Course 2: Handout 2.1.1—E-Tag Illustration

e-Tag reported as an Import

Tag Information			
GCA	PSE	Tag Code	LCA
BPAT		"--H"	CISO

Contact Information	
PSE Code	
PSE Contact	
PSE Phone	
PSE Fax	
Gen Contact	
Gen Phone	
Gen Fax	
Load Contact	
Load Phone	
Load Fax	
Load Comment	

Start Date:	3/10/2011
Stop Date:	3/11/2011
Time Zone:	PD
Transaction Type:	Normal
Tag MWh at Generator (original / final):	357/357

WECC Reserve Sharing
BPAT (BA) %

Requests					
	Req	Type	Author	Time	Setup
>>		Current Tag			
	0	Creation		3/7/2011 11:50	Approved

Market Path			
PSE	Product	Contract	Misc (token/value)
AAAAA			

Physical Path								
CA	**TP**	**PSE**	**POR**	**POD**	**Sched Entities**	**Contract**	**Misc (Token/Value)**	
BPAT		PSE A	KFallsGen					
	BPAT	PSE B	KFallsGen	Malin500	BPAT			
	CISO	PSE C	Malin500	NP15	CISO		CAISO Product	ENGY
							CAISO Res ID	PCG2_MaIN500_I_F_PPM_02
CISO			NP15				RPS ID	

"PSE C" is the PSE at the border crossing into California and must report this transaction as an import

First POR. **Imports** should be aggregated by this point of interconnection

Course 2: Handout 2.1.1—E-Tag Illustration

Figure 2: e-Tag reported as an Export

Tag Information			
GCA	PSE	Tag Code	LCA
BPAT		"--H"	CISO

Contact Information	
PSE Code	
PSE Contact	
PSE Phone	
PSE Fax	
Gen Contact	
Gen Phone	
Gen Fax	
Load Contact	
Load Phone	
Load Fax	
Load Comment	

Start Date:	3/10/2011
Stop Date:	3/11/2011
Time Zone:	PD
Transaction Type:	Normal
Tag MWh at Generator (original / final):	357/357

WECC Reserve Sharing
BPAT (BA) %

Requests					
	Req	Type	Author	Time	Setup
>>		Current Tag			
	0	Creation		3/7/2011 11:50	Approved

Market Path			
PSE	Product	Contract	Misc (token/value)
AAAAA			

Physical Path								
CA	**TP**	**PSE**	**POR**	**POD**	**Sched Entities**	**Contract**	**Misc (Token/Value)**	
		PSE A	SP15					
	CISO	PSE B	SP15	PVWest	CISO			
	CISO	PSE C	PVWest	PaloVerde 500	CISO			
	SRP	PSE C	PaloVerde 500		SRP		RPS ID	

"PSE B" is the PSE at the border crossing out of California and must report this transaction as an export

Final POD. **Exports** should be aggregated by this point of interconnection

Verification of Conformance with GHG Inventory Program Requirements

Verification bodies are required to review the GHG Inventory Program Documentation during a full verification and when the documentation is updated.

What level of review of the plan is required by verification bodies

The verifier is responsible for confirming that the GHG Inventory Plan conforms to the requirements of the Regulation. That means that a plan as described in the Regulation, and all of the section exists and can be provided to the verifier, and that the plan includes at least some information about each of the subsection requirements in the Regulation (§95105(d)(1-10)). If any section is missing and this is not addressed by the reporting entity, a non-conformance would result, and the verifier would give a qualified positive verification statement. If the verifier determines that the plan meets the requirements of the Regulation but is not thorough, or certain elements of the plan are not well-understood by reporting entity staff, the verifier should note this in the issues log as an opportunity for improvement, but not a non-conformance. The verifier should also consider how the shortcomings in the Plan affect the risk of misstatement in emissions reporting.

To facilitate review of GHG Inventory Plan for electric power entities, the following conformance checklist template is provided. This checklist is not a requirement of the verification process.

Table 1-1: Draft sample conformance checklist

Requirement	Findings	
	Initially In Conformance (Y/N)	**Resolved (Y/N)**
General Requirements:		
The plan has been developed and is available in either hardcopy or electronic copy to ARB staff and verifiers, upon request.		
The plan is maintained and up-to-date.		
The plan is appropriately implemented.		
Provisions in section 95105(d) GHG Inventory Program for Electric Power Entities that Import or Export Electricity:		
(1) Information to allow the verification team to develop a general understanding of entity boundaries, operations, and electricity transactions;		
(2) Reference to management policies or practices applicable to reporting pursuant to section 95111;		
(3) List of key personnel involved in compiling		

data and preparing the emissions data report;		
(4) Training practices for personnel involved in reporting delivered electricity pursuant to section 95111 and responsible for data report certification, including documented training procedures;		
(5) Query of NERC e-Tag source data to determine the quantity of electricity (MWh) imported, exported, and wheeled for transactions in which they are the purchasing-selling entity on the last physical path segment that crosses the border of the state of California, access to review the raw e-Tag data, a tabulated summary, and query description;		
(6) Reference to other independent or internal data management systems and records, including written power contracts and associated verbal or electronic records, full or partial ownership, invoices, and settlements data used to document whether reported transactions are specified or unspecified and whether the requirements for adjustments to covered emissions pursuant to section 95852(b) of the cap-and-trade regulation are met;		
(7) Description of steps taken and calculations made to aggregate data into reporting categories required pursuant to section 95111;		
(8) Records of preventive and corrective actions taken to address verifier and ARB findings of past non-conformances and material misstatements;		
(9) Log of emissions data report modifications made after initial certification;		
(10) A written description of an internal audit program that includes emissions data report review and documents ongoing efforts to improve the GHG Inventory Program.		

Verifying an e-Tag Database

You are verifying the emissions data report of a marketer of electricity, (EZ Electricity, PSE Code: EZE) who imports and exports power from California. You are currently reviewing a copy of workbook 1 which was uploaded to create their emissions data report. You have also requested and received a copy of their raw e-Tag data, in spreadsheet format, which includes **all** transactions where EZE was a PSE on **any** leg of the transaction.

