Permit Amendment
Source Analysis & Technical Review

Company	**Toyota Motor Manufacturing, Texas, Inc.**	Permit Numbers	**70661, PSDTX1036M1, and GHGPSDTX180**
City	**San Antonio**	Project Number	**274625**
County	**Bexar**	Account Numbers	**BG-1002-B**
Project Type	**Amend**	Regulated Entity Number	**RN104086673**
Project Reviewer	**Mike Coldiron, P.E.**	Customer Reference Number	**CN602524043**
Site Name	**Motor Vehicle Assembly Plant**		

Project Overview

Toyota Motor Manufacturing, Texas, Inc. (Toyota) operates a light duty truck assembly plant in San Antonio. The operations include metal stamping, welding, assembly using parts produced offsite, sealer and adhesive application, painting, roll testing and application of spray on bed liners.

This permit amendment covers the following changes to the site:

- The construction of a second assembly plant (Plant 2) to be located to the east of the existing plant;
- The addition of a panel coating line at Plant 1 that includes e-coat, primer surfacer, basecoat and clearcoat;
- The addition of MIG/laser welding at Plant 1 in the existing bodyshop;
- The addition of more presses in the metal stamping shop at Plant 1;
- The addition of diesel and urea storage tanks at Plant 1; and
- The expansion of the buildings at Plant 1 to allow for the rerouting of some of the conveyors and the addition of HVAC units.

The addition of a number of new combustion sources resulted in the plant wide CO_2e emission rates to exceed 75,000 tpy and as a result a new greenhouse gas (GHG) PSD permit is required.

Planned MSS activities were also included in the review and the majority of the activities are authorized via a Permit by Rule (PBR) (30 Texas Administrative Code [TAC] Chapter 106) or as De Minimis (30 TAC §116.119). The activities are listed in Attachments I and II respectively. The remaining planned MSS activities are included in the permit itself.

When the site was originally permitted in 2005 two assembly plants were permitted and the permit included a cap across both permits for hourly and annual emission rates. Only one plant was constructed, and the second plant was never removed from the permit. The proposed Plant 2 has entirely separate allowable emission rates from Plant 1 and a special condition has been added to the permit requiring TMMTX to submit a permit amendment to remove the never constructed Plant 2 from the permit. The change in allowable emission rates is as follows:

Emission Summary

Air Contaminant	Current Allowable Emission Rates (tpy)	Decreases in Emissions from Plant 1 Sources Never Constructed (tpy)[1]	Project Increases (tpy)	Proposed Allowable Emission Rates (tpy)
PM	79.21	-6.70	23.33	95.84
PM_{10}	79.08	-6.70	23.33	95.71
$PM_{2.5}$	79.03	-6.70	23.33	95.66
VOC	1889.49	-71.10	1359.70	3178.09
Exempt Solvent	0.00	0.00	56.46	56.46
NO_X	44.16	0.00	133.20	177.36
CO	29.25	0.00	209.00	238.25
SO_2	0.47	0.00	1.80	2.30
HAPs	N/A	N/A	N/A	N/A
CO_2	0.00	0.00	281976.37	281976.37
CH_4	0.00	0.00	5.30	5.30
N_2O	0.00	0.00	0.50	0.50
GHG mass basis	0.00	0.00	281982.22	281982.22
CO_2 Equivalents (CO_2e)	0.00	0.00	282268.04	282268.04

[1]The changes in the emission rates include the removal of Category No. 7 (Miscellaneous Metal Coatings) and Category No 12 (Marshalling Yard) from the existing Plant 1 allowable emission rates since they were never constructed.

Compliance History Evaluation - 30 TAC Chapter 60 Rules

A compliance history report was reviewed on:	**March 1, 2018**
Site rating & classification:	**0.00 / High**
Company rating & classification:	**0.00 / High**
If the rating is 50<RATING<55, what was the outcome, if any, based on the findings in the formal report:	**N/A**
Has the permit changed on the basis of the compliance history or rating?	**No**

