

## **Marathon Petroleum LP Summary**

### Permit to Install Applications

Permit to Install (PTI) application No. 118-15 is for the installation and operation of a gasoil hydrotreater (GOHT) feed heater and a GOHT reactor, and is referred to as the “Tier 3 Fuels Project”, and PTI application No. 122-15 is for the installation and operation of eight liquefied petroleum gas (LPG) storage tanks and an LPG railcar load rack, and is referred to as the “LPG Storage and Transfer Project”. The equipment in these applications is to be installed at Marathon Petroleum Company LP’s (Marathon) Detroit Refinery, located at 1300 South Fort Street, Detroit, Michigan.

### Site Background

The Marathon refinery can process 140,000 barrels per day of crude oil. The crude oil is refined into various products including liquefied petroleum gases, gasoline, fuel oil, asphalt, and petroleum coke. The products leave the refinery by truck, lake tanker, railroad car, and pipeline. The refinery operates 24 hours per day, 7 days per week, and 52 weeks per year.

The refinery currently operates a gasoil GOHT feed heater and reactor in order to meet the United States Environmental Protection Agency’s (USEPA) Tier 2 Motor Vehicle Emissions Standards and Gasoline Sulfur Control Requirements. The permit application has proposed to install a new GOHT feed heater and reactor so Marathon can produce gasoline that complies with the USEPA Tier 3 Fuel Standards. The new equipment will allow continued operation of the GOHT unit while the other reactor is off-line to change the catalyst. The Tier 3 Fuels Project may result in increased emissions from the following equipment at the Detroit Refinery. These increased emissions were included in the evaluation of the Tier 3 Fuels Project.

- The hydrogen plant heater firing rate will increase to provide the additional hydrogen required in the GOHT reactors to remove additional sulfur from the gasoil.
- The sulfur recovery units (SRU) and associated equipment will process the additional six long tons per day of sulfur that will be removed from the gasoil in the GOHT reactors.

The refinery currently has sixteen LPG bullet storage tanks and an LPG railcar load rack. The eight new LPG bullet storage tanks and the new LPG railcar load rack are intended to replace the sixteen existing tanks and the existing load rack to modernize the LPG storage and handling operations. Note the new LPG railcar load rack will be located in Marathon’s Melvindale Tank Farm which is adjacent to the Detroit Refinery.

The Tier 3 Fuels Project and the LPG Storage and Transfer Project are separate, unrelated projects. However, because Marathon submitted both PTI applications in June 2015, a joint public comment period and hearing were conducted.

### Current Air Quality

The Detroit Refinery is located in an area that is considered to be an attainment area for all of the National Ambient Air Quality Standards (NAAQS) except for the standard for sulfur dioxide (SO<sub>2</sub>). The area is considered to be a nonattainment area for SO<sub>2</sub>.

### Public Comment Period and Hearing

The Michigan Department of Environmental Quality (MDEQ) provided an enhanced public comment period for the Tier 3 Fuels Project and the LPG Storage and Transfer Project, as follows:

- The public comment period started on November 18, 2015. Also on that date, the MDEQ sent approximately 280 letters and e-mails to persons who had previously expressed interest, via letter, and had provided a complete address, including the Director of the Detroit Health Department, the Mayor of Detroit, the Wayne County Clerk's office, and several Wayne County Commissioners. The public comment period announcement was also placed on the Department of Environmental Quality (DEQ) calendar and in the Michigan Chronicle.
- The public hearing and an informational session were held on January 6, 2016 with approximately 300 people in attendance. A total of 58 oral comments were taken during the hearing.
- Approximately 3,900 written comments were received during the public comment period.
- The MDEQ also extended the public comment period beyond the required 30 days. The comment period was initially scheduled to last for 50 days, due to the holidays, and was extended an additional 23 days based on requests from interested parties. The public comment period ended at 5:00 pm on January 29, 2016.

### Proposed Permit Modifications

Based on the comments received during the public comment period and at the public hearing, the MDEQ made several changes to the permit conditions, including the following:

- Marathon is required to remove the 16 existing LPG tanks from service after the new LPG tanks have been placed into service.
- The total reduced sulfur (TRS) content of the refinery fuel gas burned in the new GOHT charge heater is now limited and Marathon is required to monitor it.
- Marathon is required to test the volatile organic compound (VOC) emission from the new GOHT charge heater.