The follow table includes ALL e-Tag data for which EZE is listed as the PSE.
GCA = generation control area; LCA = load control area; PST = Pacific Standard Time; PSE = purchasing-selling entity; POR = point of receipt; POD = point of delivery

#	TAG CODE	GCA	LCA	Start PST	Stop PST	MWh	PSE	POR	POD
1	MQF323	GWA	CISO	1/1_3:00	1/1_4:00	95	NATU01	GLWND1	
	MQF323	GWA	CISO	1/1_3:00	1/1_4:00	95	MSCG01	GLWND1	BPAT
	MQF323	GWA	CISO	1/1_3:00	1/1_4:00	95	MSCG01	BPAT	CaptainJack
	MQF323	GWA	CISO	1/1_3:00	1/1_4:00	95	EZE	Captain Jack	NP15
	MQF323	GWA	CISO	1/1_3:00	1/1_4:00	95	SMUD01	NP15	
2	1447852	PGE	CISO	1/1_23:00	1/2_0:00	500	PGEMPG	PGEGEN	
	1447852	PGE	CISO	1/1_23:00	1/2_0:00	500	PGEMPG	PGEGEN	Malin500
	1447852	PGE	CISO	1/1_23:00	1/2_0:00	500	EZE	MALIN500	RDM230
	1447852	PGE	CISO	1/1_23:00	1/2_0:00	500	PG&E	RDM230	CTW230
	1447852	PGE	CISO	1/1_23:00	1/2_0:00	500	PG&E	CTW230	
3	Z28548	PSEI	SRP	1/11_4:00	1/11_5:00	210	VNTG01	WINDRIDGE	
	Z28548	PSEI	SRP	1/11_4:00	1/11_5:00	210	PWX01	WINDRIDGE	NOB
	Z28548	PSEI	SRP	1/11_4:00	1/11_5:00	210	EZE	NOB	SYLMAR
	Z28548	PSEI	SRP	1/11_4:00	1/11_5:00	210	EZE	SYLMAR	FourCorners 345
	Z28548	PSEI	SRP	1/11_4:00	1/11_5:00	210	SRP	FourCorners345	PVWEST
	Z28548	PSEI	SRP	1/11_4:00	1/11_5:00	210	SRP	PVWEST	
4	IR4475	BPAT	CISO	1/17_11:00	1/17_12:00	200	PPMIRT	LeanJnpr2	
	IR4475	BPAT	CISO	1/17_11:00	1/17_12:00	200	EZE	LeanJnpr2	LaGrande
	IR4475	BPAT	CISO	1/17_11:00	1/17_12:00	200	EZE	LaGrande	CaptainJack
	IR4475	BPAT	CISO	1/17_11:00	1/17_12:00	200	SPPS1	CaptainJack	
5	144782	CISO	SRP	1/17_16:00	1/17_21:00	250	PAC01	Devers230	
	144782	CISO	SRP	1/17_16:00	1/17_21:00	250	EZE	Devers230	Eldorado
	144782	CISO	SRP	1/17_16:00	1/17_21:00	250	EZE	Eldorado	PVWEST
	144782	CISO	SRP	1/17_16:00	1/17_21:00	250	AZPS	PVWEST	
	MER9966	CISO	SPPC	2/21_13:00	2/21_14:00	150	MCPI01	MossLndng	
	MER9966	CISO	SPPC	2/21_13:00	2/21_14:00	150	EZE	MossLndng	NP15

6	MER9966	CISO	SPPC	2/21_13:00	2/21_14:00	150	EZE	NP15	Marble60
	MER9966	CISO	SPPC	2/21_13:00	2/21_14:00	150	EZE	Marble60	SUMMIT120
	MER9966	CISO	SPPC	2/21_13:00	2/21_14:00	150	SRP	SUMMIT120	
#	**TAG CODE**	**GCA**	**LCA**	**Start PST**	**Stop PST**	**MWh**	**PSE**	**POR**	**POD**
7	QC53981	BPAT	PACW	6/11_21:00	6/11_23:00	63	BPAT	JnprCnynBPA	
	QC53981	BPAT	PACW	6/11_21:00	6/11_23:00	63	EZE	JnprCnyn BPA	JohnDay
	QC53981	BPAT	PACW	6/11_21:00	6/11_23:00	63	EZE	JohnDay	Malin230
	QC53981	BPAT	PACW	6/11_21:00	6/11_23:00	63	PPMIRT	MALIN230	
8	IBR1754	BPAT	CISO	7/8_11:00	7/8_19:00	160	PACW	KFallsGen	
	IBR1754	BPAT	CISO	7/8_11:00	7/8_19:00	160	PACW	KFallsGen	Malin500
	IBR1754	BPAT	CISO	7/8_11:00	7/8_19:00	160	EZE	Malin500	Hilltop345
	IBR1754	BPAT	CISO	7/8_11:00	7/8_19:00	160	EZE	HILLTOP 345	NP15
	IBR1754	BPAT	CISO	7/8_11:00	7/8_19:00	160	PG&E	NP15	
9	QC07107	IID	LDWP	7/9_22:00	7/9_23:00	300	PPMIRT	Devers230	
	QC07107	IID	LDWP	7/9_22:00	7/9_23:00	300	PPMIRT	Devers230	ElDorado 230
	QC07107	IID	LDWP	7/9_22:00	7/9_23:00	300	EZE	ElDorado 230	NOB
	QC07107	IID	LDWP	7/9_22:00	7/9_23:00	300	EZE	NOB	Sylmar
	QC07107	IID	LDWP	7/9_22:00	7/9_23:00	300	LDWP	Sylmar	
10	IBR1754	BPAT	CISO	7/8_11:00	7/8_19:00	200	PACW	PGEGEN	
	IBR1754	BPAT	CISO	7/8_11:00	7/8_19:00	200	PACW	PGEGEN	Malin500
	IBR1754	BPAT	CISO	7/8_11:00	7/8_19:00	200	EZE	Malin500	RDM230
	IBR1754	BPAT	CISO	7/8_11:00	7/8_19:00	200	EZE	RDM230	NP15
	IBR1754	BPAT	CISO	7/8_11:00	7/8_19:00	200	PG&E	NP15	

Here are the applicable parts of EZE's workbook 1.

