

Appendix 2 - Sheet 17

Enter On-road Mobile Emissions Inventory
HGB 2015 Eight-Hour Ozone Nonattainment Area

Six Nonattainment Counties: Brazoria, Chambers, Fort Bend, Galveston, Harris, Montgomery

'RFP Analysis Year	Uncontrolled or Existing Control NO _x (tpd)	Controlled NO _x (tpd)	Total Reduction NO _x (tpd)	Percent Reduction	Uncontrolled or Existing Control VOC (tpd)	Controlled VOC (tpd)	Total Reduction VOC (tpd)	Percent Reduction
2017	91.82	91.82	0.00	0.00	45.11	45.11	0.00	0.00
2023	1,110.38	55.14	1,055.24	95.03	644.96	31.41	613.55	95.13

Notes:

Note 1: The HGB 2015 ozone nonattainment area uncontrolled on-road EI values for 2017 reflect controls in place up to 2017, no post-2017 controls included (existing 2017 controls).

Note 2: The HGB 2015 ozone nonattainment area uncontrolled on-road EI values for 2023 reflect pre-1990 controls, no post-1990 controls included (uncontrolled).

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Appendix 2 - Sheet 18

Enter Point Source Emissions Inventory
HGB 2015 Eight-Hour Ozone Nonattainment Area

Six Nonattainment Counties: Brazoria, Chambers, Fort Bend, Galveston, Harris, Montgomery

'RFP Analysis Year	Existing Controlled Emissions (as of 2017) NOX (tpd)	Post-2017 Controlled NOX (tpd)	Total Reduction NO _x (tpd)	Percent Reduction	Existing Controlled Emissions (as of 2017) VOC (tpd)	Post-2017 Controlled VOC (tpd)	Total Reduction VOC (tpd)	Percent Reduction
2017	97.36	97.36	0.00	0.00	73.37	73.37	0.00	0.00
2023	105.23	105.23	0.00	0.00	78.09	78.09	0.00	0.00

Notes:

- 1) The difference between existing post-2017 Controlled emissions (as of 2017) and Post-2017 Controlled VOC emissions represents noncreditable as well as creditable reductions.

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Appendix 2 - Sheet 19

Enter 2023 Control Measure Reductions

HGB 2015 Nonattainment Area Eight-hour Ozone Season VOC and NO_x

Six Nonattainment Counties: Brazoria, Chambers, Fort Bend, Galveston, Harris, Montgomery

RFP Control Strategy Description	Source Category	Total 2017 to 2023 NO _x Emissions Reductions (tpd)	Total 2017 to 2023 VOC Emissions Reductions (tpd)	Use this control for RFP demonstration? (Yes or No)	Is this an on-road mobile control that will change the MVEB? (Yes or No)
Chapter 117 NO _x controls	Point	0.00	0.00	Yes	No
Chapter 115 Storage Tank Rule	Point	0.00	0.00	Yes	No
Coating / printing rules	Point	0.00	0.00	Yes	No
Portable fuel containers	Area	0.00	0.00	Yes	No
Federal Motor Vehicle Control Program (FMVCP)	OR	1033.45	602.37	Yes	Yes
Reformulated Gasoline (RFG)/Tier 3 Sulfur Gasoline/Ultra Low Sulfur Diesel	OR	18.06	7.25	Yes	Yes
Inspection and Maintenance (I/M)	OR	1.78	3.94	Yes	Yes
On-road TxLED	OR	1.95	0.00	Yes	Yes
Tier I and II locomotive NO _x standards	NR	0.75	0.00	Yes	No
Small non-road spark ignition (SI) engines (Phase I)	NR	-6.74	52.33	Yes	No
Heavy duty non-road engines	NR	0.34	5.14	Yes	No
Tiers 2 and 3 non-road diesel engines	NR	2.67	0.56	Yes	No
Small non-road SI engines (Phase II)	NR	4.82	49.11	Yes	No
Large non-road SI & recreational marine	NR	50.94	16.89	Yes	No
Non-road TxLED	NR	0.97	0.00	Yes	No
Non-road RFG	NR	0.00	0.13	Yes	No
Tier 4 non-road diesel engines	NR	65.88	14.28	Yes	No
Diesel recreational marine	NR	0.02	0.00	Yes	No
Small SI (Phase III)	NR	4.83	19.80	Yes	No
Chapter 117 NO _x area source engine controls	Area	0.00	0.00	Yes	No
Drilling Rigs: Federal Engine Standards and Texas Low Emission Diesel	NR	0.64	0.13	Yes	No
Commercial marine vessel engine certification standards and fuel programs	NR	54.33	0.33	Yes	No
This row not used for current RFP	N/A	0.00	0.00	No	No
This row not used for current RFP	N/A	0.00	0.00	No	No
This row not used for current RFP	N/A	0.00	0.00	No	No
This row not used for current RFP	N/A	0.00	0.00	No	No
This row not used for current RFP	N/A	0.00	0.00	No	No
This row not used for current RFP	N/A	0.00	0.00	No	No
This row not used for current RFP	N/A	0.00	0.00	No	No
This row not used for current RFP	N/A	0.00	0.00	No	No
This row not used for current RFP	N/A	0.00	0.00	No	No
This row not used for current RFP	N/A	0.00	0.00	No	No
This row not used for current RFP	N/A	0.00	0.00	No	No
This row not used for current RFP	N/A	0.00	0.00	No	No
This row not used for current RFP	N/A	0.00	0.00	No	No
This row not used for current RFP	N/A	0.00	0.00	No	No
Total		1234.70	772.27		

