITS EMISSIONS SUMMARY table on the Subpart Y Overview page.

Click the link titled "ADD a Process Vent."

To edit an existing Process Vent unit, click on the edit icon or the Name/ID link, which is the first column in the PROCESS VENTS UNITS EMISSIONS SUMMARY table.

To delete an existing Process Vent unit, click on the delete icon, which is the last column in the PROCESS VENTS UNITS EMISSIONS SUMMARY table.



Subpart Y collects the following data about your Process Vent unit:

- A unique name or identifier, plus optional description for this process vent unit (see also About Unique Unit Names):
 - Operation type associated with this process vent:
 - Atmospheric crude distillation
 - Vacuum distillation
 - Delayed coking
 - Fluid coking (traditional)
 - Flexicoking

٠

- Visbreaking, other thermal cracking
- Fluid catalytic cracking unit
- Non-fluid catalytic cracking unit
- Catalytic hydrocracking
- Catalytic reforming unit continuous regeneration
- Catalytic reforming unit cyclic regeneration
 Catalytic reforming unit semi-regenerative
- Fuels solvent deasphalting
- Desulfurization/ hydrotreat naphtha/reformer feed
- Desulfurization/ hydrotreat gasoline
 Desulfurization/ hydrotreat kerosene/jet fuel
- Desulfurization/ hydrotreat diesel
- Desulfurization/ hydrotreat other distillate
- Desulfurization/ hydrotreat residual
- Desulfurization/ hydrotreat heavy gas oil
- Desulfurization/ hydrotreat --other
- HF alkylation
- H2SO4 alkylation
- Aromatics production
- Asphalt production
- Isomerization Isobutane
- Isomerization Iso C5,C6
- Lubricants production
- Petroleum coke storage
- Sulfur plant
- Gas plant (LPG production unit)
- Oxygenate plant MTBE
- Oxygenate plant ETBE
- Oxygenate plant TAME
- ٠ Oxygenate plant - other (specify)
- Marine vessel loading/unloading
- Truck/tank truck loading/unloading
- Rail car loading/unloading
- ٠ Blow down system
- Knock-out pot
- Analyzer
- Vacuum jet exhaust
- Wastewater treatment unit
- Wastewater collection system (drain, junction box, etc.)
- · Soil remediation

- Other
- Control device used to reduce methane (and other organic) emissions from the unit:
 Thermal or catalytic incinerator/oxidizer
 - Carbon adsorber
 - Condenser
 - Oil scrubber
 - None
 - Other (specify)
- Greenhouse gases to report for this process vent. Select any combination of CO₂, CH₄ or N₂O. CO₂ emissions must be reported if the process vent contains greater than 2 percent by volume CO₂ or greater. CH₄ emissions must be reported if the process vent contains 0.5 percent by volume of CH₄ or greater. N₂O emissions must be reported if the process vent contains 0.01 percent by volume of N₂O or greater. You must use Equation Y-19 for catalytic reforming unit depressurization and purge vents when methane is used as the purge gas.

When you are finished, click SAVE.

Adding or Updating Process Vents Unit Emissions Information

This page provides a step-by-step description of how to enter Subpart Y Process Vents unit GHG and associated data.

To add or update Subpart Y Process Vents unit emissions information, locate the PROCESS VENTS UNITS EMISSIONS SUMMARY table on the Subpart Y Overview page, and click OPEN.

	d States onmental Protection =Y		e-GGRT 🔑
ME FACILITY REGI	STRATION FACILITY MANAGEMEN	T DATA REPORTING	Electronic Greenhouse Gas Reporting Tool
			Helio, Caltin Carter My Profile Log
	Petroleum Refineries Co	mpany 1 (2010)	
	Subpart Y: Petrole		
nting	Subpart Overview » Process V	ents » Vent1	
	GHG DATA AND ASSOCIA	TED INFORMATION	
	Use this page to enter the G	HG data required by Subpart Y. Please enter the	(Eq. Y-19) CO2 emissions (metric tons)
	collected on this page, pleas	ocess vent. For additional information about the data ie use the e-GGRT Help link (s) provided.	(Eq. 1- ra) C O2 emissions (metric tons)
			50
			(Eq. Y-19) CH4 emissions (metric tons)
			10
			(Eq. Y-19) N2O emissions (metric tons)
	EQUATION Y-19 SUMMARY .	AND RESULT	
		$\mathbf{E}_{\mathbf{X}} = \sum_{p=1}^{N} \left((VR)_{p} \times (MF_{X})_{p} \times \frac{MVV_{x}}{MVC} \times (VT)_{p} \right)$	
		$= \sum_{p=1}^{\infty} \left(\left(VR \right) p \wedge \left(MP_{X} \right) p \wedge MVC \wedge \left(V1 \right) p \right) \right)$	~ 0.001)
		Hover over an element in the equation above to reveal a	definition of that element.
	Annual volumetric flow	56 (scf)	
	discharged to the atmosphere	36 (44)	
	Method used to measure	Continuous or at least hourly measurements	~
	or estimate the annual volumetric flow rate	Commode of a recentionly mediatements	
	Number of venting	46	
	events, if vent is intermittent		
	Cumulative venting time	356 (hours)	
		-	
	CO2 SUMMARY AND RESUL Annual CO2 emission	500 (metric tons)	
	from this process vent	Use Y-19 spreadsheet to calculate	
	Annual average mole fraction of CO2	.012 (decimal; 0 ≤ x ≤ 1	1.0)
	Method used to measure	Engineering estimates/process knowledge 💌	
	or estimate the mole fraction of CO2		
	CH4 SUMMARY AND RESUL	T	
	Annual CH4 emission from this process vent	50 (metric tons)	
	from this process vent	Use Y-19 spreadsheet to calculate	
	Annual average mole	.022 (decimal; 0 ≤ x ≤ 1	1.0)
	fraction of CH4 Method used to measure		
	or estimate the mole fraction of CH4	Engineering estimates/process knowledge ¥	
	N20 SUMMARY AND RESUL	T	
	Annual N20 emission	10 (metric tons)	
	from this process vent	Use Y-19 spreadsheet to calculate	
	Annual managements	.023 (decimal; 0 ≤ x ≤ 1	0
	Annual average mole fraction of N2O	.U23 (decimal; U.S.x.S.1	
	Method used to measure or estimate the mole	Engineering estimates/process knowledge 💌	
	or estimate the mole fraction of N2O		
	CANCEL SAVE		

Subpart Y collects the following data about your Process Vent unit:

- Annual volumetric flow discharged to the atmosphere (scf)
 - Method used to measure or estimate the annual volumetric flow rate:
 - · Continuous or at least hourly measurements
 - Routine (less frequent than hourly but at least weekly) measurements
 - Periodic (less frequent than weekly) measurements
 - Process knowledge
 - Engineering calculation
 - Other (specify)

٠

- · Number of venting events, if vent is intermittent (see note below)
- Cumulative venting time (hours)

1. Note that number of venting events is not applicable for continuous venting in which case you may leave this field blank

Subpart Y collects the following data if CO₂ is being reported for this Process Vent:

- Annual CO₂ emissions from this process vent (metric tons). To calculate this value download the spreadsheet by clicking the link titled "Use Y-19 spreadsheet to calculate." Fill in the spreadsheet using the instructions in the spreadsheet. After completing the spreadsheet, copy the value of CO₂ calculated by the spreadsheet to this page in the box next to "Annual CO₂ emission from this process vent (metric tons)."
- Annual average mole fraction of CO₂
- Method used to measure or estimate the annual average mole fraction of CO₂:
 - Engineering estimates/process knowledge
 - Direct measurement
 - Other (specify)

Subpart Y collects the following data if CH₄ is being reported for this Process Vent:

- Annual CH₄ emissions from this process vent (metric tons). To calculate this value download the spreadsheet by clicking the link titled "Use Y-19 spreadsheet to calculate." Fill in the spreadsheet using the instructions in the spreadsheet. After completing the spreadsheet, copy the value of CH₄ calculated by the spreadsheet to this page in the box next to "Annual CH₄ emission from this process vent (metric tons)."
- Annual average mole fraction of CH₄
- Method used to measure or estimate the annual average mole fraction of CH₄:
 - Engineering estimates/process knowledge
 - Direct measurement
 - Other (specify)

Subpart Y collects the following data if N2O is being reported for this Process Vent:

- Annual N₂O emissions from this process vent (metric tons). To calculate this value download the spreadsheet by clicking the link titled "Use Y-19 spreadsheet to calculate." Fill in the spreadsheet using the instructions in the spreadsheet. After completing the spreadsheet, copy the value of N₂O calculated by the spreadsheet to this page in the box next to "Annual N₂O emission from this process vent (metric tons)."
- Annual average mole fraction of N₂O
- Method used to measure or estimate the annual average mole fraction of N₂O:
 - Engineering estimates/process knowledge
 - Direct measurement
 - Other (specify)

The Equation Y-19 Summary is presented on the page. You can hover over an element in the equation to reveal a definition of that element.

When you have finished entering emission results, click SAVE.

Back to Top

See Also

Screen Errors Using e-GGRT to Prepare Your Subpart Y Report Subpart Y Summary Information for this Facility Subpart Y Delayed Coking Unit Information Subpart Y Asphalt Blowing Unit Information Subpart Y Coke Calcining Unit Information Subpart Y Catalytic Cracking, Fluid Coking, and Catalytic Reforming Unit Information Subpart Y Flares Unit Information Subpart Y Process Vents Unit Information Subpart Y Sulfur Recovery Plant Information Subpart Y Emissions Information for Process Units Monitored by CEMS Subpart Validation Report

Subpart Y Sulfur Recovery Plant Information

This page provides a step-by-step description of how to enter Subpart Y Sulfur Recovery Plant information about this facility.

Adding or Updating Sulfur Recovery Plant Information

To add or update Subpart Y Sulfur Recovery Plant information for this Facility, locate the SULFUR RECOVERY UNITS EMISSIONS SUMMARY table on the Subpart Y Overview page.

To edit an existing Sulfur Recovery Plant, click on the edit icon or the Unit Name/Identifier link, which is the first column in the SULFUR RECOVERY UNITS EMISSIONS SUMMARY table.

To delete an existing Sulfur Recovery Plant, click on the delete icon, which is the last column in the SULFUR RECOVERY UNITS EMISSIONS SUMMARY table.

Click image to expand

	tates nental Protection				e-GGR	IT 🔎
DME FACILITY REGISTR	ATION FACILITY MANAGEN	IENT DATA REPORTING		Elect	Reporting 1	Bas 'ool
				Heli	io, Caitlin Cartere N	ly Profile Logo
	FacilityToDelete1835-	eum Refineries (2011)				
ing e-GGRT for Subpart Y orting	Subpart Overview	euni kennenes (2011)				
sotting	OVERVIEW OF SUBPAI Subpart Y requires affect from flares, catalytic crac with flexicoking design, d recovery units, cole cato tanks, uncontrolled blow non-merchant hydrogen p	AT Y REPORTING REQUIREMENTS ad facilities to report Greenhouse ga king units, traditional fluid coking un elayed coking units, catalytic reform ning units, asphalt blowing, equipme your systems, loading operations, p lants, For additional information abo	s (GHG) emissions its, fluid coking units ing units, sulfur ent leaks, storage rocess vents, and	deadline used as i direct em FR 53057 accordan currently emission	finalized a rule that d for reporting certain o nputs to emission eq itters until March 31, (published August 2 collecting this subse equations.	data elements uations for 2015. See 76 (5, 2011). In GRT is not
	please use the e-GGRT H	lelp link(s) provided.		— 🔔 si	ubpart Y: View V	alidation
	FACILITY-LEVEL EMISSI					
		CO2 (metric tons)		la (metric tons)		
	Uncontrolled Blowdown Systems	N/A	ł –	54.00	Complete	OPEN
	Equipment Leaks	NØ		54.00	Complete	OPEN
	Loading Operations	NØ		54.00	Complete	OPEN
	Storage Tanks	Facility did not receive unstabilize	d crude oiVstored lig			OPEN
	olologo lanto	unstabilized crude oil		0100 01101 (1101	o on proto	
	Sour Gas Sent Off-Site	Facility does not send sour gas o	f-site		Complete	OPEN
	Delayed Coking	NØ		54.00	Complete	OPEN
	DELAYED COKING UNITS					
	Unit Name/Identifier				Status ¹	Delet
	None entered				Status	Delet
	ADD a Delayed Coking	1				
		TS EMISSIONS SUMMARY				
	Unit Name/Identifier			tons) Status ¹		Delet
	Dja Stim	60.0		42.00 Comple	te OPE	×
	COKE CALCINING UNITS Unit Name/Identifier		: tons) N2O (metric 54.00 2	tons) Status ¹ 24.000 Comple	te OPE	Delete N X
	ADD a Coke Calcining	Init				
	COKING UNITS WITH FLI UNITS EMISSIONS SUM		TIC REFORMING			
		CO2 (metric tons) CH4 (metric				Delete
	DØ CRU	50.0	34.00 3	36.000 Comple	te OPE	×
	+ADD a Catalytic Cracki					
	FLARES UNITS EMISSIO					
		CO2 (metric tons) CH4 (metric 50.0				Delete
	Di Flare1 I ADD a Flare	50.0	54.00 6	54.000 Comple	te OPE	*
	PROCESS VENTS UNITS	EMISSIONS SUMMARY				
		CO2 (metric tons) CH4 (metric	tons) N2O (reatrid	tons) Statue1		Delet
	Process1	50.0		54.000 Comple	te OPE	
	ADD a Process Vent					• ^
	SULFUR RECOVERY UNI	S EMISSIONS SUMMARY				
	Unit Name/Identifier		C0	2 (metric tons)	Status ¹	Delete
	None entered					
	+ ADD a Sulfur Recovery	Plant				
	★ Facility Overview					
	¹ A status of "Incomplete" me validation messages in your subpart you will not see this	ans that one or more required data ele Validation Report by clicking the "View Inity.	ments are incomplete Validation" link above	. For details, refe (Note: if there an	er to the Data Com e no validation me	pleteness ssages for this
	n Statement Contact Us					2011.R.12 Y

Subpart Y collects the following data about your sulfur recovery plant:

- A unique name or identifier, plus optional description for this sulfur recovery plant (see also About Unique Unit Names).
- For each plant, indicate a response of Yes or No answering the question: Do you operate and maintain a CEMS that measures CO₂ emissions according to subpart C? This means that both a flow meter and a concentration monitor need to be installed. If so, you must use the CEMS methodology for measuring CO₂ emissions from the sulfur recovery unit.

When you are finished, click NEXT.

	nmental Protection		אטט-9 🛃
IOME FACILITY REGIST	TRATION FACILITY MANAGEMEN	DATA REPORTING	Electronic Greenhouse Gas Reporting Tool Hello, Caltin Carter My Profile Logout
e-GRET Help	Petroleum Refineries Co Subpart Y: Petroleu Subpart Overview * Sulf1 * Edit	um Refineries	
	Use this page to enter the m recovery plant. Also enter the recovery plant, and additiona	T EMISSIONS CALCULATION METHOD thind used to calculate CD2 emissions of the sulfur in maximum rated throughput, the type of the sulfur linformation. For additional information about the data e use the e-GGRT Help link(s) provided.	* denotes a required field
	UNIT INFORMATION		
	Name or ID*	Sulf1 (40 chara	cters maximum)
	Description (optional)		
	Туре	Sulfur Recovery Plant	
	RATED OUTPUT		
	Maximum rated throughput of the sulfur recovery plant	20000 (metric tons sulfur	per stream day)
	PLANT TYPE		
	Type of sulfur recovery plant	Caustic scrubber	
	CO2 EMISSIONS CALCULATI	ON METHOD	
	Method used to calculate* the CO2 emissions	 Equation Y-12 Process Vent Method 	
	RECYCLED TAIL GAS		
	If you recycle tail gas to * the front of the plant, is the recycled flow rate and carbon content of recycled tail gas included	© Yes	
	in the measured volumetric flow and carbon mole fraction data? (If you do not	No No	
	recycle tail gas, please select "No")		
	CONTINUOUS EMISSIONS M	ONITORING	
	ls this unit's emissions* monitored using a CEMS?	⊙ Yes ⊛ No	
	+BACK CANCEL SA	Æ	

Subpart Y collects the following data about your sulfur recovery plant:

- Maximum rated throughput of the sulfur recovery plant (metric tons sulfur per stream day)
 - Type of sulfur recovery plant:
 - Caustic scrubber
 - Claus
 - Lo-cat
 - Sulfuric acid plant
 - Other (specify)
- Method used to calculate the CO₂ emissions. Specify either Equation Y-12 or Process Vent Method. [Only appears if No is selected for using a CEMS. For Claus Plants (that do not use a CEMS according to Subpart C), Equation Y-12 must be used. For non-Claus plants (that do not use a CEMS according to Subpart C), either Equation Y-12 or the Process Vent Method may be used.]
- Indicate whether, if you recycle tail gas, the recycled flow rate and carbon content of recycled tail gas is included in the measured volumetric flow and carbon mole fraction data. If you do not recycle tail gas, please select No. [This question appears only if Equation Y-12 is selected]. Click either Yes or No.
- Indicate if a correction for CO₂ emissions in the tail gas is used. [This question appears only if Yes is selected for previous question]. Click either Yes or No. Note that per Section 98.253(f)(5), if tail gas is recycled to the front of the sulfur recovery plant and the recycled flow rate and carbon content is included in the measured data, then the annual CO₂ emissions must be corrected to avoid double counting these emissions.