Unspecified Imports

Ref.#	Aggregated By First Point of Receipt (POR) on NERC e-tag at, or near, the Source per 95111(a)(3) [Input First POR Code]	MWh Measured at First Point of Delivery (POD)	Transmission loss correction factor (1.02)	[EFunsp] Default emission factor for unspecified imports	[CO2e] Annual CO2 equivalent mass emissions (MT CO2e)
A	PGEGEN	500	1.02	0.428	218
B	KFallsGen	160	1.02	0.428	69.8
C	Devers230	300	1.02	0.428	131

Specified Imports

Ref.#	**Facility and Unit ID Name** (select "Other" if not listed)	ARB Facility and Unit ID#	Aggregated By First Point of Receipt (POR) on NERC e-tag at, or near, the Source per 95111(a)(3)	Measured at busbar, Yes/No	MWh as measured at the Busbar or at the First Point of Delivery (POD) inside California per 95111(a)(4)(A)(2) on NERC e-tag	**[TL]** Transmission loss correction factor, = 1.00 or 1.02 (MWh must include transmission loss factor (*1.02) if not measured at busbar or if supplied by BPA)	**[EF_{sp} : CO2e total]** Facility-specific or unit-specific emission factor published on the ARB Mandatory Reporting website, (MT CO_2e/MWh)
D	Glacier Wind Farm (Naturener)	800032-000	GLWND1	Yes	100	1.00	0.000

Exports (not part of covered emissions calculation)

Ref.#	Aggregated By Final Point of Delivery (POD) on NERC e-tag at, or near, the Sink per 95111(a)(6) [Input Final POD Code]	MWh Measured at Last Point of Delivery (POD) inside California per 95111(a)(6)(A) on NERC e-tag in the Energy and Transmission Profiles, MWh Total	**[TL]** Transmission loss correction factor (1.00)	**[EF_{unsp}]** Default emission factor for unspecified electricity, (MT CO_2e/MWh)	**[CO_2e]** Annual CO_2 equivalent mass emissions from the unspecified electricity deliveries at each point of receipt identified (MT CO_2e)
E	MCCULLOUG230	250	1.00	0.428	107.0

No Wheels Reported

Total covered emissions, as reported: 418.8 $MTCO_2e$

The following table is a list of locations of POR/POD with regard to the California border.

Intertie	Inside/Outside	Intertie	Inside/Outside
BLYTH161	Inside	M345	Outside
BPAT	Outside	Malin500	Outside
BRDY	Outside	Marble60	Inside
CaptainJack	Outside	Mccullough230	Outside
CTW230	Inside	MIDC	Outside
Devers230	Outside	MossLndng	Inside
DEVERS500	Inside	NOB	Outside
Eldorado230	Outside	NP15	Inside
ElDorado500	Outside	PGEGEN	Outside
FourCorners345	Outside	PVWEST	Outside
GLWND1	Outside	RDM230	Inside
Hilltop345	Inside	RDM500	Inside
JnprCnynBPA	Outside	SP15	Inside
JohnDay	Outside	SUMMIT120	Outside
KFallsGen	Outside	SYLMAR	Inside
LaGrande	Outside	WINDRIDGE	Outside
LeanJnpr2	Outside		

Using the data provided:

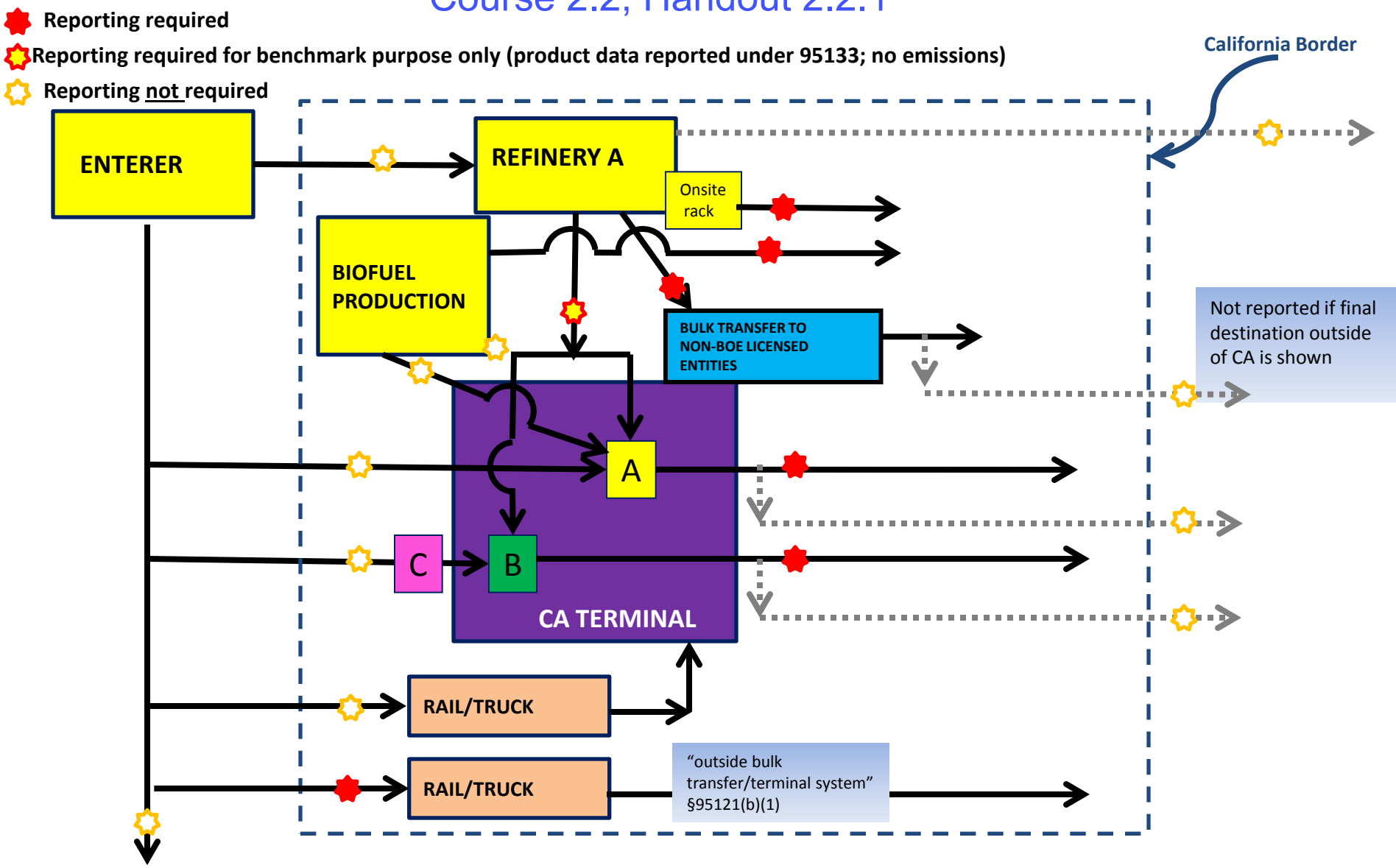
- Identify any issues in the emissions data report. Is there any additional information you need to verify the transactions reported? You may refer to tagged transactions and reported transactions by their corresponding numbers/letters shown in the left column, e.g, “#X should be reported as an export”