Notes

- 1) Point source Chapter 117 NO_x controls in the HGB area had compliance deadlines before 2017. The 2017 EI includes the effects of the control. No additional control beyond 2017 are claimed.
- 2) Area source Chapter 117 NO_x controls in the HGB area had compliance deadlines before 2017. The 2017 EI includes the effects of the control. No additional control beyond 2017 are claimed.
- 3) Area source Portable fuel containers controls in the HGB area had compliance deadlines before 2017. The 2017 EI includes the effects of the control. No additional control beyond 2017 are claimed.
- 4) All six counties in the HGB area are covered by the federal RFG requirement.
- 5) Inspection and Maintenance Program is only modeled for the five counties covered by the program: The five I/M counties include: Brazoria, Fort Bend, Galveston, Harris, and Montgomery.
- 6) "This row not used for current RFP" control rows were created only to allow for planners to easily add controls for alternative scenario analyses.

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Calculate 2017 RFP Base Year Emissions Inventory**HGB 2015 Eight-Hour Ozone Nonattainment Area****Six Nonattainment Counties: Brazoria, Chambers, Fort Bend, Galveston, Harris, Montgomery**

The 2017 Base Year Inventory	NO_x (tons/day)	VOC (tons/day)
Point Source 2017 EI	97.36	73.37
Area Source 2017 EI	31.86	298.93
On-road mobile 2017 EI	91.82	45.11
Non-road mobile 2017 EI	131.43	41.76
Biogenic 2017 EI (see Note 1)	See Note 1	See Note 1
Total 2017 Base Year Inventory	352.47	459.17

Notes:

1) Beginning with the Air Emissions Reporting Requirements (December 2008), the emissions required to be reported no longer include emissions from biogenic sources. Therefore, as of the 2017 reporting year, the comprehensive triennial emissions inventory no longer includes emissions from biogenic sources. The RFP demonstrations are based upon the emissions from anthropogenic sources. The guidance for RFP calculations shows the first step is to subtract the emissions from biogenic sources from the total base year emissions to obtain the total anthropogenic emission inventory. As of 2017, under the AERR, the base year emissions do not include biogenic sources and already represent the total anthropogenic emissions. In this case, step one of the RFP process is not needed, and the emissions from biogenic sources is unnecessary. This RFP SIP revision: uses a base year of 2017; does not require subtraction of the biogenic emissions in Step One of the RFP calculation process; and does not include quantification of emissions from biogenic sources.

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Appendix 2 - Sheet 22

**2023 Forecasted Uncontrolled or Existing Control Emissions Inventory with pre-2017 Controls
HGB 2015 Nonattainment Area Eight-Hour Ozone Season VOC and NO_x
Six Nonattainment Counties: Brazoria, Chambers, Fort Bend, Galveston, Harris, Montgomery**

Uncontrolled or Existing Control EI with pre-2017 controls: These calculations add up to the total Uncontrolled or Existing Control NO_x and VOC emissions (tpd) for the 2023 RFP milestone year. The totals for each source category used in these calculations were entered on enter EI sheets.