When you are finished, click SAVE.

Adding or Updating Sulfur Recovery Plant Emissions Information

This section provides a step-by-step description of how to enter Subpart Y sulfur recovery plant emissions information.

To add or update emissions information for a sulfur recovery plant that is monitored by CEMS, please refer to the Subpart Y Emissions Information for Process Units Monitored by CEMS help page.

To add or update emissions information for a sulfur recovery plant that is NOT monitored by CEMS, locate the SULFUR RECOVERY UNITS EMISSIONS SUMMARY table on the Subpart Y Overview page, and click OPEN.

					e-GGR	
ATION FACILITY MANAGEN	MENT DATA REPORTING			Elec	tronic Greenhouse G Reporting To Io, Catin Cartere My	Profile Logo
FacilityToDelete1835-	A2					
	leum Refineries (2	:011)				
Subpart Overview				EPA has	finalized a rule that de	fers the
	RT Y REPORTING REQUIRE			used as	for reporting certain da inputs to emission equ	ations for
Subpart Y requires affect from flares, cotalutic crar	ed facilities to report Greenh king units, traditional fluid co	ouse gas (GHG) en okion units fluid col	nissions king unite		nitters until March 31, 2 7 (published August 25	
with flexicoking design, d	lelayed coking units, catalyti	ic reforming units, s	ulfur	accorda	nce with the rule, e-GG collecting this subset	IRT is not
tanks, uncontrolled blowd	ining units, asphalt blowing, down systems, loading opera	ations, process vent	s, and		equations.	or inputs to
non-merchant hydrogen p please use the e-GGRT H	alants. For additional informatelip link(s) provided.	tion about Subpart	Y reporting,			
				<u>∕</u> s	ubpart Y: View Va	lidation
FACILITY J EVEL EMISSI	ONE CHIMADY			_		
PACIEITT-LEVEL EMISSI	CO2 (met	tric tons)	CH4 (met	ric tons)	Statue ¹	
Uncontrolled Blowdown		N/A			Complete	OPEN
Systems Equipment Leaks		N/A		54.00	Complete	OPEN
Loading Operations		N/A			Complete	OPEN
Storage Tanks	Facility did not receive un		(stored liquide of			OPEN
	unstabilized crude oil		and a manual of			_
Sour Gas Sent Off-Site	Facility does not send so				Complete	OPEN
Delayed Coking		N/A		54.00	Complete	OPEN
DELAYED COKING UNITS						
Unit Name/Identifier					Status ¹	Delete
None entered						
ADD a Delayed Coking	Unit					
ASPHALT BLOWING UNI	TS EMISSIONS SUMMARY					
Unit Name/Identifier			H4 (metric tons)	Status		Delete
🕼 Still1		50.0		Comple		
+ADD an Asphalt Blowin	g Unit					
COKE CALCINING UNITS						
	CO2 (metric tons) CH	(metric tone) M	n O (matric taxe)	Status		Delete
CCU1	50.0	54.00		Comple	te OPEN	
+ ADD a Coke Calcining						
CATALYTIC CRACKING U COKING UNITS WITH FLI	EXICOKING DESIGN, AND	D COKING UNITS, CATALYTIC REFO	FLUID RMING			
COKING UNITS WITH FLI UNITS EMISSIONS SUM	EXICORING DESIGN, AND MARY	CATALYTIC REFO	RMING			
COKING UNITS WITH FLI UNITS EMISSIONS SUM Unit Name/Identifier	EXICOKING DESIGN, AND MARY r CO2 (metric tons) CH	CATALYTIC REFO	RMING 20 (metric tons)			
COKING UNITS WITH FLI UNITS EMISSIONS SUM Unit Name/Identifier	EXICOKING DESIGN, AND MARY CO2 (metric tons) CH 50.0	CATALYTIC REFO	RMING 20 (metric tons)	Status	te OPEN	Delete
COKING UNITS WITH FLI UNITS EMISSIONS SUM Unit Name/Identifier	EXICOKING DESIGN, AND MARY CO2 (metric tons) CH 50.0	CATALYTIC REFO	RMING 20 (metric tons)		te OPEN	
COKING UNITS WITH FLI UNITS EMISSIONS SUM Unit Name/Identifier	EXICOKING DESIGN, AND MARY CO2 (metric tons) CH 50.0 ng or Coking Unit	CATALYTIC REFO	RMING 20 (metric tons)		open	
COKING UNITS WITH FL UNITS EMISSIONS SUMM Unit Name/Identifier Ca CRU ADD a Catalytic Cracki FLARES UNITS EMISSIO Unit Name/Identifier	EXICORING DESIGN, AND + MARY CO2 (metric tons) CH 50.0 ng or Coking Unit NS SUMMARY CO2 (metric tons) CH	CATALYTIC REFO 4 (metric tons) No 34.09 4 (metric tons) No	RMING 20 (metric tons) 36.000 20 (metric tons)	Comple		×
COKING UNITS WITH FLI UNITS EMISSIONS SUMM Unit Name/demifier CRU ADD a Catalytic Cracki FLARES UNITS EMISSIO Unit Name/demifier CR Flare1	EXICOKING DESIGN, AND MARY CO2 (metric tons) CH 50.0 ng or Coking Unit NS SUMMARY	CATALYTIC REFO 4 (metric tons) No 34.00	RMING 20 (metric tons) 36.000 20 (metric tons)	Comple		
COKING UNITS WITH FL UNITS EMISSIONS SUMM Unit Name/Identifier Ca CRU ADD a Catalytic Cracki FLARES UNITS EMISSIO Unit Name/Identifier	EXICORING DESIGN, AND + MARY CO2 (metric tons) CH 50.0 ng or Coking Unit NS SUMMARY CO2 (metric tons) CH	CATALYTIC REFO 4 (metric tons) No 34.09 4 (metric tons) No	RMING 20 (metric tons) 36.000 20 (metric tons)	Comple		X Delete
COKING UNITS WITH LI UNITS EMISSIONS SUM Unit NameAdentifiet Dja CRU	EXICORING DESIGN, AND of MARY CO2 (metric tons) CH 50.0 ng or Coking Unit NS SUMMARY r CO2 (metric tons) CH 50.0	CATALYTIC REFO 4 (metric tons) No 34.09 4 (metric tons) No	RMING 20 (metric tons) 36.000 20 (metric tons)	Comple		X Delet
COKING UNITS WITH EL UNITS EMISSIONS SUM Unit Namelidentifiet [2] CRU + ADD a Catalytic Cracki FLARES UNITS EMISSIO Unit Namelidentifiet [2] Flaret + ADD a Flare PROCESS VENTS UNITS	EXICORING DESIGN, AND MARY CO2 (metric tons) CH 60 D ng or Coking Unk NS SUMMARY r CO2 (metric tons) CH 60 D EMISSIONS SUMMARY	CATALYTIC REFO 4 (metric tons) No 34.00 44 (metric tons) Ac 54.00	RMING 20 (metric tons) 36.000 20 (metric tons) 54.000	Comple Status Comple		Delete
COKING UNITS WITH EL UNITS EMISSIONS SUM Unit Namelidentifiet [2] CRU + ADD a Catalytic Cracki FLARES UNITS EMISSIO Unit Namelidentifiet [2] Flaret + ADD a Flare PROCESS VENTS UNITS	EXICORING DESIGN, AND of MARY CO2 (metric tons) CH 50.0 ng or Coking Unit NS SUMMARY r CO2 (metric tons) CH 50.0	CATALYTIC REFO 4 (metric tons) No 34.00 44 (metric tons) Ac 54.00	RMING 20 (metric tons) 36.000 20 (metric tons) 54.000 20 (metric tons)	Comple Status Comple	tte OPEN	Delete
Cokinic units with FL Units Emissions Sum Unit AmenAdentifier Car CRU +ADD a Catalytic Cracki FLARES UNITS Emissio Unit Name1dentifier ADD a Flares PROCESS VENTS UNITS Unit Name1dentifier	EXICORING DESIGN, AND of ARY CO2 (metric tons) CH 50.0 ng or Coking Unit NS SUMMARY CO2 (metric tons) CH EMISSIONS SUMMARY CO2 (metric tons) CH	CATALYTIC REPOI (metric tons) No 34.00 (metric tons) No 54.00 (metric tons) No (metric tons) No	RMING 20 (metric tons) 36.000 20 (metric tons) 54.000 20 (metric tons)	Status Comple Status	tte OPEN	Delete
Coking units with Hermonovic Sources and the source constraints and the source of the sources of	EXTORING DESIGN, AND- ANY P CO2 (metric torn) CH 500 ng or Coking Unit HS SUMMARY CO2 (metric torn) CH EMISSIONS SUMMARY CO2 (metric torn) CH 500	CATALYTIC REFO 44 (metric tons) N2 44 (metric tons) N2 54 00 44 (metric tons) N2 21.00	RMING 20 (metric tons) 36.000 20 (metric tons) 54.000 20 (metric tons)	Status Comple Status	tte OPEN	Delete
CONINUMTS MURSICONS SUM MURTS RUSSICONS SUM MURTS RUSSICONS SUM MURTS RUSSICONS SUM PADD & Catalyte Cracki FLARES MURTS EMISSIO MURT Manna Meantifier GE Flant PROCESS VENTS UNITS MURT Manna Meantifier GE Process ADD & Process Vent SULFUR RECOVERY UNIT	EXICONING DESIGN, AND- ARY CQ: (mining trans) CRI ary CC: (mining trans) CRI ary CC: (mining trans) CRI CQ: (mining trans) CRI EMISSIONS SUMMARY CQ: (mining trans) CRI EXISSIONS SUMMARY TS EMISSIONS SUMMARY	CATALYTIC REFO I4 (metric tons) N2 I4 (metric ton	RMING 20 (metric tons) 36 000 20 (metric tons) 54 000 54 000 54 000	Status Comple Status Comple	te OPEN	Delet
Control units with sections sum units faussions sum units faussions sum units faussions sum units faussions faussions of control of the section section of control of the section section of the section section section section of the section section section section section of the section section section section section of the section section section section section section of the section section section section section section section of the section se	EXICONING DESIGN, AND- ARY CQ: (main: tran), CH ary CC: (main: tran), CH ary CC: (main: tran), CH CQ: (main: tran), CH EMISSIONS SUMMARY CQ: (main: tran), CH SO.0 TS EMISSIONS SUMMARY	CATALYTIC REFO I4 (metric tons) N2 I4 (metric ton	RMING 20 (metric tons) 36.000 20 (metric tons) 54.000 20 (metric tons)	Status Comple Status Comple	te OPEN te OPEN	Delete
CORRECUENTS WITH STATES WITHS EARSSIGNS SUM UNITS EARSSIGNS SUM UNITS EARSSIGNS SUM Careford States Careford States Ca	EXICONING DESIGN, AND- ANY CC2, UNING TOTAL OF CON- ng of Cohing Unit NS SUMMARY CC2, UNING TOTAL OF CON- EXILSSIONS SUMMARY CC2, UNING CON- EXILSSIONS SUMMARY TS EMISSIONS SUMMARY	CATALYTIC REFO I4 (metric tons) N2 I4 (metric ton	RMING 20 (metric tons) 36 000 20 (metric tons) 54 000 54 000 54 000	Status Comple Status Comple	te OPEN	Delet Delet
Control units with sections sum units faussions sum units faussions sum units faussions sum units faussions faussions of control of the section section of control of the section section of the section section section section of the section section section section section of the section section section section section of the section section section section section section of the section section section section section section section of the section se	EXICONING DESIGN, AND- ANY CC2, UNING TOTAL OF CON- ng of Cohing Unit NS SUMMARY CC2, UNING TOTAL OF CON- EXILSSIONS SUMMARY CC2, UNING CON- EXILSSIONS SUMMARY TS EMISSIONS SUMMARY	CATALYTIC REFO I4 (metric tons) N2 I4 (metric ton	RMING 20 (metric tons) 36 000 20 (metric tons) 54 000 54 000 54 000	Status Comple Status Comple	te OPEN te OPEN	Delet Delet
CORRECUENTS WITH STATES WITHS EARSSIGNS SUM UNITS EARSSIGNS SUM UNITS EARSSIGNS SUM Careford States Careford States Ca	EXICONING DESIGN, AND- ANY CC2, UNING TOTAL OF CON- ng of Cohing Unit NS SUMMARY CC2, UNING TOTAL OF CON- EXILSSIONS SUMMARY CC2, UNING CON- EXILSSIONS SUMMARY TS EMISSIONS SUMMARY	CATALYTIC REFO I4 (metric tons) N2 I4 (metric ton	RMING 20 (metric tons) 36 000 20 (metric tons) 54 000 54 000 54 000	Status Comple Status Comple	te OPEN te OPEN	Delet Delet
CORRECUENTS WITH STUBSONS SUM WITH SEMISSIONS SUM WITH CANSINGS SUM WITH CANSINGS SUM CORRECTIONS CORRECTIONS ACD a Cetalgite Creation Constraints ACD a Cetalgite Creation Constraints ACD a Constraints PROCESS VEHTS WITHS WITH Constraints ACD a Constraints WITH Constraints SULFUR RECOVERY UNI WITH Constraints SULFUR RECOVERY UNI WITH Constraints SULFUR RECOVERY UNI WITH Constraints SULFUR RECOVERY UNI Constraints SULFUR RECOVERY UNI WITH Constraints SULFUR RECOVERY UNI CONSTRAINTS SULFUR RECOVERY UNI WITH Constraints SULFUR RECOVERY UNI CONSTRAINTS SULFUR RECOVERY UNI SULFUR RECOVERY SULFUR RECO	EXICOLING DESIGN, AND- ANY COL profile (any) COL 900 ng or Coking Unit HS SUMMARY COL (methic fam) COL 900 EMISSIONS SUMMARY COL (methic fam) COL 900 EMISSIONS SUMMARY TS EMISSIONS SUMMARY Plant	CataLyttic REFO 34.00 4 (metric toni)) N. 4 (metric toni)) N. 54.00 21.00 C	RMING 20 (metric tons) 30 (metric tons) 54 000 54 000 02 (metric tons)	Status Comple Status Comple Status Incomp	te OFA	Delet
Control units with set of units fails solved and the set of the set of the set of the set of the set of the set of the set of the set of the set of the set of the set of the set of the set of the set	Extroching Destrick, Alth- Alty	CC 4 (notice tony) N. 34 00 4 (notice tony) N. 64 00 4 (notice tony) N. 21.00 CC 3 data elements are 1	RMING 20 (metric tons) 36.000 20 (metric tons) 54.000 20 (metric tons) 54.000 00: (metric tons)	Status Comple Status Comple Status Incomp	te OPEN	Delet X Delet X Delet X

Depending on the methods selected to calculate CO_2 emissions (see previous section titled "Adding or Updating Sulfur Recovery Plant Information"), you will be presented with screens to collect CO_2 emission results and additional data. Each specific screen is discussed below.

Equation Y-12 Summary and Result

The Equation Y-12 Summary is presented on the page. You can hover over an element in the equation to reveal a definition of that element.

Data collection elements that contains the phrase "If measured" below are not required if you use a non-measurement option provided in the rule to report this data (i.e. engineering estimates).

Subpart Y collects the following data about your sulfur recovery plant:

- Annual CO₂ emissions from this sulfur recovery plant (metric tons). The e-GGRT system provides links to optional worksheets that may
 be used to perform the calculations; use of the spreadsheet is entirely optional and is provided for your assistance. To calculate this value
 using the optional spreadsheet, download the spreadsheet by clicking the link titled "Use Y-12 spreadsheet to calculate." Fill in the
 spreadsheet using the instructions in the spreadsheet. After completing the spreadsheet, copy the value of CO₂ calculated by the
 spreadsheet to this page in the box next to "Annual CO₂ emission from this sulfur recovery plant (metric tons)."
- If measured, specific consensus-based standard method or describe the procedure specified by the flow meter manufacturer used to
 measure annual volume of sour gas fed
- If measured, number of hours missing data procedures were used for annual volume of sour gas fed
- · If measured, method used to measure the annual average mole fraction of carbon in the sour gas
- If measured, number of hours missing data procedures were used for annual average mole fraction of carbon in the sour gas
- Annual volume of recycled tail gas (report only if this value was not used to calculate the correction factor, in scf)
- If measured, method used to measure the annual volume of recycled tail gas
- If measured, number of hours missing data procedures were used for annual volume of recycled tail gas
- Annual average mole fraction of carbon in the tail gas (report only if this value was not used to calculate the correction factor, in kg-mole C/kg-mole gas)
- If measured, method used to measure the annual average mole fraction of carbon in the tail gas
- If measured, number of hours missing data procedures were used for annual average mole fraction of carbon in the sour gas

- Correction factor used to calculate CO₂ emissions
 - If unit specific correction factor is used, method used to determine correction factor used to calculate the CO₂ emissions
 - Used measurement data for the annual volume of recycled tail gas and annual average mole fraction of carbon in the tail
 - gasUsed measurement data for the annual volume of recycled tail gas and engineering calculations for mole fraction of carbon in the tail gas
 - Used measurement data for the mole fraction of carbon in the tail gas and engineering calculations for the annual volume of recycled tail gas
 - Used engineering calculations for both the annual volume of recycled tail gas and annual average mole fraction of carbon in the tail gas
 - Other (specify)

When you have finished entering emission results, click SAVE.