- Re-calculate emissions and calculate the percent error.

- If the reporting entity does not make modifications to their emissions data report, what emissions data verification statement would you submit?

Transportation Fuel Reporting Overview

Course 2.2; Handout 2.2.1



Course 2.2: Handout 2.2.2

	CO2 Emission Factor: **Metric tons CO2/bbl** (from table MM-1)	CH4 Emission Factor: **Grams CH4/bbl** (from 95121 table 1 or Table C-2 of subpart C)	N2O Emission Factor: **Grams N2O/bbl** (from 95121 table 1 or Table C-2 of subpart C)
CBOB—Summer			
Regular	0.3753	20	20
Midgrade	0.3758	20	20
Premium	0.3763	20	20
CBOB—Winter			
Regular	0.3663	20	20
Midgrade	0.3684	20	20
Premium	0.3705	20	20
RBOB—Summer			
Regular	0.3686	20	20
Midgrade	0.3677	20	20
Premium	0.367	20	20
RBOB—Winter			
Regular	0.3676	20	20
Midgrade	0.3676	20	20
Premium	0.3679	20	20
Distillate Fuel Oils			
Distillate No. 1	0.4264	2	1
Distillate No. 2	0.4296	2	1
Liquefied Petroleum Gas (LPG)			
Ethane	0.2537	1	0.1
Ethylene	0.2835	1	0.1
Propane	0.2349	1	0.1
Propylene	0.2521	1	0.1
Butane	0.2761	1	0.1
Butylene	0.2936	1	0.1
Isobutane	0.2655	1	0.1
Isobutylene	0.2939	1	0.1
Pentanes Plus	0.3235	1	0.1
Biomass-Derived Fuel			
Ethanol (100%)	0.2422	37	27
Biodiesel (100%, methyl ester) Rendered Animal Fat	0.3957	2	1
Renewable diesel	0.4296	2	1
Vegetable Oil	0.411	2	1

Facility Name: RS Training

Facility ARB ID: 22790

Facility Reporting Year: 2011

Certification Statement:

The designated representative or alternate designated representative must sign (i.e., agree to) this certification statement. If you are an agent and you click on "SUBMIT", you are not agreeing to the certification statement, but are submitting the certification statement on behalf of the designated representative or alternate designated representative who is agreeing to the certification statement. An agent is only authorized to make the electronic submission on behalf of the designated representative, not to sign (i.e., agree to) the certification statement.

Facility Representatives

Designated Representative: Ryan Schauland

Facility Location

Physical Address: nj
City: kjh
State / Province: CA
ZIP / Postal Code: 95558
Country:

Latitude: 40
Longitude: 60

County: LOS ANGELES
Air Basin: SOUTH COAST
District: SOUTH COAST AQMD

Mailing Address: 45
City: nn
State / Province: CA
ZIP / Postal Code: 95558
Country:

Payment Information (required if subject to AB 32 Cost of Implementation Fee Regulation)

Responsible Party for Payment:
Responsible Party Email:
Responsible Party Phone:
Billing Address:
City:
State / Province:
ZIP / Postal Code:
Country:

Owners / Operators

Name: myself

GHG Quantity

CO_2 equivalent emissions (excluding biogenic) from subpart C - AA:	0 Metric Tons
CO_2 equivalent quantity from supplier categories, excluding biogenic (subparts MM - PP):	12,376.4881 Metric Tons
Exempt Biogenic CO_2 emissions from subpart C - AA:	0 Metric Tons

Exempt Biogenic CO2 emissions from supplier categories (subparts MM - PP):	605.805 Metric Tons
CO2 equivalent emissions from electric power entities:	0 Metric Tons
Covered CO2 equivalent emissions:	
De Minimis CO2 equivalent emissions:	0 Metric Tons
Maximum allowable De Minimis emissions:	389.468793 Metric Tons

General Facility Reporting Information

NAICS Codes

Primary:	424710 (Petroleum Bulk Stations and Terminals)
Second Primary:	
Additional:	

U.S. Parent Companies

Parent Company Name:	myself
Address:	3584 a st, Sacramento, CA 95852
Percentage of Ownership Interest:	100%

GHG Report Start Date:	2011-01-01
GHG Report End Date:	2011-12-31
Explanation of any calculation methodology changes during the reporting year:	

EPA e-GGRT Facility IDs

125410

Full or Abbreviated GHG Report:	Full
Company or Entity qualifies for Small Business Status:	No
Confidential Data and Other Comments:	

Natural Gas Purchases/Acquisitions for Reporting Facilities [95115(k), 95103(a)(1)]

Natural Gas Supplier Name:	Facility does not consume NG
Supplier's ARB ID:	
Customer Number:	
Purchases/Acquisitions (MMBtu):	0
Was this natural gas received directly from an interstate pipeline?	No
Natural Gas Supplier Name:	Facility does not consume NG
Supplier's ARB ID:	
Customer Number:	
Purchases/Acquisitions (MMBtu):	0
Was this natural gas received directly from an interstate pipeline?	No

Increases and Decreases in Facility Emissions [95104(f)]:

Have facility emissions increased or decreased more than five percent in relation to the previous data year?	No

Note: This section is not subject to the third-party verification requirements

Electricity Generation

Facility has the capacity to generate electricity:	No
Reported emissions include emissions from a cogeneration/bigeneration unit:	No
Parasitic Steam Use: Generated thermal energy used for supporting power production (excluding steam used directly for generating electricity) [95112(a)(5)(B)]:	
Generated thermal energy for on-site industrial applications not related to electricity generation [95112(a)(5)(C)]:	
Description of the excluded data and an estimated magnitude of the excluded product(s) using best available methods [95103(l)]:	
Description of best available monitoring methods (BAMM) used during the reporting year:	

Subpart MM: Suppliers of Petroleum Products

Gas Information Details

Gas Name	**Gas Quantity** (Metric Tons)
Methane	0.3881
Nitrous Oxide	0.3568
Carbon Dioxide	12,257.73
Exempt Biogenic Carbon dioxide	605.805

Total Covered CO2e Emissions:

Totals	
Annual volume of product "i" produced, imported, or exported by the reporting party (barrels).	32,800
Liquefied Petroleum Gas (LPG).	0
Annual CO2 emissions that would result from the complete combustion or oxidation of each petroleum product or natural gas liquid “i” (metric tons).	12,863.535
Annual CH4 emissions from the combustion of a particular type of fuel (metric tons).	0.3881
Annual N2O emissions from the combustion of a particular type of fuel (metric tons).	0.3568
Carbon dioxide equivalent (metric tons/year)	12,982.2931
Estimated CO2e Covered Emissions (metric tons/year)	12,376.4881

CBOB-Summer	**Regular**	**Midgrade**	**Premium**
Annual volume of product "i" produced, imported, or exported by the reporting party (barrels).	0	0	0
Product-specific CO2 emission factor from Table MM-1	0.3753	0.3758	0.3763

(metric tons CO2 per barrel).			
Annual CO2 emissions that would result from the complete combustion or oxidation of each petroleum product or natural gas liquid “i” (metric tons).	0	0	0
Fuel-specific default emission factor for CH4, from Table C–2 of Subpart C (kg CH4 per mmBtu).	0.02	0.02	0.02
Fuel-specific default emission factor for N2O, from Table C–2 of Subpart C (kg N2O per mmBtu).	0.02	0.02	0.02
Conversion factor from kilograms to metric tons.	0.001	0.001	0.001
Annual CH4 emissions from the combustion of a particular type of fuel (metric tons).	0	0	0
Annual N2O emissions from the combustion of a particular type of fuel (metric tons).	0	0	0
Global warming potential for CO2	1	1	1
Global warming potential for CH4	21	21	21
Global warming potential for N2O	310	310	310
Carbon dioxide equivalent (metric tons/year)	0	0	0
Estimated CO2e Covered Emissions (metric tons/year)	0	0	0

CBOB-Winter	Regular	Midgrade	Premium
Annual volume of product "i" produced, imported, or exported by the reporting party (barrels).	0	0	0
Product-specific CO2 emission factor from Table MM-1 (metric tons CO2 per barrel).	0.3663	0.3684	0.3705
Annual CO2 emissions that would result from the complete combustion or oxidation of each petroleum product or natural gas liquid “i” (metric tons).	0	0	0
Fuel-specific default emission factor for CH4, from Table C–2 of Subpart C (kg CH4 per mmBtu).	0.02	0.02	0.02
Fuel-specific default emission factor for N2O, from Table C–2 of Subpart C (kg N2O per mmBtu).	0.02	0.02	0.02
Conversion factor from kilograms to metric tons.	0.001	0.001	0.001
Annual CH4 emissions from the combustion of a particular type of fuel (metric tons).	0	0	0
Annual N2O emissions from the combustion of a particular type of fuel (metric tons).	0	0	0
Global warming potential for CO2	1	1	1
Global warming potential for CH4	21	21	21
Global warming potential for N2O	310	310	310
Carbon dioxide equivalent (metric tons/year)	0	0	0
Estimated CO2e Covered Emissions (metric tons/year)	0	0	0

RBOB-Summer	Regular	Midgrade	Premium
Annual volume of product "i" produced, imported, or exported by the reporting party (barrels).	1,500	2,000	2,500
Product-specific CO2 emission factor from Table MM-1 (metric tons CO2 per barrel).	0.3686	0.3677	0.367
Annual CO2 emissions that would result from the complete combustion or oxidation of each petroleum product or natural gas liquid “i” (metric tons).	552.9	735.4	917.5
Fuel-specific default emission factor for CH4, from Table			

C–2 of Subpart C (kg CH4 per mmBtu).	0.02	0.02	0.02
Fuel-specific default emission factor for N2O, from Table C–2 of Subpart C (kg N2O per mmBtu).	0.02	0.02	0.02
Conversion factor from kilograms to metric tons.	0.001	0.001	0.001
Annual CH4 emissions from the combustion of a particular type of fuel (metric tons).	0.03	0.04	0.05
Annual N2O emissions from the combustion of a particular type of fuel (metric tons).	0.03	0.04	0.05
Global warming potential for CO2	1	1	1
Global warming potential for CH4	21	21	21
Global warming potential for N2O	310	310	310
Carbon dioxide equivalent (metric tons/year)	562.83	748.64	934.05
Estimated CO2e Covered Emissions (metric tons/year)	562.83	748.64	934.05

RBOB-Winter	Regular	Midgrade	Premium
Annual volume of product "i" produced, imported, or exported by the reporting party (barrels).	2,500	3,000	3,500
Product-specific CO2 emission factor from Table MM-1 (metric tons CO2 per barrel).	0.3676	0.3676	0.3679
Annual CO2 emissions that would result from the complete combustion or oxidation of each petroleum product or natural gas liquid “i” (metric tons).	919	1,102.8	1,287.65
Fuel-specific default emission factor for CH4, from Table C–2 of Subpart C (kg CH4 per mmBtu).	0.02	0.02	0.02
Fuel-specific default emission factor for N2O, from Table C–2 of Subpart C (kg N2O per mmBtu).	0.02	0.02	0.02
Conversion factor from kilograms to metric tons.	0.001	0.001	0.001
Annual CH4 emissions from the combustion of a particular type of fuel (metric tons).	0.05	0.06	0.07
Annual N2O emissions from the combustion of a particular type of fuel (metric tons).	0.05	0.06	0.07
Global warming potential for CO2	1	1	1
Global warming potential for CH4	21	21	21
Global warming potential for N2O	310	310	310
Carbon dioxide equivalent (metric tons/year)	935.55	1,122.66	1,310.82
Estimated CO2e Covered Emissions (metric tons/year)	935.55	1,122.66	1,310.82