Forecasted 2023 Uncontrolled or Existing Control Emissions Inventory with pre-2017 Controls		
Emissions Description	NO _x (tpd)	VOC (tpd)
Point Source	105.23	78.09
Area Source	37.31	289.85
On-Road Mobile Source	1110.38	644.96
Non-Road Mobile Source	292.45	200.90
Total	1545.37	1213.80

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Appendix 2 - Sheet 23

Calculations: 2017 to 2023 Control Measures Reductions

HGB 2015 Nonattainment Area Eight-Hour Ozone Season VOC and NO_x

Six Nonattainment Counties: Brazoria, Chambers, Fort Bend, Galveston, Harris, Montgomery

Explanation: The control strategy name, control reduction amount, status of inclusion of the control in the RFP calculations, and whether or not the control is for on-road mobile sources were all input into the Enter Reductions 2023 sheet. The reduction is the reduction that is creditable from each control between 2017 and 2023. If the control has been turned off by inputting a "No" in the "Use this control for 2023 RFP demonstration?" column, the spreadsheet will put a zero in for the reduction for that control on this sheet, even if a positive value for the control was input into the Enter Reductions 2023 sheet. If it was intended to have a positive reduction for the control but there is a zero, go back to the Enter Reductions 2020 Sheet and change the No to a Yes indicating that the control will be used for RFP demonstration.

Creditable Reductions Control Strategy	Source Category	Total 2017 to 2023 NOX Emissions Reductions (tpd)	Total 2017 to 2023 VOC Emissions Reductions (tpd)	Use this control for RFP demonstration? (Yes or No)	Is this an on-road mobile control that will change the MVEB? (Yes or No)
Chapter 117 NOX controls	Point	0.00	0.00	Yes	No
Chapter 115 Storage Tank Rule	Point	0.00	0.00	Yes	No
Coating / printing rules	Point	0.00	0.00	Yes	No
Portable fuel containers	Area	0.00	0.00	Yes	No
Federal Motor Vehicle Control Program (FMVCP)	OR	1033.45	602.37	Yes	Yes
Reformulated Gasoline (RFG)/Tier 3 Sulfur Gasoline/Ultra Low Sulfur Diesel	OR	18.06	7.25	Yes	Yes
Inspection and Maintenance (I/M)	OR	1.78	3.94	Yes	Yes
On-road TxLED	OR	1.95	0.00	Yes	Yes
Tier I and II locomotive NOX standards	NR	0.75	0.00	Yes	No
Small non-road spark ignition (SI) engines (Phase I)	NR	-6.74	52.33	Yes	No
Heavy duty non-road engines	NR	0.34	5.14	Yes	No
Tiers 2 and 3 non-road diesel engines	NR	2.67	0.56	Yes	No
Small non-road SI engines (Phase II)	NR	4.82	49.11	Yes	No
Large non-road SI & recreational marine	NR	50.94	16.89	Yes	No
Non-road TxLED	NR	0.97	0.00	Yes	No
Non-road RFG	NR	0.00	0.13	Yes	No
Tier 4 non-road diesel engines	NR	65.88	14.28	Yes	No
Diesel recreational marine	NR	0.02	0.00	Yes	No
Small SI (Phase III)	NR	4.83	19.80	Yes	No
Chapter 117 NOX area source engine controls	Area	0.00	0.00	Yes	No
Drilling Rigs: Federal Engine Standards and Texas Low Emission Diesel	NR	0.64	0.13	Yes	No
Commercial marine vessel engine certification standards and fuel programs	NR	54.33	0.33	Yes	No
This row not used for current RFP	N/A	0.00	0.00	No	No
This row not used for current RFP	N/A	0.00	0.00	No	No
This row not used for current RFP	N/A	0.00	0.00	No	No
This row not used for current RFP	N/A	0.00	0.00	No	No
This row not used for current RFP	N/A	0.00	0.00	No	No
This row not used for current RFP	N/A	0.00	0.00	No	No
This row not used for current RFP	N/A	0.00	0.00	No	No
This row not used for current RFP	N/A	0.00	0.00	No	No
This row not used for current RFP	N/A	0.00	0.00	No	No
This row not used for current RFP	N/A	0.00	0.00	No	No
This row not used for current RFP	N/A	0.00	0.00	No	No
This row not used for current RFP	N/A	0.00	0.00	No	No
This row not used for current RFP	N/A	0.00	0.00	No	No
This row not used for current RFP	N/A	0.00	0.00	No	No
Total 2020 RFP Control Reductions		1234.69	772.26		

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Appendix 2 - Sheet 24

Calculations: 2023-2024 Contingency Control Measures Reductions

HGB 2015 Nonattainment Area Eight-Hour Ozone Season VOC and NO_x

Six Nonattainment Counties: Brazoria, Chambers, Fort Bend, Galveston, Harris, Montgomery

Explanation: The control strategy name, control reduction amount, status of inclusion of the control in the RFP calculations, and whether or not the control is for on-road mobile sources were all input into the Enter Cont Reductions 2024 sheet. The reduction is the reduction that is creditable from each control between 2023 and 2024. If the control has been turned off by inputting a "No" in the "Use this control for 2024 RFP contingency demonstration?" column, the spreadsheet will put a zero in for the reduction for that control on this sheet, even if a positive value for the control was input into the Enter Cont Reductions 2024 sheet. If it was intended to have a positive reduction for the control but there is a zero, go back to the Enter Cont Reductions 2024 Sheet and change the No to a Yes indicating that the control will be used for RFP contingency demonstration.