Click image to expand

e-GRET Help	Petroleum Refineries Co	mpany 1 (2010)	Helio, Caldin Carter My Profile L
	Subpart Y: Petroleu	Im Refineries	
Ising e-GGRT for Subpart Y sporting	Subpart Overview + Sulfur Reci	overy Plants » Sulfl » Eq. Y-12	
	information shown for this su	TED INFORMATION HG data required by Subpart Y. Please enter the flur recovery plant. For additional information about the please use the e-GGRT Help link(s) provided.	(Eq.Y-12) CO2 emissions (metric ton
	EQUATION Y-12 SUMMARY /	AND RESULT	
		CO2=Fso×44 MVC×MFc×0.001	
		Hover over an element in the equation above to reveal a	definition of that element.
	Annual CO2 emission from this sulfur recovery plant	500 (metric tons)	
	ANNUAL VOLUME OF SOUR	GAS FED TO THE SULFUR RECOVERY PLANT	
	If measured, specific consensus-based standard method or describe the procedure specified by the flow meter manufacturer used to measure annual volume of sour gas fed		
	If measured, number of hours missing data procedures were used for annual volume of sour gas fed	10 (hours)	
		RACTION OF CARBON IN THE SOUR GAS	
	If measured, method used to measure the annual average mole fraction of carbon in the sour gas	Method 18 at 50 CFR part 60, appendix A-6	v
	If measured, number of hours missing data procedures were used for annual average mole fraction of carbon in the sour gas	10 (hours)	

Process Vent Method (Equation Y-19) Summary and Result

The Equation Y-19 Summary is presented on the page. You can hover over an element in the equation to reveal a definition of that element.

Subpart Y collects the following data about your sulfur recover plant:

- Annual CO₂ emissions from this sulfur recovery plant (metric tons). The e-GGRT system provides links to optional worksheets that may be used to perform the calculations; use of the spreadsheet is entirely optional and is provided for your assistance. To calculate this value using the optional spreadsheet, download the spreadsheet by clicking the link titled "Use Y-19 spreadsheet to calculate." Fill in the spreadsheet using the instructions in the spreadsheet. After completing the spreadsheet, copy the value of CO₂ calculated by the spreadsheet to this page in the box next to "Annual CO₂ emission from this sulfur recovery plant (metric tons)."
- Annual volumetric flow discharged to the atmosphere (scf)
 - Method used to measure or estimate the annual volumetric flow rate:
 - · Continuous or at least hourly measurements
 - Routine (less frequent than hourly but at least weekly) measurements
 - Periodic (less frequent than weekly) measurements
 - Process knowledge
 - Engineering calculation
 - Other (specify)
- Number of venting events, if vent is intermittent (see note below)
- Cumulative venting time (hours)
- Annual average mole fraction of CO₂
- Method used to measure or estimate the annual average mole fraction of CO₂:
 - Engineering estimates/process knowledge
 - Direct measurement
 - Other (specify)

1. Note that number of venting events is not applicable for continuous venting in which case you may leave this field blank

When you have finished entering emission results, click SAVE.

	tates nental Protection			e-GGRT 🔑
HOME FACILITY REGISTR	ATION FACILITY MANAGEMEN	T DATA REPORTING		Electronic Greenhouse Gas Reporting Tool Helio, Caltin Cartere My Profile Logo
e-GGRT Help Using e-GGRT for Subpart Y reporting		VI TEST U M Refineries (2011 overy Plants×Sulfl <mark>× Process</mark>)		
	information shown for this su	TED INFORMATION HG data required by Subpart Y Ifur recovery plant. For addition please use the e-GGRT Help lin	al information about the	(Eq. Y-19) CO2 emissions (metric tons)
	EQUATION Y-19 SUMMARY	$\mathbf{E}_{\mathbf{X}} = \sum_{p=1}^{N} \left(\left(\mathbf{VR} \right)_{p} \times \left(\mathbf{MF}_{\mathbf{X}} \right)_{p} \right)$		
	Annual CO2 emission from this sulfur recovery plant	Hover over an element in the e	(metric tons)	efinition of that element.
	Annual volumetric flow discharged to the atmosphere		(scf)	
	Method used to measure or estimate the annual volumetric flow rate	Select		×
	Number of cumulative venting events for all relevant vents, if vents are intermittent (not applicable for continuous venting)			
	Cumulative venting time for all relevant vents		(hours)	
	AVERAGE MOLE FRACTION	OF CO2		
	Annual average mole fraction of CO2		(decimal; 0 ≤ x ≤ 1.0)
	Method used to measure or estimate the mole fraction of CO2	Select	M	
	CANCEL SAVE			

Back to Top

See Also

Screen Errors

- Using e-GGRT to Prepare Your Subpart Y Report
- Subpart Y Summary Information for this Facility
- Subpart Y Delayed Coking Unit Information
- Subpart Y Asphalt Blowing Unit Information
- Subpart Y Coke Calcining Unit Information
- Subpart Y Catalytic Cracking, Fluid Coking, and Catalytic Reforming Unit Information
- Subpart Y Flares Unit Information
- Subpart Y Process Vents Unit Information
- Subpart Y Sulfur Recovery Plant Information
- Subpart Y Emissions Information for Process Units Monitored by CEMS
- Subpart Validation Report

Subpart Y Emissions Information for Process Units Monitored by CEMS

This page provides step-by-step instructions on how to enter and edit Subpart Y Petroleum Refinery CO₂ emissions information for process units that are monitored by a Continuous Emissions Monitoring System (CEMS).

This page applies to the following types of process units that may be monitored by CEMS under Subpart Y:

- Coke calcining units
- Catalytic cracking units
- Traditional fluid coking units
- Fluid coking units with flexicoking design
- Catalytic reforming units
- Sulfur recovery plants

Step 1: Add a CEMS Monitoring Location (CML)

To add a CML, click the "Add a CEMS Monitoring Location" link below the CEMS MONITORING LOCATION (CML) SUMMARY table on the Subpart Overview page

The screenshot below is from Subpart G and is displayed as an example. The screen for other subparts may differ slightly.

	States immental Protection RATION FACILITY MANAGEMENT DATA REPORTING	
HOME PACILIT REGIS	RATION PROILITT MANAGEMENT DATA REPORTING	Helo, Emmanuel Kaluri My Profile Logou
) e-GGRT Help Jsing e-GGRT for Subpart G eporting	Facility ABC Subpart C: Ammonia Manufacturing (2011) Subpart Overview OVENUEV OF SUBPART REPORTING RECORRENTS Subpart Graymas affected activities proof cathord nodex (CO2) process emissions from activities moder and and there are the Coefficiency and for your facility. For additional information about Subpart G reporting, prease use the e-GGRT High (seles) provide.	EVA has finalized a rule that defens the deadlee for reporting certain data elements well as sirplats to emission equations for direct entities unablanch 11, 2015 See 76 P1 55077 (published August 25, 2011) is correctly coefficient of the subset of repuls to emission equations.
	SUBPART G SUMMARY INFORMATION FOR THIS FACILITY Annual Urea Prod. (motic cras) Quantity of CO: use 45.0	Subpart G: No Validation Messages ed to produce urea (metric tons) 40 OPEN
	UNIT SUUMARY Unit Name Identifier Feedstock COs (matric No unit subse added ADD a Unit	tons) Status [†] Delete
	UNIT SUMMARY (Units monitored by CEMS) Unit Nameldentifier Feedstock Status ¹ Pelete No units have been added ADD a Unit Monitored by CEMS	
	Eachty Overview A status of "Incomplete" means that one or more required data elements are incomplete. Fractional and a status of the View Validation message is in your Validation (Report by clicking the "View Validation" inic above (Network) and the View Validation (Report by clicking the View Validation" inic above (Network)	

Step 2: Define a CML and report emissions information

For each CEMS Monitoring Location, provide the following information:

- A unique unit name or identifier for the CML (see also About Unique Unit Names)
- An optional description or label for the CML
- The configuration of processes or process units that are monitored by the CML:
 - Single process or process unit that exhausts to a dedicated stack
 - Multiple processes or process units that share a common stack
 - Process or process unit that shares a common stack with one or more stationary fuel combustion units
- The types of fuel combusted in the unit(s) monitored by the CEMS
- The Tier 4/CEMS methodology start and end dates
- The quarter total of hourly CO₂ mass emissions for each quarter of the reporting year (metric tons) (*Do not cumulate emissions data between quarters*)
- The total annual CO₂ mass emissions measured by the CEMS (metric tons)
- An indication whether emissions reported for the CEMS include emissions calculated according to 98.33(a)(4)(viii) for a slipstream that bypassed the CEMS
- The total annual biogenic CO₂ emissions from the combustion of all biomass fuels combined (metric tons) (*if not applicable, enter '0'*)
- The total annual non-biogenic CO₂ emissions which includes fossil fuel, sorbent, and process CO₂ emissions (metric tons)
- The total annual CH₄ and N₂O emissions associated with the combustion of all Table C-2 fuels combusted in all processes/process units monitored by the CEMS derived from application of Equation C-10 (metric tons) (*if there are no combustion emissions in this CML, please enter '0*)
- The total number of source operating hours in the reporting year
- The total operating hours in which a substitute data value was used in the emissions calculations for the CO₂ concentration parameter
- The total operating hours in which a substitute data value was used in the emissions calculations for the stack gas flow rate parameter
- If moisture correction is required and a continuous moisture monitor is used, the total operating hours in which a substitute data value was used in the emissions calculations for the stack gas moisture content parameter
- The total annual CO2 emissions from the CEMS Monitoring Location (CML) Summary attributable to combustion (metric tons)

Do not leave any of these fields blank. If, for example, your facility has no biogenic CO₂ emissions, enter '0'.

For assistance in calculating annual CH_4 and N_2O emissions using Equation C-10, access the optional calculation spreadsheet by clicking one of the links titled "Use Equation C-10 spreadsheet to calculate" located below each of the red emissions information data entry boxes and follow the provided instructions

Step 3: Identify process units monitored at a CML

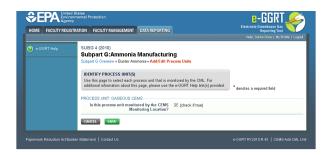
To identify the process units monitored at a CML, first click the link titled "ADD/REMOVE a process unit that exhausts to this CEMS Monitoring Location" at the bottom of the page

1. The screenshot below is from Subpart G and is displayed as an example. The screen for other subparts may differ slightly.

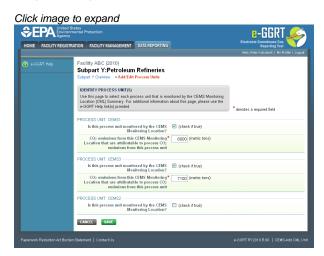
tates sental Protection			_	Electronic Greenhouse
ATION FACILITY MANAGEMENT	DATA REP	ORTING HELP D	ESK	Reporting Hello, Emmanuel Kalluri
Facility ABC Subpart G:Ammoni Subpart G Overview » Add/Edi	a Manufa CEMS Monit	oring Location	1)	
CONTINUOUS EMISSION M LOCATION (CML) INFORMA	IONITORING	SYSTEM (CEMS) N	IONITORING	
Use this page to uniquely ide and provide the annual GHG the "ADD/REMOVE a Proces process unit(s) monitored by additional information about th Help link(s) provided.	ntify each CEI emissions and as Unit" link at this CEMS M he data collect	VIS Monitoring Loca other information of the bottom of the p onitoring Location (ted on this page, pl	tion (CML) Summary escribed below. Use lage to identify the CML) Summary. For ease use the e-GGRT	Total CO2 trom CEMS (or Part 75 methodology) (m Total Biogenic CO2 (meth
CONFIGURATION CEMS Monitoring* Location Name/ID				40 characters maximum)
Description (optional)			~ ~	
Configuration Type*	Select			
Types of fuel combusted in the unit(s) monitored by the CEMS)(200 characters maximum)
TIER 4 METHODOLOGY INFO	RMATION			
Calculation Methodology* Start Date	01/01/2011			
Calculation Methodology* End Date	12/31/2011			
QUARTERLY CO2 EMISSION				
QUARTERET CO2 EMISSION	Quarter 1		(metric tons)
	Quarter 2		(metric tons)
	Quarter 3		(metric tons)
	Quarter 4		(metric tons)
				,
ANNUAL CO2 EMISSIONS) measured y the CEMS		(metric tons)
Check this box to indic emissions reported fo include emissions calculate to 98.33(a)(4)(viii) for a slip bypassed	ate that the or the CEMS d according stream that i the CEMS.	•		
Total annual biogeni	c CO2 mass		(metric tons)
Total annual non-biogeni emissions (includes fossil fu and process CO:	emissions c CO2 mass el, sorbent, emissions)		(metric tons)
EQUATION C-10 SUMMARY A		N ₂ O=0.001 × (F	40. × CC	
				eveal a definition of that element
				stion of Table C-2 Fuels direct C-2 Fuels in this CEMS Monit
	If there Location	are no combustion n, please enter 0.	emissions from Table	C-2 Fuels in this CEMS Monit
Total CH	4 emissions	Lise Equation	(metric tons n C-10 spreadsheet to) o calculate
Total No) emissions		(metric tons	
.0001 1125	2.777.0715	Use Equation	n C-10 spreadsheet to	o calculate
ADDITIONAL EMISSIONS INF	DRMATION -			
Total number of source hours in the rep	e operating	(hours)		
		(hours)		
The total operating hours substitute data value was emissions calculati co	used in the ons for CO ₂ ncentration	(nours)		
The total operating hours substitute data value was emissions calculations for	in which a used in the or stack gas flow rate	(hours)		
The total operating hours substitute data value was emissions calculations fi moist (if moisture correction is re a continuous moisture mon	in which a used in the or stack gas	(hours)		
(if moisture correction is re a continuous moisture mon	equired and itor is used)			
CEMS MONITORING LOCATI Process Unit Name/Ident There are no process units mo by CEMS available for selection	ON PROCESS	UNITS		
			MC Manhadan Land	
ADD/REMOVE/EDIT a proc	ess unit that e	ixinausts to this GE	wo wontoning Locati	on

On the CML Process Units Selection page, use the check boxes to select the process unit(s) monitored at this CML. This will indicate that the unit(s) selected vent emission through the stack monitored by this CML.

1. The screenshot below is from Subpart G and is displayed as an example. The screen for other will differ slightly depending on the number of units with emissions monitored by a single CML at your facility.



Subpart Y also collects the CO₂ emissions from this CEMS Monitoring Location that are attributable to process CO₂ emissions from this process unit (metric tons).



When finished selecting process unit for the CML and entering additional required information (if applicable), click SAVE. You should then be directed back to the Add/Edit a CML Location form and see the units you selected listed in the CEMS MONITORING LOCATION (CML) PROCESS UNITS table.

Step 4: Save entered data for a CML

When you have finished entering data for a CML, click SAVE. You will then return to the Subpart Overview page. You will see the status of data entry for the CML updated to "Complete" in the Status column in the CEMS MONITORING LOCATION (CML) SUMMARY table.

If you don't have all the data, you can enter some now, save it, and finish later by clicking on the hyperlinked name of the CML in the CEMS MONITORING LOCATION (CML) SUMMARY table.

After you save the data on this page, the next time you open the page, the calculator on the top of the page will display the CO₂ process emissions for the CML, rounded to the nearest 0.1 of a metric ton. The value displayed is for informational purposes only.

1 Note: the screenshot below is from Subpart G and is displayed as an example. The screen for other subparts will differ slightly.