Public Notice Information - 30 TAC Chapter 39 Rules

Rule Citation	Requirement	
39.403	Is Public Notice Required?	**Yes**
	Date Application Received:	**August 31, 2017**
	Date Administratively Complete:	**September 8, 2017**
	Small Business Source?	**No**
	Date Leg Letters mailed:	**September 8, 2017**
39.603	Date Published:	**September 20, 2017**
	Publication Name:	***San Antonio Express -News***
	Pollutants:	Carbon monoxide, hazardous air pollutants, nitrogen oxides, organic compounds, particulate matter including particulate matter with diameters of 10 microns or less and 2.5 microns or less and sulfur dioxide.
	Date Affidavits/Copies Received:	**September 27, 2017**
	Is bilingual notice required?	**Yes**
	Language:	**Spanish**
	Date Published:	**September 20, 2017**
	Publication Name:	***La Prensa de San Antonio***
	Date Affidavits/Copies Received:	**September 27, 2017**
	Date Certification of Sign Posting / Application Availability Received:	**December 1, 2017**
39.604	Public Comments Received?	**No**
	Hearing Requested?	**No**
	Meeting Request?	**No**
	Date Response to Comments sent to OCC:	**N/A**
	Consideration of Comments:	**N/A**
	Is 2nd Public Notice required?	**Yes**
39.602(c)	Date SB 709 Legislative Notification Sent:	**04/24/2018 and 07/ 20/ 2017**
39.419	Date 2nd Public Notice/Preliminary Decision Letter Mailed:	**August 1, 2018**
39.413	Date Cnty Judge, Mayor, and COG letters mailed:	**August 1, 2018**
	Date Federal Land Manager letter mailed:	**N/A**
39.605	Date affected states letter mailed:	**N/A**
39.603	Date Published:	**August 2, 2018**
	Publication Name:	***San Antonio Express -News***
	Pollutants:	Carbon monoxide, hazardous air pollutants, nitrogen oxides, organic compounds, particulate matter including particulate matter with diameters of 10 microns or less and 2.5 microns or less, sulfur dioxide and greenhouse gases.
	Date Affidavits/Copies Received:	**August 8, 2018**
	Is bilingual notice required?	**Yes**
	Language:	**Spanish**
	Date Published:	***N/A***
	Publication Name:	***La Prensa de San Antonio ceased publication in June 2018 and a diligent search by TMMTX revealed no other Spanish language newspapers in operation in Bexar County.***

	Date Affidavits/Copies Received:	**N/A**
	Date Certification of Sign Posting / Application Availability Received:	**September 7, 2018**
	Public Comments Received?	**No**
	Meeting Request?	**No**
	Date Meeting Held:	**No**
	Hearing Request?	**No**
	Date Hearing Held:	**N/A**
	Request(s) withdrawn?	**N/A**
	Date Withdrawn:	**N/A**
	Consideration of Comments:	**N/A**
39.421	Date RTC, Technical Review & Draft Permit Conditions sent to OCC:	**N/A**
	Request for Reconsideration Received?	**N/A**
	Final Action:	**Approve**
	Are letters Enclosed?	**N/A**

Construction Permit & Amendment Requirements - 30 TAC Chapter 116 Rules

Rule Citation	Requirement	
116.111(a)(2)(G)	Is the facility expected to perform as represented in the application?	**Yes**
116.111(a)(2)(A)(i)	Are emissions from this facility expected to comply with all TCEQ air quality Rules & Regulations, and the intent of the Texas Clean Air Act?	**Yes**
116.111(a)(2)(B)	Emissions will be measured using the following method: Pressure drop monitoring for dry filter systems, water supply pressure for water wash systems, temperature monitoring for the thermal oxidizers, visible emissions observations and detailed recordkeeping.	
	Comments on emission verification:	**N/A**
116.111(a)(2)(D)	Subject to NSPS?	**Yes**
	Subparts **A** & **MM and Kb**	
116.111(a)(2)(E)	Subject to NESHAP? There are no NESHAPs applicable to Automobile and Light Duty Truck Assembly Plants	**No**
	Subparts &	
116.111(a)(2)(F)	Subject to NESHAP (MACT) for source categories?	
	Subparts **A** & **PPPP, MMMM, IIII, and EEEE**	
116.111(a)(2)(H)	**Nonattainment review applicability: Bexar county is in attainment of all NAAQS and as a result non-attainment new source review does not apply**	
116.111(a)(2)(I)	**PSD review applicability: The project increases exceeded the major modification thresholds for VOC, NO_x and CO, PM_{10} and $PM_{2.5}$ and as a result PSD review was required. The project also caused the site wide emissions of GHG to exceed 75,000 tons of CO_2e and as a result a GHG PSD permit is required.**	
116.111(a)(2)(L)	Is Mass Emissions Cap and Trade applicable to the new or modified facilities? **No. The site is not located in the HGB Nonattainment area.**	
	If yes, did the proposed facility, group of facilities, or account obtain allowances to operate:	**N/A**
116.140 - 141	Permit Fee: $ 75,000 Fee certification:	**Yes**
	Applicable Outstanding Fees:	**$0.00**