RFP Control Strategy Description	Source Category	Total 2023 to 2024 NO _x Emissions Reductions (tpd)	Total 2023 to 2024 VOC Emissions Reductions (tpd)	Use this control for 2024 RFP contingency demonstration? (Yes or No)
Chapter 117 NOX controls	Point	0.00	0.00	No
Chapter 115 Storage Tank Rule	Point	0.00	0.00	No
Coating / printing rules	Point	0.00	0.00	No
Portable fuel containers	Area	0.00	0.00	No
Federal Motor Vehicle Control Program (FMVCP)	OR	23.85	13.26	Yes
Reformulated Gasoline (RFG)/Tier 3 Sulfur Gasoline/Ultra Low Sulfur Diesel	OR	-1.56	-0.26	Yes
Inspection and Maintenance (I/M)	OR	-0.20	-0.04	Yes
On-road TxLED	OR	-0.09	0.00	Yes
Tier I and II locomotive NOX standards	NR	0.00	0.00	No
Small non-road spark ignition (SI) engines (Phase I)	NR	-0.13	1.03	Yes
Heavy duty non-road engines	NR	-0.07	0.03	Yes
Tiers 2 and 3 non-road diesel engines	NR	-0.16	-0.04	Yes
Small non-road SI engines (Phase II)	NR	0.10	0.90	Yes
Large non-road SI & recreational marine	NR	2.21	0.69	Yes
Non-road TxLED	NR	-0.04	0.00	Yes
Non-road RFG	NR	0.00	0.00	Yes
Tier 4 non-road diesel engines	NR	0.85	0.16	Yes
Diesel recreational marine	NR	0.01	0.00	Yes
Small SI (Phase III)	NR	0.12	0.45	Yes
Chapter 117 NOX area source engine controls	Area	0.00	0.00	No
Drilling Rigs: Federal Engine Standards and Texas Low Emission Diesel	NR	0.00	0.00	No
Commercial marine vessel engine certification standards and fuel programs	NR	0.00	0.00	No
This row not used for current RFP	N/A	0.00	0.00	No
This row not used for current RFP	N/A	0.00	0.00	No
This row not used for current RFP	N/A	0.00	0.00	No
This row not used for current RFP	N/A	0.00	0.00	No
This row not used for current RFP	N/A	0.00	0.00	No
This row not used for current RFP	N/A	0.00	0.00	No
This row not used for current RFP	N/A	0.00	0.00	No
This row not used for current RFP	N/A	0.00	0.00	No
This row not used for current RFP	N/A	0.00	0.00	No
This row not used for current RFP	N/A	0.00	0.00	No
This row not used for current RFP	N/A	0.00	0.00	No
This row not used for current RFP	N/A	0.00	0.00	No
This row not used for current RFP	N/A	0.00	0.00	No
This row not used for current RFP	N/A	0.00	0.00	No
Total 2021 RFP Control Reductions		24.89	16.18	

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Appendix 2 - Sheet 25

Calculations: 2017 to 2023 On-road Control Measures Reductions

HGB 2015 Nonattainment Area Eight-Hour Ozone Season VOC and NOX

Six Nonattainment Counties: Brazoria, Chambers, Fort Bend, Galveston, Harris, Montgomery