Total N ADDITIONAL EMISSIONS 01 Total number of sour hours in the ro The total operating hou substitute data value we emissions calcula	IT DATA REA		IELP DESK	Electronic Greenhouse Gas Reporting Tool
Subpart C:Ammon Dudget C:Ourton C:Ammon Dudget C				Hello, Emmanuel Kalluri My Profile Logoi
CONTINUOUS EMISSION Use this age to many by the the **ADDREMOVE = how process unity investor the **ADDREMOVE = how process unity investor the process of the the investor the process of the investor the process of the investor centre of the investor cen				
CONFIGURATION CALIFORM (CMM) INFORM In a final special in a "ADDIREDATION INFORM DE Information About Process units of the information About CEMS Maintening Information CEMS Maintenin				
COMPICURATION CERES Maintening Centrylino (periods) Centrylino (periods)	ATION			
CONFIGURATION CERES Maniferry CERES Maniferry CERES Maniferry Centry and protocol Types of head combusted in the Second Second Second Second Types of head combusted in the Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Center Second Secon	emissions an	d other inform	ation described	L) Summary Total CO2 from CEMS (or applicable below. Use Part 75 methodology) (metric tons)
CONFIGURATION CERES Maniferry CERES Maniferry CERES Maniferry Centry and protocol Types of head combusted in the Second Second Second Second Types of head combusted in the Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Center Second Secon	this CEMS N	Ionitoring Loc ted on this p	ation (CML) Su	mmary. For the e-GGRT
CENS Skontoning Lecation NamenD Description (optional) Configuration Type Type Automation Type Automation Type Automation Calculation Hendoology Calculation Hendoology Calculation Hendoology End Dave Calculation Hendoology Total annual Colten Calculation end Colten Calculation Calculation end Colten Calculation Ca			ogo, produo doc	Total Biogenic CO2 (metric tons)
CENS Monitoring Lecation NamenD Description (optional) Configuration Type Type Automation Type Automation Configuration Type Type Automation Configuration Type Type Automation Configuration Market Type Automation Configuration Market Contraction Methodology Contraction Methodology End Date Contraction Methodology Contraction Con				Total Non-biogenic CO2 (metric tons)
CENS Monitoring Lecation NamenD Description (optional) Configuration Type Type Automation Type Automation Configuration Type Type Automation Configuration Type Type Automation Configuration Market Type Automation Configuration Market Contraction Methodology Contraction Methodology End Date Contraction Methodology Contraction Con				
Description (optional) Configuration Type Type the unity) nontineed Type the unity) nontineed The unity) nontineed The unity) nontineed TER 4 METHODOLOGY MF Calculation Methodology Calculation Methodology Calcula				(40 characters maximum)
Configuration Type Types of fast combused in the unity in ordered by the CEBS TER 4 METHODOLOSY MF Calculation Hethodology Calculation Hethodology Calculation Hethodology Calculation Types Calculation Types Calculation Total annual holigen the metaions reported the metaions reported t				
Tree A METHODOLOGY NP Calculation Methodology Calculation Color Methodology Calculation Color Methodology Calculation Calculation Calculation Calculation Calculation Calculation Calculation Calculation Calculations Calculation Calculation Calculation Calculations Calculation Calculation				
TER 4 METHODOLOGY NF Calculation Methodology and Calculation Methodology Calculation Methodology Calculation Methodology Calculation Methodology Calculation Methodology Calculation Methodology Calculation reported Interference of the Calculation Methodology Calculation Calculation Interference of the Calculatio	Select			
Calculation Hethodology Calculation Hethodology Calculation Hethodology Calculation Hethodology Calculation Hethodology Calculation Hethodology Calculation Hethodology Calculation Hethodology Calculation Calculation Photometry Calculation Calculation Calculation Profession Calculation Profession Calculation Profession Calculation Profession Calculation Profession Calculation Profession Calculation Profession Calculation Profession Calculation Profession Calculation Calc				(200 characters maximum)
Calculation Methodology Calculation Methodology Calculation Methodology Calculation Methodology Calculation Methodology Calculation Methodology Calculation Methodology Calculation Calculation (Methodology Calculation Provided Calculation (Methodology) Calculation Provided Calculation (Methodology) Calculation Calcula	ORMATION -			
Led Date GUARTERLY CO2 EMISSION GUARTERLY CO2 EMISSION ANNUAL CO2 EMISSION Total annual CO: m (Disperic and non-biogen (Disperican)				
ANNUAL CO: EMISSIONS Total annual CO: m (Diagenic and m biogen include annual coins reported include annual coins reported include annual coins reported include annual biogen Total annual biogen Total annual biogen Total annual biogen Total annual biogen Total annual biogen EQUATION C-10 SUMMARY Total C Total C The total operating hous semissions calculations The total operating hous semissions calculations and total control of the total operating total control of the total operating hous semissions calculations and the total operating hous and total control of total C C ENS MONTRONE COAT	12/31/2011			
Total annual CC: me (biogenic and non-biogen Check this box to indi include emissions calculate to 98.336(4)(1) for at al box of the second second second second emissions (include second and process CC EQUATION C-10 SUMMARY Total annual house Total annual house emissions (include second and process CC EQUATION C-10 SUMMARY Total NU Total NU Total Annual house Total house Total house annual house Total house to annual house to annua	Quarter 1			
Total annual CC: me (biogenic and non-biogen Check this box to indi include emissions calculate to 98.338(4)(1)) for all of 98.388(4) for all of all annual to be emissions (include logical and process CC EGUATION C-19 SUMMARY Total annual to be emissions (include logical and process CC EGUATION C-19 SUMMARY Total annual to be emissions (include logical and process CC EGUATION C-19 SUMMARY Total annual to be emissions (include logical and process CC Total N and the sum of the su	Quarter 1			(metric tons) (metric tons)
Total annual CC: me (biogenic and non-biogen Check this box to indi include emissions calculate to 98.338(4)(1)) for all of 98.388(4) for all of all annual to be emissions (include logical and process CC EGUATION C-19 SUMMARY Total annual to be emissions (include logical and process CC EGUATION C-19 SUMMARY Total annual to be emissions (include logical and process CC EGUATION C-19 SUMMARY Total annual to be emissions (include logical and process CC Total N and the sum of the su	Quarter 3			(metric tons)
Total annual CC: me (biogenic and non-biogen Check this box to indi include emissions calculate to 98.338(4)(1)) for all of 98.388(4) for all of all annual to be emissions (include logical and process CC EGUATION C-19 SUMMARY Total annual to be emissions (include logical and process CC EGUATION C-19 SUMMARY Total annual to be emissions (include logical and process CC EGUATION C-19 SUMMARY Total annual to be emissions (include logical and process CC Total N and the sum of the su	Quarter 4			(metric tons)
Total annual CC:me (biogenic and non-biogen Check this box to indi include emissions calculat by Statistical Statistical Statistical Cost annual biogen emissions (calculated Statistical and process CC EQUATION C-10 SUMMARY Total Annual biogen emissions (calculated Statistical ADDITIONAL EMISSIONS IN Total Annual Cost ADDITIONAL EMISSIONS IN Total Annual Cost and annual CC annual Cost annual Cost and annual CC annual Cost annual Cost and annual CC annual Cost annual Cost annual CC annual Cost annual Cost annual CC annual Cost annual Cost annual CC annual CC annual Cost annual CC annual CC ann				
CENS SUBJECT Constraints of the set of the s	ss emissions			(metric tons)
Total annual biogen Total annual non biogen emissions (ruiceles fostil and process Cd EGUATION C-10 SUMMARY Total C COUNTION C-10 SUMMARY Total C C C C C C C C C C C C C C C C C C C	c) measured by the CEMS			
Total annual biogen Total annual non biogen emissions (ruiceles fostil and process Cd EGUATION C-10 SUMMARY Total C COUNTION C-10 SUMMARY Total C C C C C C C C C C C C C C C C C C C	cate that the for the CEMS ad according			
Total annual non biogenerics in the second s				
EQUATION C-19 SUMMARY Total C Total N ADDITIONAL EMISSIONE IN ADDITIONAL EMISSIONE CARA Total number of sour missions calculate substitute data value wa emissions calculate intermissions intermissions calculate intermissions calculate intermissio	emissions			(metric tons)
Total C Total N ADDITIONAL EMISSIONS IN Total number of surr hours in the r The total operating hou substitute data value wa emissions calculations missions calculations of massions calculations of massions calculations of massions calculations of massions calculations of massions calculations of continuous mobility of the total operating hou emissions calculations of continuous mobility of the total operating hou	ucl, sorbent, cenissions)			(metric tons)
Total C Total N ADDITIONAL EMISSIONS IN Total number of sour hours in the ro emissions calculations we emissions calculations remissions calculations and the total operating hour substitute data value wa emissions calculations of mosister calculations (if mosister calculations a continuous mosistion calculations of constitutions and calculations of calculations of calculations of constitutions and calculations of calculations of calculations of calculations of calculations of cal	AND RESULT	s		
Total N ADDITIONAL EMISSIONS IN Total number of sur hours in the re- missions calculations emissions calculations of the total operating hour substitute data value wa emissions calculations The total operating hour emissions calculations of the institute concentration of the institute concentration of continuous mothers me CEMS MIONITORING LOCAT			01 × (HI) _A × E	F
Total N ADDITIONAL EMISSIONS IN Total number of sur hours in the re- missions calculations calculations The total operating hour substitute data value wa emissions calculations The total operating hour emissions calculations and the total operating hour emissions calculations (If moisture concerned) a continuous moisture mo				on above to reveal a definition of that element.
Total N ADDITIONAL EMISSIONS IN Total number of sur hours in the re- missions calculations calculations The total operating hour substitute data value wa emissions calculations The total operating hour emissions calculations and the total operating hour emissions calculations (If moisture concerned) a continuous moisture mo	Enter 0 If there Locatio	2H4 and N2O are no comb in, please en	emissions from sustion emission ter 0.	only combustion of Table C-2 Fuels directly below. Is from Table C-2 Fuels in this CEMS Monitoring
ADDITIONAL EMISSIONIS IN Total number of same hours in ther of substitute data value we emissions calcula of the total operating hour substitute data value we not statute total operating total substitute data value we not substitute data value we n	H4 emissions			(metric tons) preadsheet to calculate
ADDITIONAL EMISSIONIS IN Total number of same hours in ther of substitute data value we emissions calcula of the total operating hour substitute data value we not statute total operating total substitute data value we not substitute data value we n	O emissions			
Total number of sour in the re The total operating hour was in the re- trained of the total operating hour was substitute data value was emissions calculators restrictive data value was emissions calculators The total operating hour substitute data value was emissions calculators data value was emissions calculators data value was emissions calculators data value was emissions calculators data value was calculators motiver me CEMS MIONITORING LOCAT	emissions	Use	Equation C-10 s	(metric tons) preadsheet to calculate
Total number of sour in the re The total operating hour was in the re- trained of the total operating hour was substitute data value was emissions calculators restrictive data value was emissions calculators The total operating hour substitute data value was emissions calculators data value was emissions calculators data value was emissions calculators data value was emissions calculators data value was calculators motiver me CEMS MIONITORING LOCAT				
The total operating hour we emissions calculate the state was emissions calculate the state operation in the state operating hour substitute data value was emissions calculaters are emissions calculaters emissions calculaters of a continuous motivare mostare motivare corrections is a continuous motivare motivare corrections is a continuous motivare motivare motivare motivare motivare motivare motivare motivare corrections is a continuous motivare mo			hours)	
The total operating hour substitute data value wa emissions acclutators The total operating hou substitute data value wa emissions collections (if moisture correction is a continuous moisture mo				
The staal operating how substitute data value we emissions calculations The total operating how emissions calculations of mesister common is a continuous mesister CEMS MONITORING LOCAT	s used in the tions for CO2 oncentration		hours)	
The total operating hour substitute data value wa emissions calculations (if moisture correction is a continuous moisture mo CEMS MONITORING LOCAT			hours)	
substitute data value wa emissions calculations moi (if moisture correction is a continuous moisture mo CEMS MONITORING LOCAT	s used in the for stack gas flow rate			
(if moisture correction is a continuous moisture mo CEMS MONITORING LOCAT	rs in which a s used in the for stack cas		hours)	
CEMS MONITORING LOCAT	sture content equired and nitor is used)			
There are no process units n by CEMS available for select	ION PROCES	S UNITS		
ADD/REMOVE/EDIT a pro		exhausts to	this CEMS Mon	itoring Location
CANCEL				

Step 5: Repeat Steps 1-4

Repeat Steps 1-4 until emissions information has been entered for all CMLs. If you have missed something, the validation report messages will help you identify any incomplete entries.

Back to Top

See Also

Screen Errors Using e-GGRT to Prepare Your Subpart Y Report Subpart Y Summary Information for this Facility Subpart Y Delayed Coking Unit Information Subpart Y Asphalt Blowing Unit Information Subpart Y Coke Calcining Unit Information Subpart Y Catalytic Cracking, Fluid Coking, and Catalytic Reforming Unit Information Subpart Y Flares Unit Information Subpart Y Process Vents Unit Information Subpart Y Sulfur Recovery Plant Information Subpart Y Emissions Information for Process Units Monitored by CEMS Subpart Validation Report

Using Subpart Y Calculation Spreadsheets

These optional spreadsheets are provided to assist reporters in calculating emissions and in keeping records of these calculations.

Reporters are required to keep records of these calculations under 40 CFR 98.3(g) and additional subpart-specific provisions, but are not required to use these spreadsheets or to submit any spreadsheets to EPA.

Spreadsheets may include inputs to emission equations, reporting some of which EPA deferred until 2015. (See 76 FR 53057, published August 25, 2011, http://www.gpo.gov/fdsys/pkg/FR-2011-08-25/pdf/2011-21727.pdf).

Overview

A

This help page provides guidance for working with the supplemental Subpart Y calculation spreadsheets. The guidance provides step-by-step instructions for the following tasks:

- Selecting the Appropriate Calculation Spreadsheet
- Downloading a Calculation Spreadsheet
- General Information on Using a Calculation Spreadsheet
- Using the Equation Y-1a Calculation Spreadsheet
- Using the Equation Y-1b Calculation Spreadsheet
- Using the Equation Y-2 Calculation Spreadsheet
- Using the Equation Y-3 Calculation Spreadsheet
- Using the Equation Y-4, Y-5 Calculation Spreadsheet
- Using the Equation Y-6, Y-7a, Y-7b Calculation Spreadsheet
- Using the Equation Y-8 Calculation Spreadsheet
- Using the Equation Y-9, Y-10 Calculation Spreadsheet
- Using the Equation Y-11 Calculation Spreadsheet
- Using the Equation Y-12 Calculation Spreadsheet
- Using the Equation Y-13 Calculation Spreadsheet
- Using the Equation Y-14, Y-15 Calculation Spreadsheet
- Using the Equation Y-16a, Y-16b, Y-17 Calculation Spreadsheet
- Using the Equation Y-18 Calculation Spreadsheet
- Using the Equation Y-19 Calculation Spreadsheet
- Using the Equation Y-20 Calculation Spreadsheet
- Using the Equation Y-21 Calculation Spreadsheet
- Using the Equation Y-22 Calculation Spreadsheet
- Using the Equation Y-23 Calculation Spreadsheet

Specific information on each of the calculation spreadsheets is provided below:

Calculation Spreadsheet (click to download)	Selection Criteria: Emissions Source	Output(s)	Instructions (click to view)
Equation Y-1a Calculation Spreadsheet.xls	Flares	CO ₂	Y-1a Help
Equation Y-1b Calculation Spreadsheet.xls	Flares	CO ₂	Y-1b Help
Equation Y-2 Calculation Spreadsheet.xls	Flares	CO ₂	Y-2 Help
Equation Y-3 Calculation Spreadsheet.xls	Flares	CO ₂	Y-3 Help
Equation Y-4, Y-5 Calculation Spreadsheet.xls	Flares	CH_4 , N_2O	Y-4, Y-5 Help
Equation Y-6, Y-7a, Y-7b Calculation Spreadsheet.xls	Catalytic Cracking Units or Fluid Coking Units	CO ₂	Y-6, Y-7a, 7b Help
Equation Y-8 Calculation Spreadsheet.xls	Catalytic Cracking Units or Fluid Coking Units	CO ₂	Y-8 Help
Equation Y-9, Y-10 Calculation Spreadsheet.xls	Catalytic Cracking Units, Fluid Coking Units, Coke Calcining Units, Catalytic Reforming Units	CH_4 , N_2O	Y-9, Y-10 Help

Equation Y-11 Calculation Spreadsheet.xls	Catalytic Reforming Units	CO ₂	Y-11 Help
Equation Y-12 Calculation Spreadsheet.xls	On-Site Sulfur Recovery Plants, Sour Gas Sent Off-Site for Sulfur Recovery	CO ₂	Y-12 Help
Equation Y-13 Calculation Spreadsheet.xls	Coke Calcining Units	CO ₂	Y-13 Help
Equation Y-14, Y-15 Calculation Spreadsheet.xls	Uncontrolled Asphalt Blowing Operations, Asphalt Blowing Operations Controlled by vapor Scrubbing	CO_2 , CH_4	Y-14, Y-15 Help
Equation Y-16a, Y-16b, Y-17 Calculation Spreadsheet.xls	Asphalt Blowing Operations Controlled by Thermal Oxidizer or Flare	CO_2 , CH_4	Y-16a, Y-16b, Y-17 Help
Equation Y-18 Calculation Spreadsheet.xls	Delayed Coking Units	CH ₄	Y-18 Help
Equation Y-19 Calculation Spreadsheet.xls	Process Vents Not Covered in Paragraphs (a) through (i) of Section 98.253	$CO_2, CH_4,$ or N ₂ O	Y-19 Help
Equation Y-20 Calculation Spreadsheet.xls	Blowdown Systems	CH ₄	Y-20 Help
Equation Y-21 Calculation Spreadsheet.xls	Equipment Leaks	CH ₄	Y-21 Help
Equation Y-22 Calculation Spreadsheet.xls	Storage Tanks Other Than Those Processing Unstabilized Crude Oil	CH ₄	Y-22 Help
Equation Y-23 Calculation Spreadsheet.xls	Storage Tanks That Process Unstabilized Crude Oil	CH ₄	Y-23 Help

Selecting the Appropriate Calculation Spreadsheet

Subpart Y requires facilities to report annual carbon dioxide (CO₂), methane (CH₄), and/or nitrous oxide (N₂O) emissions from various types of equipment, systems, and operations at petroleum refineries including the following:

- CO₂, CH₄ and N₂O emissions from each flare
- CO₂, CH₄, and N₂O coke burn-off emissions from each catalytic cracking unit, fluid coking unit, and catalytic reforming unit
- CO₂ emissions from sour gas sent off site for sulfur recovery operations
- CO2 process emissions from each on-site sulfur recovery plant
- CO₂, CH₄, and N₂O emissions from each coke calcining unit
- CO₂ and CH₄ emissions from asphalt blowing operations
- CH₄ emissions from equipment leaks, storage tanks, loading operations, delayed coking units, and uncontrolled blowdown systems
- CO₂, CH₄, and N₂O emissions from each process vent not specifically included in paragraphs (a) through (g) of §98.253
- CO₂ emissions from non-merchant hydrogen production process units (not including hydrogen produced from catalytic reforming units)

For certain emission sources, Subpart Y requires the use of CO_2 CEMS when one is in place that meets certain requirements. Specifically, Subpart Y requires the use of CO_2 CEMS if one is in place for the following sources: catalytic cracking units; traditional fluid coking units; catalytic reforming units; sulfur recovery plants; and coke calcining units. Refer to the help page for CEMS if you use a CO_2 CEMS for one of these units. The spreadsheets considered in this help page should only be used for these units when a qualified CO_2 CEMS is not used.