More details on the comments that resulted in changes to the permit conditions, the MDEQ's responses to those comments, and the changes that were made to the conditions can be found in the Response to Comments Document.

### Marathons Proposed Voluntary Modifications

In response to the public comments that were submitted during the public comment period and at the public hearing, the MDEQ asked Marathon to evaluate possible reductions in SO<sub>2</sub> emissions from the Tier 3 Fuels Project and/or the facility. In response, Marathon proposed several voluntary changes to the Tier 3 Fuels Project and several other voluntary changes at the Detroit Refinery. These changes result in an overall decrease in SO<sub>2</sub>, oxides of nitrogen (NO<sub>x</sub>), hydrogen sulfide (H<sub>2</sub>S), and sulfuric acid mist (H<sub>2</sub>SO<sub>4</sub>) emissions from the facility after the Tier 3 Fuels Project is implemented. Proposed levels of other pollutant emissions have also been revised downward, including carbon monoxide (CO), particulate matter (PM), particulate matter equal to or less than 10 microns in diameter (PM<sub>10</sub>), and particulate matter equal to or less than 2.5 microns in diameter (PM<sub>2.5</sub>). In addition, Marathon has reduced the overall amount of SO<sub>2</sub> the facility is allowed to emit. These voluntary changes are not required to comply with state and federal rules and regulations, but have been included as enforceable requirements in the final permit conditions. These changes will be completed before the new GOHT charge heater or the new GOHT reactor begins operation. Table 1 summarizes the emissions reductions from Marathon's voluntary changes and also provides Marathon's reported emissions for 2014 for reference.

Table 1 – Summary of Voluntary Emission Changes  
(All values in tons per year (tpy))

Pollutant	2014 Actual Emissions <sup>A</sup>	Originally Proposed Emissions Increases	Post Tier 3 Emissions Increases <sup>B</sup>
NO <sub>x</sub>	430.4	22	- 6.6
CO	148.0	9	4.4
VOC	435.6	3	1.2
PM	NA <sup>C</sup>	3	1.5
PM <sub>10</sub>	90.7	7	4.5
PM <sub>2.5</sub>	83.3	7	4.5
H <sub>2</sub> SO <sub>4</sub>	NA <sup>C</sup>	2	-0.5
H <sub>2</sub> S	NA <sup>C</sup>	0	0.0
TRS	NA <sup>C</sup>	0	0.0
SO <sub>2</sub>	211.4	22	-1.0

<sup>A</sup> From the Michigan Air Emissions Reporting System (MAERS).

<sup>B</sup> Includes all voluntary changes at the facility, except for the emission reductions due to the flare gas recovery systems.

<sup>C</sup> Not reported to MAERS.

Marathon's voluntary changes include the following:

- Install a system to reduce SO<sub>2</sub> emissions from the Unit 42 Sulfur Recovery Unit (SRU).

- Revised the projected actual emission rates for the Unit 72 SRU.
- Reduced the new GOHT charge heater CO limit and committed to installing a CO continuous emission monitoring system (CEMS).
- Reduced the sulfur content of the refinery fuel gas used in the new GOHT charge heater and committed to continuously monitor the TRS content of the fuel gas.
- Emission testing every five years of H<sub>2</sub>SO<sub>4</sub> and VOC emissions from the new GOHT charge heater.
- An enforceable heat input cap for the existing GOHT charge heater and the new GOHT charge heater combined.
- Reduced the projected Hydrogen Plant Heater firing rate.
- An enforceable SO<sub>2</sub> emissions cap for six emission units at the facility that is 1 tpy less than the SO<sub>2</sub> emissions in the 2013/2014 baseline period.
- Install low NOx burners and flue gas recirculation on the Zurn Boiler to reduce NOx emissions.
- Reduced the Detroit Heavy Oil Upgrade Project (DHOUP) SO<sub>2</sub> emission cap from 371 tpy to 300 tpy.
- Add flare gas recovery to the Unifiner Flare and increase the capacity of the existing flare gas recovery system on the Coker Flare.

More details on these changes and the corresponding changes to the permit conditions can be found in the Response to Comments Document.

#### Permit Update

The permits were approved on May 26, 2016.

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