Creditable Reductions Control Strategy	Control Used for RFP Demonstration?	On-road Mobile Source Control?	Total 2017 - 2023 'On-road Mobile NO _x Emissions Reductions (tpd)	Total 2017 - 2023 'On-road Mobile VOC Emissions Reductions (tpd)
Chapter 117 NOX controls	Yes	No	0.00	0.00
Chapter 115 Storage Tank Rule	Yes	No	0.00	0.00
Coating / printing rules	Yes	No	0.00	0.00
Portable fuel containers	Yes	No	0.00	0.00
Federal Motor Vehicle Control Program (FMVCP)	Yes	Yes	1033.45	602.37
Reformulated Gasoline (RFG)/Tier 3 Sulfur Gasoline/Ultra Low Sulfur Diesel	Yes	Yes	18.06	7.25
Inspection and Maintenance (I/M)	Yes	Yes	1.78	3.94
On-road TxLED	Yes	Yes	1.95	0.00
Tier I and II locomotive NOX standards	Yes	No	0.00	0.00
Small non-road spark ignition (SI) engines (Phase I)	Yes	No	0.00	0.00
Heavy duty non-road engines	Yes	No	0.00	0.00
Tiers 2 and 3 non-road diesel engines	Yes	No	0.00	0.00
Small non-road SI engines (Phase II)	Yes	No	0.00	0.00
Large non-road SI & recreational marine	Yes	No	0.00	0.00
Non-road TxLED	Yes	No	0.00	0.00
Non-road RFG	Yes	No	0.00	0.00
Tier 4 non-road diesel engines	Yes	No	0.00	0.00
Diesel recreational marine	Yes	No	0.00	0.00
Small SI (Phase III)	Yes	No	0.00	0.00
Chapter 117 NOX area source engine controls	Yes	No	0.00	0.00
Drilling Rigs: Federal Engine Standards and Texas Low Emission Diesel	Yes	No	0.00	0.00
Commercial marine vessel engine certification standards and fuel programs	Yes	No	0.00	0.00
This row not used for current RFP	No	No	0.00	0.00
This row not used for current RFP	No	No	0.00	0.00
This row not used for current RFP	No	No	0.00	0.00
This row not used for current RFP	No	No	0.00	0.00
This row not used for current RFP	No	No	0.00	0.00
This row not used for current RFP	No	No	0.00	0.00
This row not used for current RFP	No	No	0.00	0.00
This row not used for current RFP	No	No	0.00	0.00
This row not used for current RFP	No	No	0.00	0.00
This row not used for current RFP	No	No	0.00	0.00
This row not used for current RFP	No	No	0.00	0.00
This row not used for current RFP	No	No	0.00	0.00
This row not used for current RFP	No	No	0.00	0.00
This row not used for current RFP	No	No	0.00	0.00
This row not used for current RFP	No	No	0.00	0.00
This row not used for current RFP	No	No	0.00	0.00
This row not used for current RFP	No	No	0.00	0.00
This row not used for current RFP	No	No	0.00	0.00
Total On-road Mobile Source RFP Control Reductions			1055.24	613.56

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Appendix 2 - Sheet 26

Summary Sheet: Uncontrolled or Existing Control NOX Emissions Inventory
HGB 2015 Eight-Hour Ozone Nonattainment Area
Six Nonattainment Counties: Brazoria, Chambers, Fort Bend, Galveston, Harris, Montgomery

2017 Uncontrolled or Existing Control NOX (tons per day)

RFP Analysis Year	HGB
Area Sources	31.86
Non-Road Mobile Sources	250.35
On-Road Mobile Sources	91.82
Point Sources	97.36
Total	471.39

2023 Uncontrolled or Existing Control NOX (tons per day)

RFP Analysis Year	HGB
Area Sources	37.31
Non-Road Mobile Sources	292.45
On-Road Mobile Sources	1,110.38
Point Sources	105.23
Total	1,545.37

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Appendix 2 - Sheet 27

Summary Sheet: Controlled or Post-2017 Controlled NOX Emissions Inventory
HGB 2015 Eight-Hour Ozone Nonattainment Area

Six Nonattainment Counties: Brazoria, Chambers, Fort Bend, Galveston, Harris, Montgomery

Controlled or Post-2017 Controlled NOX for 2017 (tons per day)

RFP Analysis Year	HGB
Area Sources	31.86
Non-Road Mobile Sources	131.43
On-Road Mobile Sources	91.82
Point Sources	97.36
Total	352.47

Controlled or Post-2017 Controlled NOX for 2023 (tons per day)

RFP Analysis Year	HGB
Area Sources	37.31
Non-Road Mobile Sources	112.95
On-Road Mobile Sources	55.14
Point Sources	105.23
Total	310.63

Note: The controlled inventory shown here includes all controls. The controlled RFP inventory may not include all controls and may therefore be a higher value than shown here.