To determine which calculation spreadsheet(s) to use for your facility or company, consider the emission source and the GHG(s) emitted. For each emission source, use the corresponding calculation spreadsheet(s) to calculate emissions. Where reporting of multiple GHGs is required for a single emissions source, you may need to use multiple calculation spreadsheets for that emissions source. The calculation spreadsheet(s) appropriate for each emission source are detailed below.

Flares

Subpart Y requires affected facilities to report CO_2 , CH_4 , and N_2O from flares. Five calculation spreadsheets are available to calculate emissions from flares. To calculate CH_4 and N_2O emissions from flares, use the Equation Y-4, Y-5 Calculation Spreadsheet. To calculate CO_2 emissions from flares, select the appropriate calculation spreadsheet based on the follow criteria:

• If you monitor gas composition, calculate the CO₂ emissions from the flare using either the Equation Y-1a or Equation Y-1b Calculation Spreadsheet. You may elect to use either equation. Equation Y-1b is more data intensive, but is expected to be more accurate, particularly if there is a high level of CO₂ in the gas stream being sent to the flare.

- If you monitor heat content but do not monitor gas composition, calculate the CO₂ emissions from the flare using the Equation Y-2 Calculation Spreadsheet.
- If you do not measure the higher heating value or carbon content of the flare gas at least weekly, determine the quantity of gas discharged to the flare separately for periods of routine flare operation and for periods of start-up, shutdown, or malfunction, and calculate the CO₂ emissions using the Equation Y-3 Calculation Spreadsheet.

Catalytic Cracking Units and Fluid Coking Units

Subpart Y requires affected facilities to report CO_2 , CH_4 , and N_2O from each catalytic cracking unit, each traditional fluid coking unit, and each fluid coking unit of flexicoking design that does not account for GHG emissions resulting from the use of low value fuel gas using the methods described in subpart C (General Stationary Fuel Combustion Sources). Three calculation spreadsheets are available to calculate emissions from these units. To calculate CH_4 and N_2O emissions from catalytic cracking units and fluid coking units, use the Equation Y-9, Y-10 Calculation Spreadsheet. To calculate CO_2 emissions from catalytic cracking units and fluid coking units (that do not use a CO_2 CEMS), select the appropriate calculation spreadsheet based on the following criteria:

- For catalytic cracking units and fluid coking units with rated capacities greater than 10,000 barrels per stream day (bbls/sd), use the Equation Y-6, Y-7a, Y-7b Calculation Spreadsheet to calculate the CO₂ emissions.
- For catalytic cracking units and fluid coking units with rated capacities of 10,000 barrels per stream day (bbls/sd) or less that continuously or no less frequently than daily monitor the O₂, CO₂, and (if necessary) CO concentrations in the exhaust stack prior to combustion of other fossil fuels, use the Equation Y-6, Y-7a, Y-7b Calculation Spreadsheet to calculate the CO₂ emissions.
- For catalytic cracking units and fluid coking units with rated capacities of 10,000 barrels per stream day (bbls/sd) or less that do not monitor at least daily the O₂, CO₂, and (if necessary) CO concentrations in the exhaust stack prior to combustion of other fossil fuels, use the Equation Y-8 Calculation Spreadsheet to calculate the CO₂ emissions.

Catalytic Reforming Units

Subpart Y requires affected facilities to report CO_2 , CH_4 , and N_2O from each catalytic reforming unit. Three calculation spreadsheets are available to calculate emissions from these units. To calculate CH_4 and N_2O emissions from catalytic reforming units, use the Equation Y-9, Y-10 Calculation Spreadsheet. To calculate CO_2 emissions from catalytic reforming units (that do not use a CO_2 CEMS), select the appropriate calculation spreadsheet based on the following criteria:

- For catalytic reforming units that continuously or no less frequently than daily monitor the O₂, CO₂, and (if necessary) CO concentrations in the exhaust stack prior to combustion of other fossil fuels, use the Equation Y-6, Y-7a, Y-7b Calculation Spreadsheet to calculate the CO₂ emissions.
- For reforming units that do not monitor at least daily the O₂, CO₂, and (if necessary) CO concentrations in the exhaust stack prior to combustion of other fossil fuels, use the Equation Y-11 Calculation Spreadsheet.

Sulfur Recovery

Subpart Y requires affected facilities to report CO_2 emissions from sour gas sent off site for sulfur recovery and CO_2 process emissions from each on-site sulfur recovery plant. For most of these sources, only one calculation spreadsheet is available to calculate emissions from these sources. To calculate CO_2 emissions from sour gas sent off site for sulfur recovery or from each on-site sulfur recovery plant (that does not use a CO_2 CEMS), use the Equation Y-12 Calculation Spreadsheet. Alternatively, for non-Claus sulfur recovery plants (that do not use a CO_2 CEMS), you may elect to use the process vent method, for which you would calculate CO_2 emissions using the Equation Y-19 Calculation Spreadsheet.

Coke Calcining Units

Subpart Y requires affected facilities to report CO_2 , CH_4 , and N_2O from each coke calcining unit. Two calculation spreadsheets are available to calculate emissions from these units. To calculate CO_2 emissions from coke calcining units (that do not use a CO_2 CEMS), use the Equation Y-13 Calculation Spreadsheet. To calculate CH_4 and N_2O emissions from coke calcining units, use the Equation Y-9, Y-10 Calculation Spreadsheet.

Asphalt Blowing Operations

Subpart Y requires affected facilities to report CO_2 and CH_4 from asphalt blowing operations. Two calculation spreadsheets are available to calculate emissions from asphalt blowing operations. To calculate CO_2 and CH_4 emissions from uncontrolled asphalt blowing operations or asphalt blowing operations controlled by vapor scrubbing, use the Equation Y-14, Y-15 Calculation Spreadsheet. To calculate CO_2 and CH_4 emissions from asphalt blowing operations controlled by thermal oxidizer or flare, use the Equation Y-16a, Y-16b, Y-17 Calculation Spreadsheet.

Delayed Coking Units

Subpart Y requires affected facilities to report CH_4 emissions from each delayed coking unit. One calculation spreadsheet is available to calculate emissions from these units. To calculate CH_4 emissions from delayed coking units, use the Equation Y-18 Calculation Spreadsheet. Alternatively, you may elect to use the process vent method for the depressurization cycle. If you elect this alternative, calculate CH_4 emissions during

depressurization using the Equation Y-19 Calculation Spreadsheet and calculate the CH₄ emissions during vessel opening using the Equation Y-18 Calculation Spreadsheet. You will then need to add these emissions together to calculate the total CH₄ emissions from the delayed coking unit.

Process Vents

Subpart Y requires affected facilities to report CO_2 , CH_4 , and N_2O emissions from each process vent not covered in paragraphs (a) through (i) of §98.253 that can reasonably be expected to contain greater than 2 percent by volume CO_2 or greater than 0.5 percent by volume of CH_4 or greater than 0.01 percent by volume (100 parts per million) of N_2O . This "process vent method" can also be used as an alternative methodology for certain other emission sources. One calculation spreadsheet is available to calculate emissions from these vents. To calculate GHG emissions from process vents, use the Equation Y-19 Calculation Spreadsheet.

Blowdown Systems

Subpart Y requires affected facilities to report CH_4 emissions from blowdown systems. One calculation spreadsheet is available to calculate emissions from blowdown systems, use the Equation Y-20 Calculation Spreadsheet. Alternatively, the Equation Y-19 Calculation Spreadsheet may be used to calculate CH_4 emissions from uncontrolled blowdown systems.

Equipment Leaks

Subpart Y requires affected facilities to report CH_4 emissions from equipment leaks. One calculation spreadsheet is available to calculate emissions from equipment leaks. To calculate CH_4 emissions from equipment leaks, use the Equation Y-21 Calculation Spreadsheet. Alternatively, CH_4 emissions from equipment leaks may be calculated using process-specific methane composition data (from measurement data or process knowledge) and any of the emission estimation procedures provided in the Protocol for Equipment Leak Emissions Estimates (EPA-453/R-95-017, NTIS PB96-175401). There are no calculation spreadsheets available for this alternative.

Storage Tanks

Subpart Y requires affected facilities to report CH_4 from storage tanks. Two calculation spreadsheets are available to calculate emissions from storage tanks. To calculate CH_4 emissions from storage tanks other than those processing unstabilized crude oil, use the Equation Y-22 Calculation Spreadsheet. Alternatively, CH_4 emissions from storage tanks other than those processing unstabilized crude oil may be calculated using tank-specific methane composition data (from measurement data or process knowledge) and the emission estimation methods provided in AP-42, Section 7.1; there are no calculation spreadsheets available for this alternative. To calculate CH_4 emissions from Storage tanks that process unstabilized crude oil, use the Equation Y-23 Calculation Spreadsheet.

Downloading a Calculation Spreadsheet

The table below summarizes the applicability of Subpart Y calculation spreadsheets relative to the various emission sources for petroleum refineries. Addition details are provided for each type of emissions source below the table. Calculation spreadsheets for Subpart Y may be downloaded by clicking one of the links in the first column of the table below. Users may also jump to instructions for each calculation spreadsheet by clicking one of the links in the fourth column.

Calculation Spreadsheet (click to download)	Selection Criteria: Emissions Source	Output(s)	Instructions (click to view)
Equation Y-1a Calculation Spreadsheet.xls	Flares	CO ₂	Y-1a Help
Equation Y-1b Calculation Spreadsheet.xls	Flares	CO ₂	Y-1b Help
Equation Y-2 Calculation Spreadsheet.xls	Flares	CO ₂	Y-2 Help
Equation Y-3 Calculation Spreadsheet.xls	Flares	CO ₂	Y-3 Help
Equation Y-4, Y-5 Calculation Spreadsheet.xls	Flares	CH_4, N_2O	Y-4, Y-5 Help
Equation Y-6, Y-7a, Y-7b Calculation Spreadsheet.xls	Catalytic Cracking Units or Fluid Coking Units	CO ₂	Y-6, Y-7a, 7b Help
Equation Y-8 Calculation Spreadsheet.xls	Catalytic Cracking Units or Fluid Coking Units	CO ₂	Y-8 Help

Equation Y-9, Y-10 Calculation Spreadsheet.xls	Catalytic Cracking Units, Fluid Coking Units, Coke Calcining Units, Catalytic Reforming Units	CH_4 , N_2O	Y-9, Y-10 Help
Equation Y-11 Calculation Spreadsheet.xls	Catalytic Reforming Units	CO ₂	Y-11 Help
Equation Y-12 Calculation Spreadsheet.xls	On-Site Sulfur Recovery Plants, Sour Gas Sent Off-Site for Sulfur Recovery	CO ₂	Y-12 Help
Equation Y-13 Calculation Spreadsheet.xls	Coke Calcining Units	CO ₂	Y-13 Help
Equation Y-14, Y-15 Calculation Spreadsheet.xls	Uncontrolled Asphalt Blowing Operations, Asphalt Blowing Operations Controlled by vapor Scrubbing	CO_2 , CH_4	Y-14, Y-15 Help
Equation Y-16a, Y-16b, Y-17 Calculation Spreadsheet.xls	Asphalt Blowing Operations Controlled by Thermal Oxidizer or Flare	CO_2 , CH_4	Y-16a, Y-16b, Y-17 Help
Equation Y-18 Calculation Spreadsheet.xls	Delayed Coking Units	CH ₄	Y-18 Help
Equation Y-19 Calculation Spreadsheet.xls	Process Vents Not Covered in Paragraphs (a) through (i) of Section 98.253	CO_2 , CH_4 , or N_2O	Y-19 Help
Equation Y-20 Calculation Spreadsheet.xls	Blowdown Systems	CH ₄	Y-20 Help
Equation Y-21 Calculation Spreadsheet.xls	Equipment Leaks	CH ₄	Y-21 Help
Equation Y-22 Calculation Spreadsheet.xls	Storage Tanks Other Than Those Processing Unstabilized Crude Oil	CH ₄	Y-22 Help
Equation Y-23 Calculation Spreadsheet.xls	Storage Tanks That Process Unstabilized Crude Oil	CH ₄	Y-23 Help

Using a Calculation Spreadsheet to Make Calculations

The guidance provided in this section applies to each of the calculation spreadsheets for Subpart Y. Additional guidance is provided for each individual calculation spreadsheet in the sections below.

Color coding

The calculation spreadsheets contain green input cells, gray informational cells, and red-bordered results cells filled with yellow or white. Users should use green input cells to enter all data specific to their facility, unit, or process. Gray informational cells contain parameter names, column and row headings, equation constants and subtotals. Calculation results are displayed in red-bordered results cells filled with yellow or white. For red-bordered, yellow-filled results cells, the values in these cells should be entered in the appropriate and separate calculation spreadsheet (as directed below cell) where additional calculations will be made. For red-bordered, white filled results cells, the values in these cells should be entered in e-GGRT for the appropriate process units. All cells that are not green input cells are locked and cannot be modified.

Green input cell (data entry)
Gray informational cells (locked)
Red-bordered, yellow-filled results cells (enter in appropriate and separate calculation spreadsheet)
Red-bordered, white filled results cells (enter in e-GGRT)

Stop and Warning Messages

The calculation spreadsheets will display a stop message if the user enters a value that is invalid or a warning message if the user enters a value outside the EPA estimated range for a particular data element. For invalid data entries, the stop messages will not allow a user to proceed and the user must reenter valid data before moving forward. For data entries that are outside the EPA estimated range for a particular data element, the warning messages will allow a user to proceed if the user deems the entered value to be accurate.

Multiple Units

For emissions sources under Subpart Y that require emission data to be reported for each unit, use separate calculation spreadsheets for each

unit. Do not aggregate data for multiple units when calculating emissions from these sources using these calculation spreadsheets.

Using the Equation Y-1a Calculation Spreadsheet

If you monitor gas composition, you may use the Equation Y-1a Calculation Spreadsheet to calculate annual CO_2 emissions for each fuel type combusted in each flare using the average carbon content of the flare gas combusted. A separate spreadsheet should be used for each flare and fuel type combination. In nearly all cases, gas sent to a flare will be a mixture of different process gases, which are collectively considered to be fuel gas. As such, Equation Y-1a would be applied once for this fuel type. If you monitor separately the fuel gas sent to the flare and natural gas added to the flare for the purposes of preventing oxygen infiltration or ensuring adequate heating value of the gas flared, you should calculate the CO_2 emissions separately for these fuels and sum the values for subsequent reporting. You do not need to separately calculate or report CO_2 emissions from natural gas used as pilot gas for the flare. Equation Y-1a is provided below.

(Equation Y-1a)	$CO_{2} = 0.98 \times 0.001 \times \left(\sum_{p=1}^{n} \left[\frac{44}{12} \times \left(Flare \right)_{p} \times \frac{\left(MW \right)_{p}}{MVC} \times \left(CC \right)_{p} \right] \right)$

Begin by entering the facility name, your name, the unit name or identifier, reporting period, and any additional comments in the green input cells of the general information table located immediately below the equation in the calculation spreadsheet. This is for your records.

Facility Name:	
Reporter Name:	
Unit Name/ ID:	
Reporting Period:	
Comments:	
Unit Type:	Flare

Next, enter the requested information in the green input cells in the first Input Data table. Based on your entries in the first Input Data table, a number of green input cells will be activated in the second Input data table. Enter the requested information in the green input cells in the second Input Data table.

Input Data

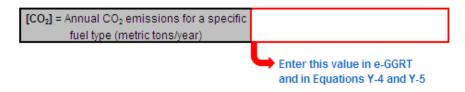
This calculation spreadsheet can be used for up to 366 measurement periods.

[n] = Number of measurement periods. The minimum value for n is 52 (for weekly measurements); the maximum value for n is 366 (for daily measurements during a leap year)	100.
[MVC] = Molar volume conversion factor (849.5 scf/kgmole at 68 °F and 14.7 psia or 836.6 scf/kg-mole at 60 °F and 14.7 psia)	

[p] = Measurement period index	[(Flare) _p] = Volume of flare gas combusted during measurement period (standard cubic feet per period, sc/iperiod). If a mass flow meter is used, measure flare gas flow rate in kg/period and replace the term "(MW) _p /MVC" with "1"	[(MW) ₀] = Average molecular weight of the flare gas combusted during measurement period (kgikg- mole). If measurements are taken more frequently than daily, use the arithmetic average of measurement values within the day to calculate a daily average	content of the flare gas combusted during measurement period (kg C per kg flare gas). If measurements are taken	Equation value for measurement period p
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

The calculation spreadsheet will calculate the annual CO_2 emissions for a fuel type combusted in a flare. The calculated value will be displayed in the red-bordered cell at the bottom of the spreadsheet. This value should be entered in e-GGRT and the Equation Y-4, Y-5 Calculation Spreadsheet for this flare. If different fuel types are separately monitored, add together the CO_2 emissions calculated for each fuel type for a given flare and use the resulting sum for entry in e-GGRT and the Equation Y-4, Y-5 Calculation Spreadsheet for this flare.