Title V Applicability - 30 TAC Chapter 122 Rules

Rule Citation	Requirement
122.10(13)	**Title V applicability: The site holds Title V Operating Permit No. O-2840.**
122.602	**Periodic Monitoring (PM) applicability: The site is subject to Title V requirements and as a result PM requirements are applicable. The PM emission rates before controls for the painting operations are less than the major source threshold and PM is required for these sources. Differential pressure measurements across the dry filter media and water supply pressure measurements to the water wash systems are used to verify that the PM control systems for the painting operations are operating properly.**
122.604	**Compliance Assurance Monitoring (CAM) applicability: The site is a major source of VOC emissions and a number of the processes use add-on emission controls to limit emissions and as a result CAM is applicable. The thermal oxidizer performance is monitored through the use of continuously recording temperature sensors, and detailed recordkeeping for the painting operations is used to determine if the VOC emission limits in the MAERT are met.**

Request for Comments

Received From	Program/Area Name	Reviewed By/Date	Comments
Region:	**13**	**Brian Wille**	**Minor comment – Condition numbering is off**
City:	**San Antonio**	**N/A**	**No comments were received**
County:	**Bexar**	**N/A**	**No local program**
ADMT:		**Amanda Jones**	**Modeling is acceptable**
EB&T:		**N/A**	**No Emission Banking and Trading associated with this application**
Toxicology:		**Ross Jones**	**Impacts are acceptable**
Compliance:		**N/A**	**No compliance action pending**
Legal:		**N/A**	**No legal action pending**
Comment resolution and/or unresolved issues: Permit conditions were revised and there are no unresolved issues.			

Process/Project Description

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- The addition of MIG/laser welding at Plant 1in the existing bodyshop;
- The addition of more presses in the metal stamping shop at Plant 1;
- The addition of diesel and urea storage tanks at Plant; and
- The expansion of the buildings at Plant 1 to allow for the rerouting of some of the conveyors and the addition of HVAC units.

The process description covers the process from the receipt of materials at the proposed Plant 2 to the roll test of a completed vehicle. The proposed changes to Plant 1 have processes that are very similar to Plant 2 and the process description will note that both Plant 1 and Plant 2 are covered.

The categories of sources associated with an automobile and light duty truck assembly plant consist of the following:

Plant 2		Plant 1Project Equivalent	
Category No. 20	Natural Gas Combustion	N/A	N/A
Category No. 21	Emergency Support Equipment	N/A	N/A
Category No. 22	Bulk Material Storage Tanks	Category 16	Urea and Diesel Fuel Storage Tanks
Category No. 23	Stamping Shop/Bodyweld Shop	Category 15	Stamping Shop/Bodyweld Shop
Category No. 24	Primary Paint Shop (E-Coat, Primer Surfacer and Topcoat)	Category 14	Truck Panel Painting (E-Coat, Primer Surfacer and Topcoat)
Category No. 25	Plastics Shop	N/A	N/A
Category No. 26	Miscellaneous Metal Coating Process	N/A	N/A
Category No. 27	Miscellaneous Body Coatings	N/A	N/A
Category No. 28	Miscellaneous Process Cleaning	N/A	N/A
Category No. 29	Paint Repair	N/A	N/A
Category No. 30	Assembly Final Line	N/A	N/A

Category 20 – Natural Gas Combustion

Category 20 represents plant wide pipeline quality natural gas consumption to provide heat for a number of the processes such as:

- Heating the pretreatment (phosphating) baths and E-coat (aka - electrodepostion primer operation [ELPO]) baths;
- Curing ovens for the painting operations;
- Heated flash zone in the base coat operations;
- Fuel for the regenerative thermal oxidizers (RTOs) to control volatile organic compounds (VOC) and exempt solvent (ES) emissions;
- Air makeup units to provide temperature and humidity control in the paint booths;
- HVAC units for comfort heating;

These units (67 for the project) range in size from 0.15 to 22.2 MMBtu/hr.