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Appendix 2 - Sheet 28

Summary Sheet: Uncontrolled or Existing Control VOC Emissions Inventory
HGB 2015 Eight-Hour Ozone Nonattainment Area
Six Nonattainment Counties: Brazoria, Chambers, Fort Bend, Galveston, Harris, Montgomery

2017 Uncontrolled or Existing Control VOC (tons per day)

RFP Analysis Year	HGB
Area Sources	298.93
Non-Road Mobile Sources	176.21
On-Road Mobile Sources	45.11
Point Sources	73.37
Total	593.62

2023 Uncontrolled or Existing Control VOC (tons per day)

RFP Analysis Year	HGB
Area Sources	289.85
Non-Road Mobile Sources	200.90
On-Road Mobile Sources	644.96
Point Sources	78.09
Total	1,213.80

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Appendix 2 - Sheet 29

Summary Sheet: Controlled or Post-2017 Controlled VOC Emissions Inventory
HGB 2015 Eight-Hour Ozone Nonattainment Area
Six Nonattainment Counties: Brazoria, Chambers, Fort Bend, Galveston, Harris, Montgomery

Controlled or Post-2017 Controlled VOC for 2017 (tons per day)

RFP Analysis Year	HGB
Area Sources	298.93
Non-Road Mobile Sources	41.76
On-Road Mobile Sources	45.11
Point Sources	73.37
Total	459.17

Controlled or Post-2017 Controlled VOC for 2023 (tons per day)

RFP Analysis Year	HGB
Area Sources	289.85
Non-Road Mobile Sources	42.18
On-Road Mobile Sources	31.41
Point Sources	78.09
Total	441.53

Note: The controlled inventory shown here includes all controls. The controlled RFP inventory may not include all controls and may therefore be a higher value than shown here.

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Summary Sheet: 2017 Emissions Inventory By Category

HGB 2015 Eight-Hour Ozone Nonattainment Area

Six Nonattainment Counties: Brazoria, Chambers, Fort Bend, Galveston, Harris, Montgomery

2017 (tons per day)

Emissions Inventory Source	Uncontrolled or Existing Control NO _x	Controlled or Post 2017 Controlled NO _x	Uncontrolled or Existing Control VOC	Controlled or Post-2017 Controlled VOC
Area Sources	31.86	31.86	298.93	298.93
Non-Road Mobile Sources	250.35	131.43	176.21	41.76
On-Road Mobile Sources	91.82	91.82	45.11	45.11
Point Sources	97.36	97.36	73.37	73.37
Total	471.39	352.47	593.62	459.17

Note: The controlled inventory shown here includes all controls. The controlled RFP inventory may not include all controls.

HGB RFP Summary of the 2017 Base Year Average Summer Weekday NO_x and VOC Emissions

Emissions Inventory Source	Uncontrolled NO _x	Controlled NO _x	Uncontrolled VOC	Controlled VOC
Non-Road Mobile Sources	250.35	131.43	176.21	41.76
On-Road Mobile Sources	91.82	91.82	45.11	45.11
Emissions Inventory Source	Existing Controlled NO _x	Post-2017 Controlled NO _x	Uncontrolled VOC	Post-2017 Controlled VOC
Area Sources	31.86	31.86	298.93	298.93
Point Sources	97.36	97.36	73.37	73.37
Total of All Sources	471.39	352.47	593.62	459.17
QA	471.39	352.47	593.62	459.17

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Summary Sheet: 2023 Emissions Inventory By Category

HGB 2015 Eight-Hour Ozone Nonattainment Area

Six Nonattainment Counties: Brazoria, Chambers, Fort Bend, Galveston, Harris, Montgomery

2023 (tons per day)

Emissions Inventory Source	Uncontrolled or Existing Control NO _x	Controlled or Post-2017 Controlled NO _x	Uncontrolled or Existing Control VOC	Controlled or Post-2017 Controlled VOC
Area Sources	37.31	37.31	289.85	289.85
Non-Road Mobile Sources	292.45	112.95	200.90	42.18
On-Road Mobile Sources	1110.38	55.14	644.96	31.41
Point Sources	105.23	105.23	78.09	78.09
Total	1545.37	310.63	1213.80	441.53

Note: The controlled inventory shown here includes all controls. The controlled RFP inventory may not include all controls and may therefore be a higher value than shown here.