Annual CO₂ Emissions (metric tons/year) from Equation Y-1a



Using the Equation Y-1b Calculation Spreadsheet

If you monitor gas composition and elect not to use Equation Y-1a, use the Equation Y-1b Calculation Spreadsheet to calculate annual CO_2 emissions for one or more fuels combusted in a single flare using the mole percent concentration and carbon mole number of each compound in the flare gas stream. A separate spreadsheet should be used for each flare and fuel type combination. In nearly all cases, gas sent to a flare will be a mixture of different process gases, which are collectively considered to be fuel gas. As such, Equation Y-1b would be applied once for this fuel type. If you monitor separately the fuel gas sent to the flare and natural gas added to the flare for the purposes of preventing oxygen infiltration or ensuring adequate heating value of the gas flared, you should calculate the CO_2 emissions separately for these fuels and sum the values for subsequent reporting. You do not need to separately calculate or report CO_2 emissions from natural gas used as pilot gas for the flare. Equation Y-1b is provided below.

$$\begin{array}{l} \begin{array}{l} \text{(Equation} \\ \text{Y-1b)} \end{array} & CO_2 = \sum_{p=1}^n \left[\left(Flare \right)_p \times \frac{44}{MVC} \times 0.001 \times \left(\frac{\left(\% CO_2\right)_p}{100\%} + \sum_{x=1}^p \left\{ 0.98 \times \frac{\left(\% C_x\right)_p}{100\%} \times CMN_x \right\} \right) \right] \end{array}$$

Begin by entering the facility name, your name, the unit name or identifier, reporting period, and any additional comments in the green input cells of the general information table located immediately below the equation in the calculation spreadsheet. This is for your records.

Facility Name:	
Reporter Name:	
Unit Name/ ID:	
Reporting Period:	
Comments:	
Unit Type:	Flare

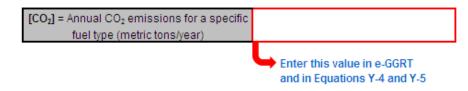
Next, enter the requested information in the green input cells in the first Input Data table. Based on your entries in the first Input Data table, a number of green input cells will be activated in the second Input data table. Enter the requested information in the green input cells in the second Input Data table. Space is provided for up to 20 carbon-containing compounds in the fuel stream.

Click image to expand

Input Data This calculation spreadsheet can be used for This calculation spreadsheet can be used for		other than CO2 in t	he flare gas stream.				
[n] = Number of measurement periods. The minimum value for n is 52 (for week) measurements); the maximum value for n is 366 (for daily measurements during a leap year)	54						
[MVC] = Molar volume conversion factor (849.5 sof/kgmole at 68 % and 14.7 psia or 836.6 sof/kg- mole at 60 % and 14.7 psia)]					
[5] = Number of carbon-containing compounds other than CO ₂ in the flare gas stream							
			[x] - Index for carbon-containing compounds other than CO ₂	s=1	x+20		
			[[CMIN x] = Carbon mole number of compound **" in the flare gas stream (mole carbon atoms per mole compound). E.g., CMIN for ethane (CgHq) is 2; CMIN for propane (CgHq) is 3				
			Comment (optional)				
(p) = Measurement period index	[[Flare],] > Volume of flare gas combusted during measurement period (standard ouble feet per period, scilperiod). If a mass flow meets is used, you must determine the average molecular weight of the flare gas during the measurement period and convert the mass flow to a volumetric flow	[(scO ₂),] = Mole percent CO ₂ concentration in the Rare gas stream during the measurement period (mole percent = percent by volume)		[[SCC_x],] = Mole percent compound "a" in the Bare gas stream during the measurement period (mole percent a percent by volume)	[[SC x],] = Mole percent concentration of compound "#" in the Hare gas stream during the measurement period (mole percent a percent by volume)	Intermediate equation value (second summation term)	Equation value for measurement period p
1			-				
3			1				
4			-				
6			1				
7			-				
9			1				
10			1				

The calculation spreadsheet will calculate the annual CO₂ emissions for a fuel stream combusted in a flare. The calculated value will be displayed in the red-bordered cell at the bottom of the spreadsheet. This value should be entered in e-GGRT and the Equation Y-4, Y-5 Calculation Spreadsheet for this flare. If different fuel types are separately monitored, add together the CO₂ emissions calculated for each fuel type for a given flare and use the resulting sum for entry in e-GGRT and the Equation Y-4, Y-5 Calculation Spreadsheet for this flare.

Annual CO₂ Emissions (metric tons/year) from Equation Y-1b



Using the Equation Y-2 Calculation Spreadsheet

If you monitor heat content but do not monitor gas composition or if reporting under subpart Q per §98.172(b), you may use the Equation Y-2 Calculation Spreadsheet to calculate annual CO_2 emissions for each fuel type combusted in each flare. A separate spreadsheet should be used for each flare and fuel type combination. In nearly all cases, gas sent to a flare will be a mixture of different process gases, which are collectively considered to be fuel gas. As such, Equation Y-2 would be applied once for this fuel type. If you monitor separately the fuel gas sent to the flare and natural gas added to the flare for the purposes of preventing oxygen infiltration or ensuring adequate heating value of the gas flared, you should calculate the CO_2 emissions separately for these fuels and sum the values for subsequent reporting. You do not need to separately calculate or report CO_2 emissions from natural gas used as pilot gas for the flare. Equation Y-2 is provided below.

(Equation $CO_2 = 0.98 \times 0.001 \times \sum_{n=1}^{n} \left[(Flare_{p} \times (HHV_{p} \times EmF_{p})_{p} \times EmF_{p} \right]$ Y-2)

Begin by entering the facility name, your name, the unit name or identifier, reporting period, and any additional comments in the green input cells of the general information table located immediately below the equation in the calculation spreadsheet. This is for your records.

Facility Name:	
Reporter Name:	
Unit Name/ ID:	
Reporting Period:	
Comments:	
Unit Type:	Flare

Next, enter the requested information in the green input cells in the first Input Data table. Based on your entries in the first Input Data table, a number of green input cells will be activated in the second Input data table. Enter the requested information in the green input cells in the second Input Data table.

If reporting under subpart Q per §98.172(b), you must report CO₂ emissions from flares that burn blast furnace gas or coke oven gas according to the procedures in §98.253(b)(1) of subpart Y (Petroleum Refineries). When using the alternatives set forth in §98.253(b)(1)(ii)(B) and §98.253(b)(1)(iii)(C), you must use the default CO₂ emission factors for coke oven gas (46.85 kg CO₂/MMBtu) and blast furnace gas (274.32 kg CO₂/MMBtu) from Table C-1 to subpart C in Equations Y-2 and Y-3 of subpart Y.

This calculation spreadsheet can be used for up to 366 measurement periods.

sh <u>eet can be used for up to 366 measuremen</u>	t periods.		
[n] = Number of measurement periods. The minimum value for n is 52 (for weekly measurements); the maximum value for n is 366 (for daily measurements during a leap year)		Please enter value for [n] before trying to input values in the table below	
[EmF] = Default CO ₂ emission factor in kilograms CO ₂ /MMBtu (HHV basis).	60	The default value for [EmF] if reporting under subpart Y is 60 kg CO ₂ /M/Blk (HHV basis). As prescribed in §98.172(b), if you are reporting CO ₂ emissions under subpart Q from flares that burn blast furnace gas or coke oven gas according to the procedures in §98.253(b)(1) and are using the alternatives set forth in §98.253(b)(1) and §98.253(b)(1)(iii)(C), you must use the default CO ₂ emission factors for coke oven gas (48.85 kg CO ₂ /M/Blu) and blast furnace gas (27.42 kg CO ₂ /M/Blu) from Table C–1 to subpart C in Equations Y–2 and Y–3 of subpart Y.	
			-
[p] = Measurement period index	[[Flare],] = Volume of flare gas combusted during measurement period (million (MII)) sc/period). If a mass flow metri sused, you must also measure molecular weight and convert the mass flow to a volumetric flow as follows: Flare[MIAscf] = 0.00001 × Flare[kg] × MVC(MW),, where MVC is the molar volume conversion factor [[8495 sc/fky-mole at 68 °F and 14.7 psia or 836.6 sc/fky-mole at 60 °F and 14.7 psia depending on the standard conditions used when determining (HHV),] and (MW), is the average molecular weight of the flare gas combusted during measurement period (kg/kg-mole)	[(HHV) ₀] = Higher heating value for the flare gas combusted during measurement period (British thermal units per scf, Blu/scf = MIMBtu/MIMscf). If measurements are taken more frequently than daily, use the arithmetic average of measurement values within the day to calculate a daily average	period p
1			0.000
2			0.000
3			0.000
4			0.000
6			0.000
7			0.000
8			0.000
9			0.000
10			0.000

The calculation spreadsheet will calculate the annual CO_2 emissions for a fuel type combusted in a flare. The calculated value will be displayed in the red-bordered cell at the bottom of the spreadsheet. This value should be entered in e-GGRT and the Equation Y-4, Y-5 Calculation Spreadsheet for this flare. If different fuel types are separately monitored, add together the CO_2 emissions calculated for each fuel type for a given flare and use the resulting sum for entry in e-GGRT and the Equation Y-4, Y-5 Calculation Spreadsheet for this flare.

Annual CO₂ Emissions (metric tons/year) from Equation Y-2



Using the Equation Y-3 Calculation Spreadsheet

If you do not measure the higher heating value or carbon content of the flare gas at least weekly or if reporting under subpart Q per §98.172(b), you may use the Equation Y-3 Calculation Spreadsheet to calculate annual CO_2 emissions for each fuel type combusted in each flare using the average carbon content of the flare gas combusted. A separate spreadsheet should be used for each flare and fuel type combination. In nearly all cases, gas sent to a flare will be a mixture of different process gases, which are collectively considered to be fuel gas. As such, Equation Y-3 would be applied once for this fuel type. If you track separately the fuel gas sent to the flare and natural gas added to the flare for the purposes of preventing oxygen infiltration or ensuring adequate heating value of the gas flared, you should calculate the CO_2 emissions from natural gas used as pilot gas for the flare. Equation Y-3 is provided below.

(Equation Y-3)	$CO_2 = 0.98 \times 0.001 \times \left(Flare_{Norm} \times HHV \times EmF + HV \times EmF + HHV \times EmF + HHV \times EmF + HV \times EmF + H$	$\sum_{n=1}^{n} \left[\frac{44}{12} \times (Flare_{SSM})_{p} \right]$	$\left(\frac{(MW)_p}{MVG} \times (CC)_p\right)$	
		p=1 [12]	MVC	

Begin by entering the facility name, your name, the unit name or identifier, reporting period, and any additional comments in the green input cells of the general information table located immediately below the equation in the calculation spreadsheet. This is for your records.

Facility Name:	
Reporter Name:	
Unit Name/ ID:	
Reporting Period:	
Comments:	
Unit Type:	Flare

Next, enter the requested information in the green input cells in the first Input Data table. Based on your entries in the first Input Data table, a

number of green input cells will be activated in the second Input data table. Enter the requested information in the green input cells in the second Input Data table.

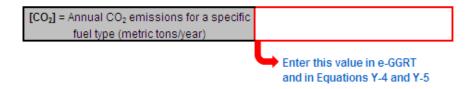
If reporting under subpart Q per §98.172(b), you must report CO₂ emissions from flares that burn blast furnace gas or coke oven gas according to the procedures in §98.253(b)(1) of subpart Y (Petroleum Refineries). When using the alternatives set forth in §98.253(b)(1)(ii)(B) and §98.253(b)(1)(iii)(C), you must use the default CO₂ emission factors for coke oven gas (46.85 kg CO₂/MMBtu) and blast furnace gas (274.32 kg CO₂/MMBtu) from Table C-1 to subpart C in Equations Y-2 and Y-3 of subpart Y.

Input Data This calculation

spreadsheet can be used for up to 366 events.		_		
 [n] = Number of start-up, shutdown, and malfunction events during the reporting year exceeding 500,000 scl/day [MVC] = Molar volume conversion factor (849 5 scl/kg-mole at 60 % f and 14.7 psia or 836.6 scl/kg-mole at 60 % f and 14.7 psia) [Flare_{Nomb}] = Annual volume of flare gas combusted during normal operations from company records, (million (MM) standard cubic feet prevean, IMASch/ear) 		Please enter value for [n] before trying to input values in the table below		
[HHV] = Higher heating value for fuel gas or flare gas from company records (British thermal units per scf. Btu/scf = MMBtu/MMscf)				
[EmF] = Default CO ₂ emission factor for flare gas in kilograms CO ₂ /MMBtu (HHV basis).	60.	(HHV basis). As prescribed in under subpart Q from flare according to the procedures set forth in §98.253(b)(1)(ii) default CO ₂ emission factor blast furnace gas (274.32 li)	f reporting under subpart Y is 6 i §98.172(b), if you are reportin s that burn blast furnace gas o in §98.253(b)(1) and are using (B) and §98.253(b)(1)(iii)(C), y s for coke oven gas (46.85 kg ig CO ₂ /MMBtu) from Table C–1 s Y–2 and Y–3 of subpart Y.	g CO ₂ emissions coke oven gas the alternatives ou must use the CO ₂ /MMBtu) and
[p] = Start-up, shutdown, and malfunction event index	[[Flare _{35M}] _p] = Volume of flare gas combusted during indexed start-up, shutdown, or malfunction event from engineering calculations, (scflevent)	[(MW) _p] = Average molecular weight of the flare gas, from the analysis results or engineering calculations for the event (kg/kg-mole)	[(CC) _p] = Average carbon content of the flare gas, from analysis results or engineering calculations for the event (kg C per kg flare gas)	Intermediate equation value (summation term)
1			37	0.000
2				0.000
3				0.000
4				0.000
5				0.000
6				0.000
7				0.000
8				0.000
9				0.000
10				0.000

The calculation spreadsheet will calculate the annual CO_2 emissions for a fuel type combusted in a flare. The calculated value will be displayed in the red-bordered cell at the bottom of the spreadsheet. This value should be entered in e-GGRT and the Equation Y-4, Y-5 Calculation Spreadsheet for this flare. If CO_2 emissions are estimated for different fuel types, add together the CO_2 emissions calculated for each fuel type for a given flare and use the resulting sum for entry in e-GGRT and the Equation Y-4, Y-5 Calculation Spreadsheet for this flare.

Annual CO₂ Emissions (metric tons/year) from Equation Y-3



Using the Equation Y-4, Y-5 Calculation Spreadsheet

Use the Equation Y-4, Y-5 Calculation Spreadsheet to calculate annual CH₄ and N₂O emissions for each flare. A separate spreadsheet should be used for each flare. Equations Y-4 and Y-5 are provided below.

Per §98.172(b), if you are reporting under subpart Q, you must report CH₄ and N₂O emissions from flares according to the requirements in §98.33(c)(2) which employ Equation C-9a (not Y-4 and Y-5) and the emission factors for coke oven gas and blast furnace gas in Table C--2 to subpart C.

$$\begin{array}{l} \mbox{(Equation Y-4)} \\ \hline {\rm CH}_4 = \left({\rm CO}_2 \times \frac{{\rm Em}{\rm F}_{\rm CH4}}{{\rm Em}{\rm F}} \right) + {\rm CO}_2 \times \frac{0.02}{0.98} \times \frac{16}{44} \times f_{\rm CH4} \\ \hline \\ \mbox{(Equation Y-5)} \\ {\rm N}_2 \, {\rm O} = \left({\rm CO}_2 \times \frac{{\rm Em}{\rm F}_{\rm N2O}}{{\rm Em}{\rm F}} \right) \end{array}$$

Begin by entering the facility name, your name, the unit name or identifier, unit description, and any additional comments in the green input cells of the general information table located immediately below the equation in the calculation spreadsheet. This is for your records.

Facility Name:	
Reporter Name:	
Unit Name or Identifier:	
Unit Description:	
Comments:	
Unit Type:	Petroleum Refinery Flare

Next, enter the requested information in the green input cells in the Input Data table.

Input Data

[CO ₂] = Emission rate of CO ₂ from flared gas calculated in paragraph (b)(1) of this section (metric tons/ year)		
[f _{CH4}] = Weight fraction of carbon in the flare gas prior to combustion that is contributed by methane from measurement values or engineering calculations (kg C in methane in flare gas/kg C in flare gas); default is 0.4	0.4	The default value for f _{CH4} is 0.4

The calculation spreadsheet will calculate the annual CH_4 and N_2O emissions from this flare. The calculated values will be displayed in the red-bordered cells at the bottom of the spreadsheet. These values should be entered in e-GGRT for this flare.

Annual Methane Emissions from flared gas (metric tons CH₄/ year) from Equation Y-4

[CH4] = Annual methane emissions from flared gas (metric tons CH4/year)	0.00	
	Enter this value	in e-GGRT

Annual N₂O Emissions from flared gas (metric tons N₂O/ year) from Equation Y-5

[N ₂ O] = Annual nitrous oxide emissions from flared gas (metric tons N ₂ O/year)	0.00	
	Enter this value	in e-GGRT

Using the Equation Y-6, Y-7a, Y-7b Calculation Spreadsheet

For catalytic cracking units, fluid coking units, and catalytic reforming units that are required to use the methods provided in 98.253(c)(2)(i) through (iii), use the Equation Y-6, and potentially Y-7a or Y-7b Calculation Spreadsheet to calculate annual CO₂ emissions from each catalytic

cracking unit and fluid coking unit. A separate spreadsheet should be used for each unit. If you do not continuously monitor the volumetric flow rate of exhaust gas prior to the combustion of other fossil fuels, Equation Y-7a (based on percent concentrations of O_2 , CO_2 , and CO in gas stream inlet and/or exhaust gas stream) or Y-7b (based on percent concentration of N_2 in gas stream inlet and exhaust gas stream) may be used to calculate the volumetric flow rate. Equations Y-6, Y-7a, and Y-7b are provided below.