Natural gas to be fired by these units will be distributed throughout the proposed new production areas via a common gas piping distribution system. The actual quantity of natural gas used will be metered at a gas meter located along the main gas header entering the proposed production areas.

Category 21 – Emergency Support Equipment

The proposed plant will include the installation of two 1200-kilowatt (kW) emergency generators. These generators will be fired with low sulfur distillate fuel oil (<15 ppm) and will be used during emergency conditions and testing. These generators will be used to provide electrical power to critical operations during emergency situations. One low sulfur distillate oil fuel (<15 ppm) fired emergency fire pump rated at 214 kilowatts (kW) will also be installed at the proposed plant. The fire pump will be tested monthly and will only be used during emergency situations. Total annual operating schedule is limited to 100 hr/yr for each engine.

Category 22 and Category 16 Bulk Material Storage Tanks

As part of this project, an additional tank farm will be constructed at Plant 2 which will contain fuel, urea, lubricants and other automotive fluids as well as purge thinner which is used in the painting operations as well as a waste solvent tank. All of these tanks will be white fixed roof tanks equipped with a submerged fill pipe. The unleaded gasoline tank will be equipped with a vapor balance system since dedicated service trucks will be used for gasoline deliveries. This category also includes the equipment leak fugitive from the loading connectors, pumps, valves and flanges since the fluids are pumped to the fluid fill operation on the assembly line and the solvent are pumped to and from the paint shop.

Table 1 Plant 2 Storage Tanks

Tank Description	Tank Capacity (gallons)
Category No. 22-01 - A/C Refrigerant Tank*	5,000
Category No. 22-02 - Long Life Coolant Fluid Tank	10,500
Category No. 22-03 - Engine Oil/Rear Suspension Tank	13,200
Category No. 22-04 - Transmission Fluid Tank	10,500
Category No. 22-05 - Two (2) Waste Paint/Solvent Tanks	13,200
Category No. 22-06 - Two (2) Purge Thinner Tanks	13,200
Category No. 22-07 - Windshield Washer Fluid	9,500
Category No. 22-08 - Power Steering Fluid Tank	13,200
Category No. 22-09 - Unleaded Gasoline Tank	10,500
Category No. 22-10 - Diesel Fuel Tank	13,200
Category No. 22-11 - Brake Fluid Tank	13,200

*R-134A refrigerant tank is a pressure tank and therefore there are no emissions.

Table 2 Additional Plant 1 Storage Tanks

Tank Description	Tank Capacity (gallons)
Category No. 16-01 - Diesel Fuel Tank	20,000
Category No. 16-02 - Urea Tank	15,000

Category 23 and Category 15 - Stamping Shop/Bodyweld Shop

Sheet steel blanks are delivered to the site and are moved to the Stamping Shop to form body panels such as doors, deck lid, hood, roof, tailgates and side panels. The blanks are loaded into the press and coated with a die lubricant that prevents the blank from sticking in the dies in the hydraulic stamping press. The stamping process uses a progressive die for many of the parts where the part is partially formed in the die and then ejected and passed to the next portion of the die where the forming is continued. Completed parts are stored until they are moved to the Bodyweld Shop where these sheet metal components are loaded into jigs and fixtures which accurately align the parts to be welded together to form the vehicle body. The welding is done using resistance welding (spot welding) which passes an electric current through the metal parts and heats them until the metal parts between the electrodes fuse together. This welding technology has no emissions.

Limited Metal Inert Gas (MIG) and laser welding (CO_2 is used as the shield or cover gas) will be performed in critical areas and in the fabrication of suspension components. MIG welding will be performed manually, as well as automatically, and will be found within several locations within the Bodyweld Shop. Particulate matter air pollutant emissions from MIG welding will be collected and removed using filtration systems with a 99% control efficiency.

Limited amounts of sealers, mastics and adhesives will also be applied in the Bodyweld Shop. These materials are included with Process Category No. 27 (Miscellaneous Body Coatings).

Category 24 and Category 14 - Primary Paint Shop (E-Coat, Primer Surfacer and Topcoat) and Truck Panel Painting

After Bodyweld, the next step of the assembly process is surface preparation and coating of the vehicle's surface. The coating process consists of three main steps (i.e., phosphate/E-coat sealer, primer surfacer and topcoat). The first step of the surface coating process includes a pre-treatment and phosphate application. The purpose is to remove the die lubricants (rust preventative oils) and grease that may have accumulated on the vehicle body parts. These cleaners are applied to the vehicle surface using a combination of spray nozzles and/or dip tanks. The tanks consist of hot water (gas fired heaters) and detergent and rinse stages (30 TAC 106.453).