Distillate Fuel Oils	Distillate No. 1	Distillate No. 2
Annual volume of product "i" produced, imported, or exported by the reporting party (barrels).	700	15,000
Product-specific CO2 emission factor from Table MM-1 (metric tons CO2 per barrel).	0.4264	0.4296
Annual CO2 emissions that would result from the complete combustion or oxidation of each petroleum product or natural gas liquid “i” (metric tons).	298.48	6,444
Fuel-specific default emission factor for CH4, from Table 1 of 95121(b)(3). (kg/barrel)	0.002	0.002
Fuel-specific default emission factor for N2O, from Table 1 of 95121(b)(3). (kg/barrel)	0.001	0.001

Conversion factor from kilograms to metric tons.	0.001	0.001
Annual CH4 emissions from the combustion of a particular type of fuel (metric tons).	0.0014	0.03
Annual N2O emissions from the combustion of a particular type of fuel (metric tons).	0.0007	0.015
Global warming potential for CO2	1	1
Global warming potential for CH4	21	21
Global warming potential for N2O	310	310
Carbon dioxide equivalent (metric tons/year)	298.7264	6,449.28
Estimated CO2e Covered Emissions (metric tons/year)	298.7264	6,449.28

Liquefied Petroleum Gas (LPG) (1 of 2)	Ethane	Ethylene	Propane	Propylene
Annual volume of product "i" produced, imported, or exported by the reporting party (barrels).	0	0	0	0
Product-specific CO2 emission factor from Table MM-1 (metric tons CO2 per barrel).	0.2537	0.2835	0.2349	0.2521
Annual CO2 emissions that would result from the complete combustion or oxidation of each petroleum product or natural gas liquid “i” (metric tons).	0	0	0	0
Volume of the fuel combusted (gallons per year).	0	0	0	0
Default high heat value of the fuel from Table C–1 of Subpart C (mmBtu per barrel).	0.069	0.1	0.091	0.091
Fuel-specific default emission factor for CH4, from Table C–2 of Subpart C (kg CH4 per mmBtu).	0.003	0.003	0.003	0.003
Fuel-specific default emission factor for N2O, from Table C–2 of Subpart C (kg N2O per mmBtu).	0.0006	0.0006	0.0006	0.0006
Conversion factor from kilograms to metric tons.	0.001	0.001	0.001	0.001
Annual CH4 emissions from the combustion of a particular type of fuel (metric tons).	0	0	0	0
Annual N2O emissions from the combustion of a particular type of fuel (metric tons).	0	0	0	0
Global warming potential for CO2	1	1	1	1
Global warming potential for CH4	21	21	21	21
Global warming potential for N2O	310	310	310	310
Carbon dioxide equivalent (metric tons/year)	0	0	0	0
Estimated CO2e Covered Emissions (metric tons/year)	0	0	0	0

Liquefied Petroleum Gas (LPG) (2 of 2)	Butane	Butylene	Isobutane	Isobutylene	Pentanes Plus
Annual volume of product "i" produced, imported, or	0	0	0	0	0

exported by the reporting party (barrels).					
Product-specific CO2 emission factor from Table MM-1 (metric tons CO2 per barrel).	0.2761	0.2936	0.2655	0.2939	0.3235
Annual CO2 emissions that would result from the complete combustion or oxidation of each petroleum product or natural gas liquid “i” (metric tons).	0	0	0	0	0
Volume of the fuel combusted (gallons per year).	0	0	0	0	0
Default high heat value of the fuel from Table C–1 of Subpart C (mmBtu per barrel).	0.101	0.103	0.097	0.103	0.11
Fuel-specific default emission factor for CH4, from Table C–2 of Subpart C (kg CH4 per mmBtu).	0.003	0.003	0.003	0.003	0.003
Fuel-specific default emission factor for N2O, from Table C–2 of Subpart C (kg N2O per mmBtu).	0.0006	0.0006	0.0006	0.0006	0.0006
Conversion factor from kilograms to metric tons.	0.001	0.001	0.001	0.001	0.001
Annual CH4 emissions from the combustion of a particular type of fuel (metric tons).	0	0	0	0	0
Annual N2O emissions from the combustion of a particular type of fuel (metric tons).	0	0	0	0	0
Global warming potential for CO2	1	1	1	1	1
Global warming potential for CH4	21	21	21	21	21
Global warming potential for N2O	310	310	310	310	310
Carbon dioxide equivalent (metric tons/year)	0	0	0	0	0
Estimated CO2e Covered Emissions (metric tons/year)	0	0	0	0	0

Biomass-Derived Fuel	Ethanol (100%)	Biodiesel (>=99%, methyl ester)	Renewable Diesel (>=99%)	Rendered Animal Fat	Vegetable Oil
Annual volume of product "i" produced, imported, or	1,500	450	150	0	0

exported by the reporting party (barrels).					
Product-specific CO2 emission factor from Table MM-1 (metric tons CO2 per barrel).	0.2422	0.3957	0.4296	0.3724	0.411
Annual CO2 emissions that would result from the complete combustion or oxidation of each petroleum product or natural gas liquid “i” (metric tons).	363.3	178.065	64.44	0	0
Fuel-specific default emission factor for CH4, from Table 1 of 95121(b)(3). (kg/barrel)	0.037	0.002	0.002	0.002	0.002
Fuel-specific default emission factor for N2O, from Table 1 of 95121(b)(3). (kg/barrel)	0.027	0.001	0.001	0.001	0.001
Conversion factor from kilograms to metric tons.	0.001	0.001	0.001	0.001	0.001
Annual CH4 emissions from the combustion of a particular type of fuel (metric tons).	0.0555	0.0009	0.0003	0	0
Annual N2O emissions from the combustion of a particular type of fuel (metric tons).	0.0405	0.00045	0.00015	0	0
Global warming potential for CO2	1	1	1	1	1
Global warming potential for CH4	21	21	21	21	21
Global warming potential for N2O	310	310	310	310	310
Carbon dioxide equivalent (metric tons/year)	377.0205	178.2234	64.4928	0	0
Estimated CO2e Covered Emissions (metric tons/year)	13.7205	0.1584	0.0528	0	0