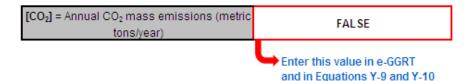
(Equation Y-6)	$CO_{2} = \sum_{p=1}^{n} \left[(Q_{r})_{p} \times \frac{(\% CO_{2} + \% CO)_{p}}{100\%} \times \frac{44}{MVC} \times 0.001 \right]$
(Equation Y-7a)	$Q_{r} = \frac{\left(79 * Q_{a} + (100 - \% O_{oxy}) * Q_{oxy}\right)}{100 - \% CO_{2} - \% CO - \% O_{2}}$
(Equation Y-7b)	$Q_{r} = \frac{(78.1 * Q_{a} + (\% N_{2,oxy}) * Q_{oxy})}{\% N_{2,exhaust}}$

Begin by entering the facility name, your name, the unit name or identifier, reporting period, any additional comments, and the unit type in the green input cells of the general information table located immediately below the equation in the calculation spreadsheet. This is for your records.

Facility Name:	
Reporter Name:	
Unit Name/ ID:	
Reporting Period:	
Comments:	
Unit Type:	

Due to the extreme length of this spreadsheet, calculation results are displayed below the general information table near the top of the spreadsheet in addition to the bottom of the spreadsheet. Once the spreadsheet has been completely filled out, enter the results in the red-bordered cell in e-GGRT and in the Equation Y-9, Y-10 Calculation Spreadsheet.

Annual CO₂ Emissions (metric tons/year) from Equation Y-6



Before transferring the data to e-GGRT and the Equation Y-9, Y-10 Calculation Spreadsheet, enter the requested information in the green input cells in the first Input Data table.

Input Data

This calculation spreadsheet can be used for up to 8784 hours per year.

[n] = Number of hours in calendar year	100.
[MVC] = Molar volume conversion factor	
(849.5 scf/kgmole at 68 °F and 14.7 psia or	
836.6 scf/kg-mole at 60 °F and 14.7 psia)	
Is Q _r calculated using Equation Y-7a,	
calculated using Equation Y-7b, or	
continuously monitored?	

Based on your entries

in the first Input Data table, a number of green input cells will be activated in the subsequent Input data tables. Enter the requested information in the green input cells in the second Input Data table shown below regardless of how Q_r is determined.

Use these data inputs regardless of how Q_r is determined			
Measurement period index	[%CO ₂] = Hourly average percent CO ₂ concentration in the exhaust gas stream from the fluid catalytic cracking unit regenerator or fluid coking unit burner (percent by volume – dry basis)	assume %CO to be zero. [For Equation Y-	
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

If you continuously monitor the volumetric flow rate of exhaust gas prior to the combustion of other fossil fuels, enter the requested information in the green input cells in the third Input Data table shown below.

Use these data inputs if Q _r is CONTINUOUSLY MONITORED	
[Qr] = Volumetric flow rate of exhaust gas from the fluid catalytic cracking unit regenerator or fluid coking unit burner prior to the combustion of other fossil fuels (dry standard cubic feet per hour, dscfh)	Equation Y-6 value for measurement period

If you do not continuously monitor the volumetric flow rate of exhaust gas prior to the combustion of other fossil fuels and calculated Q_r using Equation Y-7a (based on percent concentrations of O_2 , CO_2 , and CO in gas stream inlet and/or exhaust gas stream), enter the requested information in the green input cells in the forth Input Data table shown below.

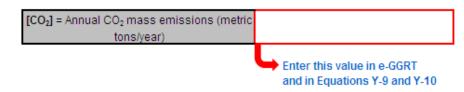
Use th	ese data inputs if Q _r is CAI	CULATED USING EQUATIO	DN Y-7a		
[Q ₄] = Volumetric flow rate of air to the fluid catalytic cracking unit regenerator or fluid coking unit burner, as determined from control room instrumentation (dscfh)	[Q _{ovj}] = Volumetric flow rate of oxygen enriched air to the fluid catalytic cracking unit regenerator or fluid coking unit burner as determined from control room instrumentation (dscfh)	[%O _{onj}] = O ₂ concentration in oxygen enriched gas stream inlet to the fluid catalytic cracking unit regenerator or fluid coking unit burner based on oxygen purity specifications of the oxygen supply used for enrichment (percent by volume – dry basis)	[%O ₂] = Hourly average percent oxygen concentration in exhaust gas stream from the fluid	Equation Y-7a value for measurement period	Equation Y-6 value for measurement period

If you do not continuously monitor the volumetric flow rate of exhaust gas prior to the combustion of other fossil fuels and calculated Q_r using Equation Y-7b (based on percent concentration of N_2 in gas stream inlet and exhaust gas stream), enter the requested information in the green input cells in the fifth Input Data table shown below.

Us	se these data inputs if Q_r is	CALCULATED USING EQUATIO	N Y-7b	
[Q_] = Volumetric flow rate of air to the fluid catalytic cracking unit regenerator or fluid coking unit burner, as determined from control room instrumentation (dscfh)	[Q _{on]} = Volumetric flow rate of oxygen enriched air to the fluid catalytic cracking unit regenerator or fluid coking unit burner as determined from control room instrumentation (dscfh)	[%N2,cwy] = N2 concentration in oxygen enriched gas stream inlet to the fluid catalytic cracking unit regenerator or fluid coking unit burner based on measured value or maximum N2 impurity specifications of the oxygen supply used for enrichment (percent by volume – dry basis)	[%N2.exhaust] = Hourly average percent N2 concentration in	Equation value for measurement period

The calculation spreadsheet will calculate the annual CO_2 emissions from each catalytic cracking unit and fluid coking unit. The calculated value will be displayed in the red-bordered cell at the bottom of the spreadsheet. This value should be entered in e-GGRT and the Equation Y-9, Y-10 Calculation Spreadsheet for this unit.

Annual CO₂ Emissions (metric tons/year) from Equation Y-6



Using the Equation Y-8 Calculation Spreadsheet

For catalytic cracking units and fluid coking units with rated capacities of 10,000 barrels per stream day (bbls/sd) or less that do not monitor at least daily the O_2 , CO_2 , and (if necessary) CO concentrations in the exhaust stack prior to combustion of other fossil fuels, use the Equation Y-8 Calculation Spreadsheet to calculate annual CO_2 emissions for each catalytic cracking unit and fluid coking unit. A separate spreadsheet should be used for each unit. Equation Y-8 is provided below.

tion Y-8)
$$CO_2 = Q_{unit} \times (CBF \times 0.001) \times CC \times \frac{44}{12}$$

Begin by entering the facility name, your name, the unit name or identifier, reporting period, any additional comments, and the unit type in the green input cells of the general information table located immediately below the equation in the calculation spreadsheet. This is for your records.

Facility Name:	
Reporter Name:	
Unit Name or Identifier:	
Unit Description:	
Comments:	
Unit Type:	

Next, enter the requested information in the green input cells in the first Input Data table.

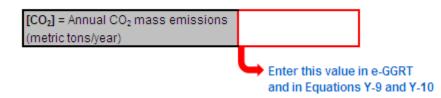
Input Data

(Equa

[Q _{unit}] = Annual throughput of unit from company records (barrels (bbls) per year, bbl/yr)		
[CBF] = Coke burn-off factor from engineering calculations (kg coke per barrel of feed); default for catalytic cracking units = 7.3; default for fluid coking units = 11		The default value for CBF is 7.3 (for catalytic cracking units) or 11 (for coking units)
[CC] = Carbon content of coke based on measurement or engineering estimate (kg C per kg coke); default = 0.94	0.94	The default value for TCC is 0.94

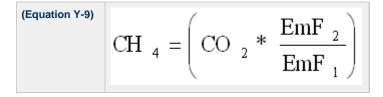
The calculation spreadsheet will calculate the annual CO_2 emissions from each catalytic cracking unit and fluid coking unit. The calculated value will be displayed in the red-bordered cell at the bottom of the spreadsheet. This value should be entered in e-GGRT and the Equation Y-9, Y-10 Calculation Spreadsheet for this unit.

Annual CO₂ Mass Emissions (metric tons/year) from Equation Y-8



Using the Equation Y-9, Y-10 Calculation Spreadsheet

Use the Equation Y-9, Y-10 Calculation Spreadsheet to calculate annual CH_4 and N_2O emissions for each catalytic cracking unit, fluid coking unit, coke calcining unit, and/or catalytic reforming unit when the default emission factors are used (no calculation spreadsheets are provided if measurement data or site-specific emission factors are used). A separate spreadsheet should be used for each unit. The Equation Y-9, Y-10 Calculation Spreadsheet performs the calculations using Equations Y-9 and Y-10 provided below.



(Equation Y-10)
N₂O =
$$\left(CO_2 * \frac{EmF_3}{EmF_1} \right)$$

Begin by entering the facility name, your name, the unit name or identifier, unit description, any additional comments, and the unit type in the green input cells of the general information table located immediately below the equation in the calculation spreadsheet. This is for your records.

Facility Name:	
Reporter Name:	
Unit Name or Identifier:	
Unit Description:	
Comments:	
Unit Type:	

Next, enter the requested information in the green input cells in the Input Data table.

Input Data

[CO2] = Emission rate of CO2 from	
coke burn-off calculated in	
paragraphs (c)(1), (c)(2), (e)(1),	
(e)(2), (g)(1), or (g)(2) of this	
section, as applicable (metric tons/	
year)	

The calculation spreadsheet will calculate the annual CH_4 and N_2O emissions from this unit. The calculated values will be displayed in the red-bordered cells at the bottom of the spreadsheet. These values should be entered in e-GGRT for this unit.

Annual Methane Emissions from coke burn-off (metric tons CH₄/ year) from Equation Y-9



Annual N₂O Emissions from coke burn-off (metric tons N₂O/ year) from Equation Y-10

[N ₂ O] = Annual nitrous oxide emissions from coke burn-off (metric tons N ₂ O/year)	0.00	
	Enter this value in e-	GGRT

Using the Equation Y-11 Calculation Spreadsheet

Use the Equation Y-11 Calculation Spreadsheet to calculate annual CO₂ emissions for each catalytic reforming unit that does not monitor at least daily the O₂, CO₂, and (if necessary) CO concentrations in the exhaust stack prior to combustion of other fossil fuels. A separate spreadsheet should be used for each unit. Equation Y-11 is provided below.

(Equation Y-11)
$$CO_2 = \sum_{1}^{n} \left[\left(CB_Q \right)_n \times CC \times \frac{44}{12} \times 0.001 \right]$$

Begin by entering the facility name, your name, the unit name or identifier, reporting period, and any additional comments in the green input cells of the general information table located immediately below the equation in the calculation spreadsheet. This is for your records.

Facility Name:	
Reporter Name:	
Unit Name/ ID:	
Reporting Period:	
Comments:	
Unit Type:	Catalytic Reforming Unit

Next, enter the requested information in the green input cells in the first Input Data table. Based on your entries in the first Input Data table, a number of green input cells will be activated in the second Input data table. Enter the requested information in the green input cells in the second Input Data table.

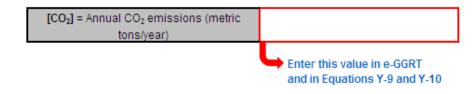
Input Data

This calculation spreadsheet can be used for up to 366 regeneration cycles. Use additional spreadsheets for regeneration cycles greater than this.
[n] = Number of regeneration cycles or

measurement periods in the calendar year			
Index for Measurement Period	[CB _a] = Coke burn-off quantity per regeneration cycle or measurement period from engineering estimates (kg coke/cycle or kg coke/measurement period)	[CC] = Carbon content of coke based on measurement or engineering estimate (kg C per kg coke); default = 0.94	Equation value for measurement period
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

The calculation spreadsheet will calculate the annual CO₂ emissions from a catalytic reforming unit. The calculated value will be displayed in the red-bordered cell at the bottom of the spreadsheet. This value should be entered in e-GGRT and the Equation Y-9, Y-10 Calculation Spreadsheet for this unit.

Annual CO₂ Emissions (metric tons/year) from Equation Y-11



Using the Equation Y-12 Calculation Spreadsheet

Except for non-Claus units electing to use the process vent method, use the Equation Y-12 Calculation Spreadsheet to calculate annual CO_2 emissions from sour gas sent off site for sulfur recovery and annual CO_2 process emissions from each on-site sulfur recovery plant. A separate spreadsheet should be used for sour gas sent off site for sulfur recovery and for each on-site sulfur recovery plant. The Equation Y-12 Calculation Spreadsheet performs the calculations using Equation Y-12 provided below.

(Equation Y-12)
$$CO_2 = F_{SG} * \frac{44}{MVC} * MF_C * 0.001$$

Begin by entering the facility name, your name, the unit name or identifier, unit description, any additional comments, and the unit type in the green input cells of the general information table located immediately below the equation in the calculation spreadsheet. This is for your records.

Facility Name:	
Reporter Name:	
Unit Name or Identifier:	
Unit Description:	
Comments:	
Unit Type:	Petroleum Refinery Sulfur Recovery Plant

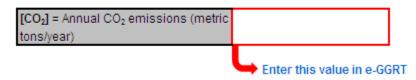
Next, enter the requested information in the green input cells in the Input Data table.

Input Data

[Fsc] = Volumetric flow rate of sour gas feed (including sour water stripper gas) to the sulfur recovery plant (scf/year)		
[MVC] = Molar volume conversion factor (849.5 scf/kgmole at 68 °F and 14.7 psia or 836.6 scf/kg-mole at 60 °F and 14.7 psia)		
[MF _c] = Mole fraction of carbon in the sour gas to the sulfur recovery plant (kg-mole C/kg-mole gas); default = 0.20.	0.2	The default value for MF_{C} is 0.2

The calculation spreadsheet will calculate the annual CO_2 emissions from sour gas sent off site for sulfur recovery or annual CO_2 process emissions from each on-site sulfur recovery plant. The calculated value will be displayed in the red-bordered cell at the bottom of the spreadsheet. This value should be entered in e-GGRT.

Annual CO₂ Emissions (metric tons/year) from Equation Y-12



Using the Equation Y-13 Calculation Spreadsheet

Use the Equation Y-13 Calculation Spreadsheet to calculate annual CO₂ emissions for each coke calcining unit. Use a separate spreadsheet for each unit. Equation Y-13 is provided below.

(Equation Y-13)	$CO_{2} = \frac{44}{12} * \left(M_{in} * CC_{GC} - \left(M_{out} + M_{dust} \right) * CC_{MPC} \right)$
--------------------	---

Begin by entering the facility name, your name, the unit name or identifier, reporting period, and any additional comments in the green input cells of the general information table located immediately below the equation in the calculation spreadsheet. This is for your records.

Facility Name:	
Reporter Name:	
Unit Name or Identifier:	
Unit Description:	
Comments:	
Unit Type:	Petroleum Refinery Coke Calcining Unit

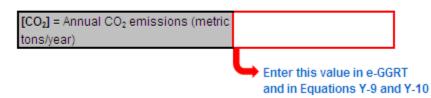
Next, enter the requested information in the green input cells in the Input Data table.

Input Data

[M _{in}] = Annual mass of green coke fed	
to the coke calcining unit from facility	
records (metric tons/year)	
[CC _{gc}] = Average mass fraction	
carbon content of green coke from	
facility measurement data (metric ton	
carbon/metric ton green coke)	
[M _{out}] = Annual mass of marketable	
petroleum coke produced by the coke	
calcining unit from facility records	
(metric tons petroleum coke/year).	
[M _{dust}] = Annual mass of petroleum	
coke dust removed from the process	
through the dust collection system of	
the coke calcining unit from facility	
records (metric ton petroleum coke	
dust/year). For coke calcining units	
that recycle the collected dust, the mass of coke dust removed from the	
process is the mass of coke dust	
collected less the mass of coke dust	
recycled to the process.	
[CC _{MPC}] = Average mass fraction	
carbon content of marketable	
petroleum coke produced by the coke	
calcining unit from facility	
measurement data (metric ton	
carbon/metric ton petroleum coke)	

The calculation spreadsheet will calculate the annual CO₂ emissions from a coke calcining unit. The calculated value will be displayed in the red-bordered cell at the bottom of the spreadsheet. This value should be entered in e-GGRT and the Equation Y-9, Y-10 Calculation Spreadsheet for this unit.

Annual CO₂ Emissions (metric tons/year) from Equation Y-13



Using the Equation Y-14, Y-15 Calculation Spreadsheet

For uncontrolled asphalt blowing operations and asphalt blowing operations controlled by vapor scrubbing, use the Equation Y-14, Y-15 Calculation Spreadsheet to calculate annual CO_2 and CH_4 emissions for asphalt blowing operation. Equations Y-14 and Y-15 is provided below.

(Equation Y-14)	$CO_{2} = \left(\boldsymbol{Q}_{\textit{AB}} \times \boldsymbol{EF}_{\textit{AB.CO2}} \right)$
(Equation Y-15)	$C\!H_{4} = \left(Q_{\mathbf{A}\mathbf{B}} \times EF_{\mathbf{A}\mathbf{B}, C\mathbf{H}4} \right)$

Begin by entering the facility name, your name, the unit name or identifier, reporting period, and any additional comments in the green input cells of the general information table located immediately below the equation in the calculation spreadsheet. This is for your records.