HGB RFP Summary of the 2023 Attainment Year Average Summer Weekday NO_x and VOC Emission

Emissions Inventory Source	Uncontrolled NO _x	Controlled NO _x	Uncontrolled VOC	Controlled VOC
Non-Road Mobile Sources	292.45	112.95	200.90	42.18
On-Road Mobile Sources	1110.38	55.14	644.96	31.41
Emissions Inventory Source	Existing Controlled NO _x	Post-2017 Controlled NO _x	Uncontrolled VOC	Post-2017 Controlled VOC
Area Sources	37.31	37.31	289.85	289.85
Point Sources	105.23	105.23	78.09	78.09
Total of All Sources	1545.37	310.63	1213.80	441.53
QA	1545.37	310.63	1213.80	441.53

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Summary Total Non-Road Emissions Inventory
HGB 2015 Eight-Hour Ozone Nonattainment Area

Six Nonattainment Counties: Brazoria, Chambers, Fort Bend, Galveston, Harris, Montgomery

'RFP Analysis Year	Uncontrolled NO _x (tpd)	Controlled NO _x (tpd)	Total Reduction NO _x (tpd)	Percent Reduction	Uncontrolled VOC (tpd)	Controlled VOC (tpd)	Total Reduction VOC (tpd)	Percent Reduction
2017	250.35	131.43	118.92	47.50	176.21	41.76	134.45	76.30
2023	292.45	112.95	179.50	61.38	200.90	42.18	158.72	79.00

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Summary Sheet: 2017 Non-Road Summary by Category

HGB 2015 Eight-Hour Ozone Nonattainment Area

Six Nonattainment Counties: Brazoria, Chambers, Fort Bend, Galveston, Harris, Montgomery

2017 (tons per day)

Emissions Inventory Source	Uncontrolled NOx	Controlled NOx	Uncontrolled VOC	Controlled VOC
Airport	8.83	8.77	2.64	2.64
Locomotive	11.83	10.89	0.57	0.57
Marine	105.06	75.88	2.49	2.37
NONROAD Model	124.08	35.66	170.42	36.16
Drilling Rigs	0.55	0.23	0.09	0.02
Total ALM	125.72	95.54	5.70	5.58
ALM Plus Drilling Rigs (Off-road)	126.27	95.77	5.79	5.60
Total All	250.35	131.43	176.21	41.76

Note: The controlled inventory shown here includes all controls. The controlled RFP inventory may not include all controls and may therefore be a higher value than shown here.

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Summary Sheet: 2023 Non-Road Summary by Category

HGB 2015 Eight-Hour Ozone Nonattainment Area

Six Nonattainment Counties: Brazoria, Chambers, Fort Bend, Galveston, Harris, Montgomery

2023 (tons per day)

Emissions Inventory Source	Uncontrolled NOx	Controlled NOx	Uncontrolled VOC	Controlled VOC
Airport	7.81	7.75	2.62	2.61
Locomotive	8.67	7.93	0.39	0.39
Marine	120.68	66.36	2.92	2.59
NONROAD Model	154.40	30.66	194.82	36.57
Drilling Rigs	0.89	0.25	0.15	0.02
Total ALM	137.16	82.04	5.93	5.59
ALM Plus Drilling Rigs (Off-road)	138.05	82.29	6.08	5.61
Total All	292.45	112.95	200.90	42.18

Note: The controlled inventory shown here includes all controls. The controlled RFP inventory may not include all controls and may therefore be a higher value than shown here.

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Summary Sheet: 2017 and 2023 On-Road Summaries

HGB 2015 Eight-Hour Ozone Nonattainment Area

Six Nonattainment Counties: Brazoria, Chambers, Fort Bend, Galveston, Harris, Montgomery

HGB Eight County RFP Ozone Season Weekday On-Road Mobile Source NOX Emissions

RFP Analysis Year Inventory	Uncontrolled or Existing Control NOx (tons per day)	Controlled NOx (tons per day)
2017 Base Year	91.82	91.82
2023 Attainment Year	1,110.38	55.14

HGB EightCounty RFP Ozone Season Weekday On-Road Mobile Source VOC Emissions

RFP Analysis Year Inventory	Uncontrolled or Existing Control VOC (tons per day)	Controlled VOC (tons per day)
2017 Base Year	45.11	45.11
2023 Attainment Year	644.96	31.41

2023 HGB Eight County RFP Ozone Season Weekday On-Road Mobile Source NOX and VOC Emissions and Control Strategy Reductions

RFP Analysis Year and Inventory of On-Road Mobile Emissions Inventory Strategies	NOX (tons per day)	VOC (tons per day)
2023 Uncontrolled Inventory	1,110.38	644.96
Federal Motor Vehicle Control Program (FMVCP)	1033.45	602.37
Reformulated Gasoline (RFG)/East Texas Regional Low RVP/Low Sulfur	18.06	7.25
Inspection and Maintenance (I/M)	1.78	3.94
On-road TxLED	1.95	0.00
2023 Controlled Inventory	55.14	31.41
QA Check	55.1400000000001	31.4000000000000