Non-emissions data required by Sections 95121(d)(7) and (8)

Imported Fuels	CARBOB	California Gasoline	California Diesel Fuel	Biodiesel	Renewable Diesel
Volume of fuel imported from outside of California for use in California (barrels)	0	0	0	0	0
For CARBOB, the designated percentage of oxygenate must be reported	0%0%				

Blended Biomass Diesel Fuels	Biodiesel	Renewable Diesel
Volume of fuel blended with California for use in California (barrels)	450	150

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Case Study 3: Reviewing bills of lading to verify fuel supplied at the rack

You are verifying the emissions from a position holder at a California terminal. The table below shows the fuel type and quantity, emission factor, and emissions that were included in the emissions data report for a sample of fuel transactions. You have requested the bills of lading for fuel transactions during that time period. The results are in the table 2 below. Identify any errors that were made in the emissions data report, calculate the percent error, and determine whether a material misstatement is present. (For the purposes of this exercise, you may assume that the emission factors used were appropriate and arithmetic was correct.)

Table 1: Emissions Reported

Trans #	Fuel	Bbl	Destination
CARBOB1	RBOB summer regular	40	South Lake Tahoe, CA
CARBOB2	RBOB summer regular	50	Sacramento, CA
CARBOB4	RBOB summer regular	46	Orland, CA
CARBOB5	RBOB summer regular	84	Perris, CA
CARBOB6	RBOB summer regular	118	Lake Tahoe, NV
DistULS6	Distillate #1 ULS	114	Riverside, CA
DistULS7	Distillate #1 ULS	92	Merced, CA
DistULS8	Distillate #1 ULS	116	Tucson, AZ
DistULS9	Distillate #1 ULS	120	Salinas, CA
DistULS12	Distillate #2 ULS	90	Emeryville, CA
DistULS15	Distillate #2 ULS	70	Rialto, CA

Table 2: Bills of Lading

Trans #	Fuel	Bbl	Destination
CARBOB1	RBOB summer regular	40	South Lake Tahoe, CA
CARBOB2	RBOB summer regular	50	Sacramento, CA
CARBOB4	RBOB summer regular	46	Orland, CA
CARBOB5	RBOB summer regular	84	Perris, CA
CARBOB6	RBOB summer regular	118	Lake Tahoe, NV
CARBOB7	RBOB summer regular	100	Medford, OR
DistULS6	Distillate #1 ULS	114	Riverside, CA
DistULS7	Distillate #1 ULS	92	Merced, CA
DistULS8	Distillate #1 ULS	116	Tucson, AZ
DistULS9	Distillate #1 ULS	120	Salinas, CA
DistULS10	Distillate #1 ULS	125	Las Vegas, NV
DistULS12	Distillate #2 ULS	90	Emeryville, CA
DistULS13	Distillate #2 ULS	100	Phoenix, AZ
DistULS15	Distillate #2 ULS	70	Rialto, CA
DistULS17	Distillate #2 ULS	130	Bakersfield, CA
DistULS19	Distillate #2 ULS	150	Reno, NV

Subpart NN: Suppliers of Natural Gas and Natural Gas Liquids

Handout 2.3.1: Case Study 5

Gas Information Details

Gas Name	**Gas Quantity** (Metric Tons)
Methane	8.993
Nitrous Oxide	0.8993
Carbon Dioxide	371,140
Exempt Biogenic Carbon dioxide	0

Total Covered CO2e Emissions:

(Equation NN-6) Results

Natural Gas CO2 Mass Total:	371,140 Metric Tons
Natural Gas CH4 Mass Total:	8.993 Metric Tons
Natural Gas N2O Mass Total:	0.8993 Metric Tons

(Equation NN-1) Potential CO2 Quantities associated with Natural Gas Delivered to all entities receiving gas from the Intrastate Pipeline

Annual MMBtu of Natural Gas Received at the City Gate(s)

Total annual MMBtu of non-biomass natural gas received at the city gate:	10,000,000 MMBtu
Total annual MMBtu of biomethane received at the city gate:	0 MMBtu
Total annual MMBtu of non-exempt biomethane received at the city gate:	0 MMBtu
Industry standard used to measure the volume:	ANSI standard
CO2 Emissions Factor:	53.02 kg CO2/MMBtu
NN-1 CO2 Results:	530,200 Metric Tons

(Equation NN-3) Potential CO2 Quantities associated with Natural Gas delivered to Transmission Pipelines or Other LDCs

Annual MMBtu of Product Supplied

Total annual MMBtu of natural gas supplied:	3,000,000 MMBtu
Total annual MMBtu of biomethane supplied:	0 MMBtu
Total annual MMBtu of non-exempt biomethane supplied:	0 MMBtu
CO2 Emissions Factor:	0.05302 MT CO2/MMBtu
NN-3 CO2 Results:	159,060 Metric Tons

(Equation NN-5) Potential CO2 Quantities associated with product received that bypassed the city gate(s) such as natural gas received from local production and the Net Natural Gas that is Liquefied and/or Stored/Removed from storage by the LDC within the Reported Year

Fuel 1

Total annual MMBtu of natural gas received at the city gate and stored on-system or liquefied and stored:	50,000 MMBtu
Total annual MMBtu of biomethane received at the city gate and stored on-system or liquefied and stored:	0 MMBtu
Total annual MMBtu of non-exempt biomethane received at the city gate and stored on-system or liquefied and stored:	0 MMBtu