Facility Name:	
Reporter Name:	
Unit Name or Identifier:	
Unit Description:	
Comments:	
Unit Type:	Asphalt Blowing Operations

Next, enter the requested information in the green input cells in the Input Data table.

Input Data

[Q _{AB}] = Quantity of asphalt blown (million barrels per year, MMbbl/year)	
[EF _{AB, CO2}] = Emission factor for	
CO2 from uncontrolled asphalt	
blowing from facility-specific test	The default value for this parameter is 1,100
data (metric tons CO ₂ /MMbbl	
asphalt blown); default = 1,100	
[EF _{AB, CH4}] = Emission factor for	
CH4 from uncontrolled asphalt	
blowing from facility-specific test	The default value for this parameter is 580
data (metric tons CH ₂ /MMbbl	
asphalt blown); default = 580	

The calculation spreadsheet will calculate the annual CO₂ and CH₄ emissions from asphalt blowing operations. The calculated values will be displayed in red-bordered cells at the bottom of the spreadsheet. These values should be entered in e-GGRT.

Annual Carbon Dioxide Emissions from Asphalt Blowing Operations (metric tons CO₂/ year) from Equation Y-14

[CO ₂] = Annual CO ₂ emissions from uncontrolled asphalt blowing (metric tons CO ₂ / year)	
	Enter this value in e-GGRT

Annual Methane Emissions from Asphalt Blowing Operations (metric tons CH₄/ year) from Equation Y-15

emissions from uncontrolled asphalt blowing (metric tons CH₄/year)	
	Enter this value in e-GGRT

Using the Equation Y-16a, Y-16b, Y-17 Calculation Spreadsheet

For asphalt blowing operations controlled by thermal oxidizer or flare, use the Equation Y-16a, Y-16b, Y-17 Calculation Spreadsheet to calculate annual CO_2 and CH_4 emissions for asphalt blowing operation. Equations Y-16a, Y-16b, and Y-17 are provided below.

(Equation Y-16a)	$CO_2 = 0.98 \times \left(\mathcal{Q}_{AB} \times CEF_{AB} \times \frac{44}{12} \right)$
(Equation Y-16b)	$CO_{2} = \mathcal{Q}_{AB} \times \left(EF_{AB,CO2} + 0.98 \times \left[\left(CEF_{AB} \times \frac{44}{12} \right) - EF_{AB,CO2} \right] \right)$
(Equation Y-17)	$CH_{\rm 4} = 0.02 \times \left(Q_{\rm AB} \times EF_{\rm AB,CH4} \right)$

Begin by entering the facility name, your name, the unit name or identifier, reporting period, and any additional comments in the green input cells of the general information table located immediately below the equation in the calculation spreadsheet. This is for your records.

Facility Name:	
Reporter Name:	
Unit Name or Identifier:	
Unit Description:	
Comments:	
Unit Type:	Asphalt Blowing Operations

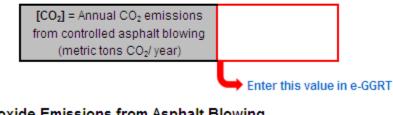
Next, enter the requested information in the green input cells in the first Input Data table.

Input Data

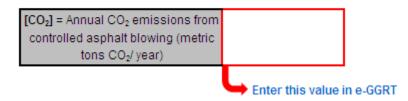
[Q _{AB}] = Quantity of asphalt blown (MMbbl/year)		
[CEF _{AB}] = Carbon emission factor from asphalt blowing from facility- specific test data (metric tons C/MMbbl asphalt blown); default = 2,750	2,750.	The default value for CEF _{AB} is 2,750
[EF _{AB, CH4}] = Emission factor for CH4 from uncontrolled asphalt blowing from facility-specific test data (metric tons CH ₄ /MMbbl asphalt blown); default = 580	580.	The default value for EF _{AB,CH4} is 580
[EF _{AB, CO2}] = Emission factor for CO2 from uncontrolled asphalt blowing from facility-specific test data (metric tons CO2/MMbbl asphalt blown); default = 1,100	1,100.	[EF _{AB, CO2}] is a required input for Equation Y-16b only; the default value is 1,100

The calculation spreadsheet will calculate the annual CO_2 and CH_4 emissions from asphalt blowing operations. The calculated values will be displayed in red-bordered cells at the bottom of the spreadsheet. If you used an emission factor for CO_2 from uncontrolled asphalt blowing from facility-specific test data enter the result from Equation Y-16b into e-GGRT, otherwise enter the result from Equation Y-16a into e-GGRT. The result for CH_4 should also be entered in e-GGRT.

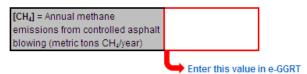
Annual Carbon Dioxide Emissions from Asphalt Blowing Operations (metric tons CO₂/ year) from Equation Y-16a



Annual Carbon Dioxide Emissions from Asphalt Blowing Operations (metric tons CO₂/ year) from Equation Y-16b



Annual Methane Emissions from Asphalt Blowing Operations (metric tons CH₄/ year) from Equation Y-17



Using the Equation Y-18 Calculation Spreadsheet

Use the Equation Y-18 Calculation Spreadsheet to calculate annual CH₄ emissions for each set of similar delayed coking vessels. A separate spreadsheet should be used for each set of different delayed coking vessels. Equation Y-18 is provided below.

(Equation Y-18)	$CH_4 = \left(N \times H \times \frac{\left(P_{CV} + 14.7\right)}{14.7} \times f_{void} \times \frac{\pi \times D^2}{4} \times \frac{16}{MVC} \times MF_{CH4} \times 0.001 \right)$
-----------------	--

Begin by entering the facility name, your name, the unit name or identifier, reporting period, and any additional comments in the green input cells of the general information table located immediately below the equation in the calculation spreadsheet. This is for your records.

Facility Name:	
Reporter Name:	
Unit Name or Identifier:	
Unit Description:	
Comments:	
Unit Type:	Delayed Coking Unit

Next, enter the requested information in the green input cells in the Input Data table.

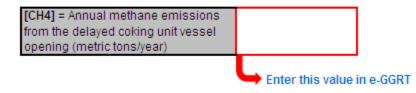
Input Data

[N] = Cumulative number of vessel openings for all delayed coking unit vessels of the same dimensions during the year		
[H] = Height of coking unit vessel (feet)		
[P _{CV}] = Gauge pressure of the coking vessel when opened to the atmosphere prior to coke cutting or, if the alternative method provided in paragraph (i)(2) of this section is		
used, gauge pressure of the coking vessel when depressurization gases are first routed to the atmosphere (pounds per square inch gauge, psig)		
[D] = Diameter of coking unit vessel (feet)		
[MF _{CH4}] = Mole fraction of methane in coking vessel gas (kg-mole CH ₄ /kg- mole gas, wet basis); default value is 0.01	0.01	The default value for MF _{CH4} is 0.01
[MVC] = Molar volume conversion factor (849.5 scf/kgmole at 68 °F and 14.7 psia or 836.6 scf/kg-mole at 60 °F and 14.7 psia)		
[f _{vold}] = Volumetric void fraction of coking vessel prior to steaming (cf gas/cf of vessel); default = 0.6	0.6	The default value for f _{vold} is 0.6

The calculation spreadsheet will calculate the annual CH₄ emissions from a set of similar delayed coking vessels. The calculated value will be

displayed in the red-bordered cell at the bottom of the spreadsheet. If you elect to use the process vent method for the depressurization cycle, calculate CH_4 emissions during depressurization using the Equation Y-19 Calculation Spreadsheet and add that value to the CH_4 emissions calculated using the Equation Y-18 Calculation Spreadsheet for vessel openings. If you have multiple sets of delayed coking vessels, add together the CH_4 emissions from all delayed coking vessels and enter the sum total into e-GGRT for delayed coking units.

Annual CH₄ Mass Emissions (metric tons/year) from Equation Y-18



Using the Equation Y-19 Calculation Spreadsheet

Use the Equation Y-19 Calculation Spreadsheet to calculate annual CO_2 , CH_4 , and N_2O emissions for each process vent not covered in paragraphs (a) through (i) of §98.253 or for other sources electing to use this method. A separate spreadsheet should be used for each process vent. Equation Y-19 is provided below.

(Equation Y-19)
$$E_x = \sum_{p=1}^{N} \left((VR)_p \times (MF_x)_p \times \frac{MW_x}{MVC} \times (VT)_p \times 0.001 \right)$$

Begin by entering the facility name, your name, the unit name or identifier, reporting period, any additional comments, and the unit types in the green input cells of the general information table located immediately below the equation in the calculation spreadsheet. This is for your records.

Facility Name:	
Reporter Name:	
Unit Name/ ID:	
Reporting Period:	
Comments:	
Unit Type:	

Next, enter the requested information in the green input cells in the first Input Data table. Based on your entries in the first Input Data table, a number of green input cells will be activated in the second Input data table. Enter the requested information in the green input cells in the second Input Data table.

Click image to expand

Input Data								
This calculation spreadsheet c	is calculation spreadsheet can be used for up to 386 venting events. Use additional spreadsheets for venting events greater than this,.							
[N] = Number of venting events								
[MVC] = Molar volume								
conversion Factor (849.5								
solfkgmole at 68 *F and 14.7 psia								
or 836.6 soffkg-mole at 60 °F and								
14.7 psia)								
[P] + Index of venting events	[(YR),] = Average volumetric flow rate of process gas during the event (sol per hour) from measurement data, process knowledge, or engineering estimates	[(YT).] = Venting time for the event (hours)		GHG CH, in process vent during the event (kg-mol of GHG CH,/kg-	[[MF are],] = Mole fraction of GHG N ₂ D in process vent during the event (kg-mol of GHG N ₂ Okg- mol vent gas) from measurement data, process knowledge, or engineering estimates	(CO ₂) for venting	(CH ₄) for venting	Equation value (N ₄ O) for venting event IP
1								
2								
3								
4								
6								
6								
7								

The calculation spreadsheet will calculate the annual CO_2 , CH_4 , and N_2O emissions from for a process vent. The calculated values will be displayed in the red-bordered cells at the bottom of the spreadsheet. These values should be entered in e-GGRT for this process vent (or for this process unit for units electing to use the process vent method).

Annual Greenhouse Gas Emissions (metric tons/year) from Equation Y-19

[E _{co2}] = Annual emissions of		
CO2 from process vent		
[E _{CH4}] = Annual emissions of		
CH₄ from process vent		
[E _{N20}] = Annual emissions of		
N ₂ O from process vent		
	Enter these values in	A GGRT

Using the Equation Y-20 Calculation Spreadsheet

Use the Equation Y-20 Calculation Spreadsheet to calculate annual CH₄ emissions for blowdown systems unless the process vent method is selected. Equation Y-20 is provided below.

(Equation Y-20) $CH_4 = \left(\mathcal{Q}_{\text{Re}f} \times EF_{BD} \times \frac{16}{MVC} \times 0.001 \right)$

Begin by entering the facility name, your name, the unit name or identifier, reporting period, and any additional comments in the green input cells of the general information table located immediately below the equation in the calculation spreadsheet. This is for your records.

Facility Name:	
Reporter Name:	
Unit Name or Identifier:	
Unit Description:	
Comments:	
Unit Type:	Blowdown System

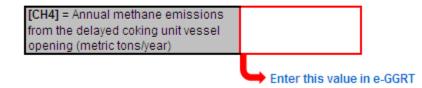
Next, enter the requested information in the green input cells in the Input Data table.

Input Data

[Q _{ref}] = Quantity of crude oil plus the quantity of intermediate products received from off site that are processed at the facility (MMbbl/year)		
[EF _{BD}] = Methane emission factor for uncontrolled blown systems (scf CH4/MMbbl); default is 137,000	137,000.	The default value for EF _{8D} is 137,000
[MVC] = Molar volume conversion factor (849.5 scf/kgmole at 68 °F and 14.7 psia or 836.6 scf/kg-mole at 60 °F and 14.7 psia)		

The calculation spreadsheet will calculate the annual CH_4 emissions from blowdown systems. The calculated value will be displayed in the red-bordered cell at the bottom of the spreadsheet. This value should be entered in e-GGRT for this unit.

Annual CH₄ Mass Emissions (metric tons/year) from Equation Y-20



Using the Equation Y-21 Calculation Spreadsheet

Use the Equation Y-21 Calculation Spreadsheet to calculate annual CH₄ emissions for equipment leaks unless the alternative method is selected.

Equation Y-21 is provided below.

$$\begin{array}{c} \text{(Equation} \\ \text{Y-21)} \end{array} \quad CH_4 = \left(0.4 \times N_{\textit{CD}} + 0.2 \times N_{\textit{PU1}} + 0.1 \times N_{\textit{PU2}} + 4.3 \times N_{\textit{H2}} + 6 \times N_{\textit{FGS}} \right) \\ \end{array}$$

Begin by entering the facility name, your name, the unit name or identifier, reporting period, and any additional comments in the green input cells of the general information table located immediately below the equation in the calculation spreadsheet. This is for your records.

Facility Name:	
Reporter Name:	
Unit Name or Identifier:	
Unit Description:	
Comments:	
Unit Type:	Equipment leaks

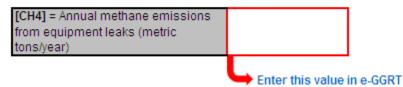
Next, enter the requested information in the green input cells in the Input Data table.

Input Data

[N _{CD}] = Number of atmospheric crude oil distillation columns at the facility	
[N _{PU1}] = Cumulative number of catalytic cracking units, coking units (delayed or fluid), hydrocracking, and full-range distillation columns (including depropanizer and debutanizer distillation columns) at	
[N _{PU2}] = Cumulative number of hydrotreating/ hydrorefining units, catalytic reforming units, and visbreaking units at the facility	
[N _{H2}] = Total number of hydrogen plants at the facility [N _{FG8}] = Total number of fuel gas systems at the facility	

The calculation spreadsheet will calculate the annual CH₄ emissions from equipment leaks. The calculated value will be displayed in the red-bordered cell at the bottom of the spreadsheet. This value should be entered in e-GGRT for this unit.

Annual CH₄ Mass Emissions (metric tons/year) from Equation Y-21



Using the Equation Y-22 Calculation Spreadsheet

Use the Equation Y-22 Calculation Spreadsheet to calculate annual CH_4 emissions for storage tanks other than those processing unstabilized crude oil unless the alternative method is selected. Equation Y-22 is provided below.

(Equation Y-22) $CH_4 = \left(0.1 \times Q_{\text{Re} f}\right)$

Begin by entering the facility name, your name, the unit name or identifier, reporting period, and any additional comments in the green input cells of the general information table located immediately below the equation in the calculation spreadsheet. This is for your records.

Facility Name:	
Reporter Name:	
Unit Name or Identifier:	
Unit Description:	
Comments:	
Unit Type:	Storage tanks other than those processing unstabilized crude oil

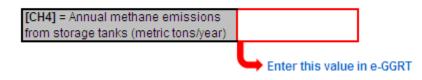
Next, enter the requested information in the green input cells in the Input Data table.

Input Data

[Q _{ref}] = Quantity of crude oil plus the	
quantity of intermediate products	
received from off site that are	
processed at the facility (MMbbl/year)	

The calculation spreadsheet will calculate the annual CH₄ emissions from storage tanks other than those processing unstabilized crude oil. The calculated value will be displayed in the red-bordered cell at the bottom of the spreadsheet. This value should be entered in e-GGRT for this unit.

Annual CH₄ Mass Emissions (metric tons/year) from Equation Y-22



Using the Equation Y-23 Calculation Spreadsheet

Use the Equation Y-23 Calculation Spreadsheet to calculate annual CH₄ emissions for storage tanks that process unstabilized crude oil. Equation Y-23 is provided below.

(Equation Y-23)
$$CH_4 = (995,000 \times Q_{un} \times \Delta P) \times MF_{CH4} \times \frac{16}{MVC} \times 0.001$$

Begin by entering the facility name, your name, the unit name or identifier, reporting period, and any additional comments in the green input cells of the general information table located immediately below the equation in the calculation spreadsheet. This is for your records.

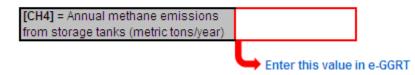
Facility Name:	
Reporter Name:	
Unit Name or Identifier:	
Unit Description:	
Comments:	
Unit Type:	Storage tanks that process unstabilized crude oil

Next, enter the requested information in the green input cells in the Input Data table.

Input Data		
[Qun] = Quantity of unstabilized crude		
oil received at the facility (MMbbl/year)		
[ΔP] = Pressure differential from the		
previous storage pressure to		
atmospheric pressure (pounds per		
square inch, psi)		
[MF _{CH4}] = Mole fraction of CH ₄ in vent		
gas from the unstabilized crude oil		
storage tank from facility	0.27	The default value for MF_{CH4} is 0.27
measurements (kgmole CH ₄ /kg-mole		
gas); use 0.27 as a default if		
measurement data are not available		
[MVC] = Molar volume conversion		
factor (849.5 scf/kgmole at 68 °F and	836.6	
14.7 psia or 836.6 scf/kg-mole at 60 °F	030.0	
and 14.7 psia)		

The calculation spreadsheet will calculate the annual CH_4 emissions from storage tanks that process unstabilized crude oil. The calculated value will be displayed in the red-bordered cell at the bottom of the spreadsheet. This value should be entered in e-GGRT for this unit.

Annual CH_4 Mass Emissions (metric tons/year) from Equation Y-23



Back to Top