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Appendix 2 - Sheet 36

Summary Sheet: Calculation Process for 2023 Target Levels of Emissions

HGB 2015 Eight-Hour Ozone Nonattainment Area

Six Nonattainment Counties: Brazoria, Chambers, Fort Bend, Galveston, Harris, Montgomery

Summary of the Calculation Process for 2023 HGB RFP Target Levels

Line	Description	NO _x	VOC
Line 1	Step 1: 2017 base year emissions inventory (see Table 2-13)	352.47	459.17
Line 2	Percent of NO _x (PN) and VOC (PV) to meet 15% reduction requirement (PN plus PV = 15)	11.20%	3.80%
Line 3	Step 2: Calculate the total NO _x and VOC reduction requirement between 2017 and 2023 (Line 1 Multiplied by Line 2)	39.48	17.45
Line 4	Step 3: Calculate the 2023 target level of emissions (Line 1 minus Line 3)	312.99	441.72

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Summary Sheet: Total RFP Emissions Reductions

HGB 2015 Eight-Hour Ozone Nonattainment Area

Six Nonattainment Counties: Brazoria, Chambers, Fort Bend, Galveston, Harris, Montgomery

Control Strategy Description	NO _x Reductions	VOC Reductions
Chapter 117 NOX controls	0.00	0.00
Chapter 115 Storage Tank Rule	0.00	0.00
Coating / printing rules	0.00	0.00
Portable fuel containers	0.00	0.00
Federal Motor Vehicle Control Program (FMVCP)	1033.45	602.37
Reformulated Gasoline (RFG)/Tier 3 Sulfur Gasoline/Ultra Low Sulfur Diesel	18.06	7.25
Inspection and Maintenance (I/M)	1.78	3.94
On-road TxLED	1.95	0.00
Tier I and II locomotive NOX standards	0.75	0.00
Small non-road spark ignition (SI) engines (Phase I)	-6.74	52.33
Heavy duty non-road engines	0.34	5.14
Tiers 2 and 3 non-road diesel engines	2.67	0.56
Small non-road SI engines (Phase II)	4.82	49.11
Large non-road SI & recreational marine	50.94	16.89
Non-road TxLED	0.97	0.00
Non-road RFG	0.00	0.13
Tier 4 non-road diesel engines	65.88	14.28
Diesel recreational marine	0.02	0.00
Small SI (Phase III)	4.83	19.80
Chapter 117 NOX area source engine controls	0.00	0.00
Drilling Rigs: Federal Engine Standards and Texas Low Emission Diesel	0.64	0.13
Commercial marine vessel engine certification standards and fuel programs	54.33	0.33
Total:	1234.69	772.26

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Summary Sheet: Point Source RFP Emissions Reductions

HGB 2015 Eight-Hour Ozone Nonattainment Area

Six Nonattainment Counties: Brazoria, Chambers, Fort Bend, Galveston, Harris, Montgomery

Emissions	NO _x	VOC
Existing Controlled Emissions (as of 2017)	105.23	78.09
RFP Point Source Reductions	0.00	0.00
RFP Post-2017 Controlled Emissions	105.23	78.09

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Summary Sheet: Area Source RFP Emissions Reductions

HGB 2015 Eight-Hour Ozone Nonattainment Area

Six Nonattainment Counties: Brazoria, Chambers, Fort Bend, Galveston, Harris, Montgomery

Emissions	NO _x	VOC
Existing Controlled Emissions (as of 2017)	37.31	289.85
RFP Area Source Reductions	0.00	0.00
RFP Post-2017 Controlled Emissions	37.31	289.85

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Summary Sheet: Non-Road Source RFP Emissions Reductions

HGB 2015 Eight-Hour Ozone Nonattainment Area

Six Nonattainment Counties: Brazoria, Chambers, Fort Bend, Galveston, Harris, Montgomery

Emissions	NO _x	VOC
Uncontrolled	292.45	200.90
RFP Non-Road Source Reductions	179.45	158.70
RFP Post-2017 Controlled Emissions	113.00	42.20

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Summary Sheet: On-Road Source RFP Emissions Reductions

HGB 2015 Eight-Hour Ozone Nonattainment Area

Six Nonattainment Counties: Brazoria, Chambers, Fort Bend, Galveston, Harris, Montgomery

Emissions	NO _x	VOC
Uncontrolled	1110.38	644.96
RFP On-Road Source Reductions	1055.24	613.56
RFP Post-2017 Controlled Emissions	55.14	31.40

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