Fuel 2a

Annual MMBtu of vaporized liquefied natural gas produced at on-system vaporization facilities for delivery on the distribution system that is not accounted for in the MMBtu collected under NN-1:	3,000 MMBtu
Annual MMBtu of vaporized liquefied biomethane produced at on-system vaporization facilities for delivery on the distribution system that is not accounted for in the MMBtu collected under NN-1:	0 MMBtu
Annual MMBtu of vaporized liquefied non-exempt biomethane produced at on-system vaporization facilities for delivery on the distribution system that is not accounted for in the MMBtu collected under NN-1:	0 MMBtu

Fuel 2b

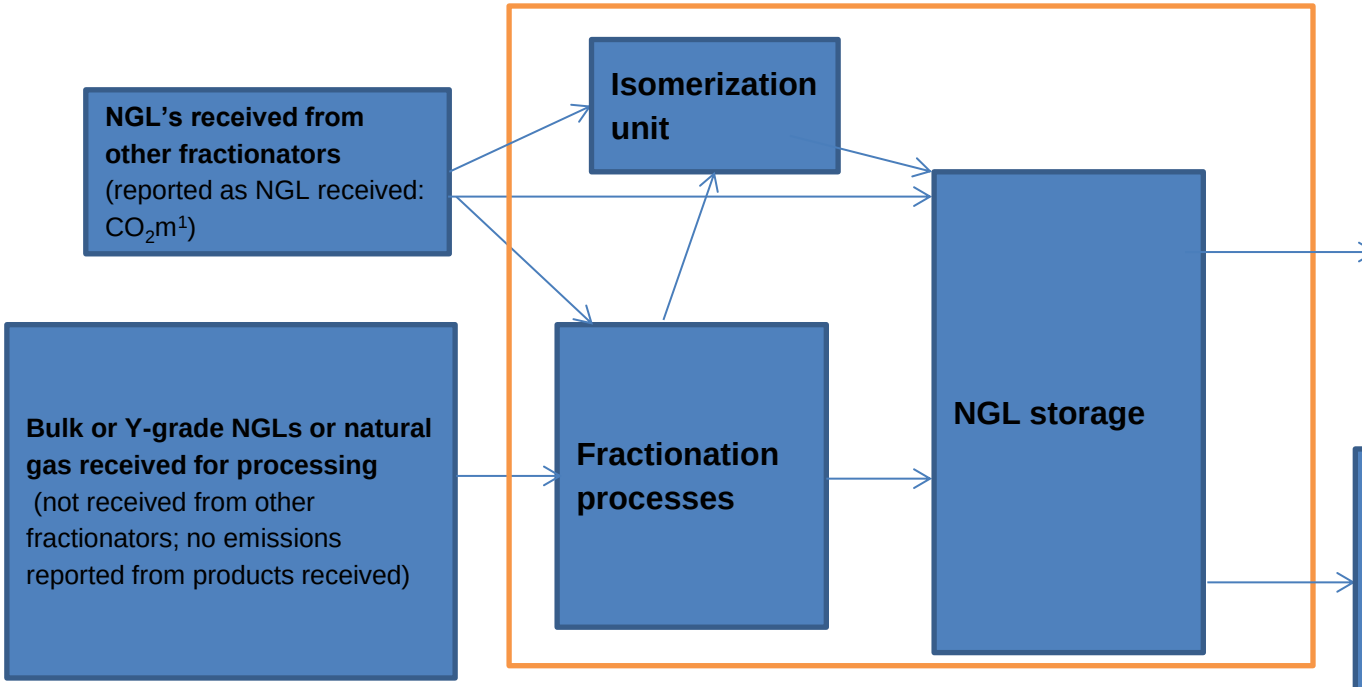
Annual MMBtu of natural gas withdrawn from on-system storage (that is not delivered to the city gate) for delivery on the distribution system:	40,000 MMBtu
Annual MMBtu of biomethane withdrawn from on-system storage (that is not delivered to the city gate) for delivery on the distribution system:	0 MMBtu
Annual MMBtu of non-exempt biomethane withdrawn from on-system storage (that is not delivered to the city gate) for delivery on the distribution system:	0 MMBtu

Fuel 2c

Annual MMBtu of natural gas delivered directly to the LDC systems from producers or natural gas processing plants from local production:	2,000,000 MMBtu
Annual MMBtu of biomethane delivered directly to the LDC systems from producers or natural gas processing plants from local production:	0 MMBtu
Annual MMBtu of non-exempt biomethane delivered directly to the LDC systems from producers or natural gas processing plants from local production:	0 MMBtu
CO2 Emissions Factor:	0.05302 MT CO2/MMBtu
NN-5 CO2 Results:	0 Metric Tons

NGL Fractionation Facility Boundary

Course 2.3: Handout 2.3.2



LPG NGLs:
NGL products sold that meet the definition of LPG in 95102(a).
Reported twice in Cal e-GGRT as emissions:
--As "LPG [product]": CO_2i[1]. Covered emissions
--As "[product] (LPG and non-LPG) " total. Not covered emissions
Reported as covered product data[2] under §95156 if produced on-site (i.e., less the amount received from other fractionators)

Non-LPG: NGL products sold that DO NOT meet the definition of LPG in §95102(a).
–Reported as emissions: "[product] (LPG and non-LPG) in Cal e-GGRT" : CO_{2i1}. NOT covered emissions
--Also reported as covered product data[2] under §95156

[1]Emissions from the downstream combustion of NGLs are calculated according to §98.403(b)(4), Eq. 8:

$$CO_2 = \sum CO_{2i} - \sum CO_{2m}$$

Where **CO_2i** = Annual CO_2 mass emissions that would result from the combustion or oxidation of fractionated NGLs delivered to all customers or on behalf of customers
and **CO_2m** = Annual CO_2 mass emissions that would result from the combustion or oxidation of fractionated NGLs received from other fractionators and calculated in paragraph (c)(1) of this section (metric tons).
§95852(e)(1) "states that a producer of LPG…has a compliance obligation for every metric ton of CO_2e included in emissions data report", so only the subset of fuels that meet the definition of LPG are considered covered emissions.

[2] Pursuant to §95156(c), covered product data includes the "annual production of the following natural gas liquids in barrels". The volume of NGLs reported as product data only include those volumes fractionated by the reporting entity, and excludes any volumes received by from other NGL fractionators