The phosphate system (30 TAC 106.375 - surface conversion), which follows the pre-phosphate washers and rinse stations, prepares the vehicle surface for painting. The vehicles are passed through dip tanks which contain a dilute solution of phosphoric acid which reacts with the steel to form a thin layer of iron phosphate. Iron phosphate separates the steel from oxygen which eliminates corrosion of the parts. Following the phosphate stage, the vehicle is rinsed to remove any remaining phosphoric acid. The rinse stages consist of spray nozzles and/or dip tanks.

The prime coating system will be an electrodeposition dip prime process known as ELPO or E-coat. The vehicle will be submerged in a tank consisting of waterborne coating made up of a mixture of resins, pigments and water. In the tank, the vehicle serves as one electrode and other specially designed tank components serve as the other electrode. An electric current is passed through the tank and charged paint particles are deposited on the oppositely charged metal body. After leaving the dip tank, excess coating will be removed by rinsing in a series of permeate rinses which cause the excess paint solids to cascade back to the dip tank. The vehicle will then be rinsed with deionized water and will enter the E-coat oven to cure the coating. The dip tank and the natural gas fired oven are exhausted though a 98% efficient regenerative thermal oxidizer (RTO). Associated with the E-coat system is necessary support equipment such as the resin, pigment, water storage tanks and exchange tanks.

After the application of E-coat materials, the body will be inspected for any paint defects and these minor defects will be corrected in the E-coat inspection and Dry Sand Area.

Prior to the application of primer surfacer in the primary body paint system, the vehicle will proceed through the sealer application area, which may include manual wiping using tack cloths to remove particles. After the vehicle has been prepped, it will proceed to an area where sealer and sound dampening material will be applied to selected portions of the vehicle (part of Process Category No. 27). Once the unit has passed through the sealer application area, it will proceed through the PVC U-coat booth (part of Process Category No. 27). PVC U-coat, damping (under) coat and sealer materials will be applied using a combination of manual/automatic spray applicators to selective portions of the vehicle. The VOC emissions from the oven associated with the application of PVC materials will be controlled by a natural gas fired thermal oxidizer.

Once the vehicle has received the required PVC U-coat/sealer materials, the vehicle will proceed to the primary body paint system in the plant's Paint Shop. This system is designed to apply anti-chip, primer surfacer and topcoat (basecoat and clearcoat) materials to the vehicle. Anti-chip materials and waterborne primer surfacer coatings (interior and exterior) will then be applied to the vehicle using high transfer efficiency application equipment such as high volume low pressure (HVLP), electrostatic spray and turbo disks or turbo bells. The vehicle will then travel through a heated flash zone. The heated flash zone drives off the water and a portion of the glycol ether co-solvents before the application of topcoat.

In the topcoat spray zone, basecoat (color coat) will be applied to the vehicle parts using high transfer efficiency application equipment such as high volume low pressure (HVLP), electrostatic spray and turbo disks or turbo bells. After the application of waterborne basecoat, the vehicle will proceed through a heated flash zone and continue to the booth until it reaches the clearcoat application area. Clearcoat (provides UV protection, chemical and abrasion resistance) is applied using high transfer efficiency application equipment as noted above. After clearcoat application, the vehicle enters a natural gas fired cure oven to bake the primer surfacer, basecoat, clearcoat and the other coatings applied in the paint shop.

All paint materials will be supplied to the primary body paint system from mix tanks in the paint mix room or satellite tanks via a central paint circulating system (tanks, pumps and piping). The paint circulating system consists of minimal valves, flanges and pumps, and thus there are insignificant fugitive emissions from this system. The paint viscosity may be reduced as required with the appropriate thinners. These paint thinners are included as part of the VOC content of the paint ("as sprayed VOC" or "as applied") when calculating emissions from the primary body paint system.

The primary body paint system spray booths will control particulate matter emissions from paint overspray by incorporating a 99% efficient water wash system. In a water wash system, the booth air (conditioned air enters the booths through the natural gas fired air makeup units (AMUs) and overspray is directed downward (down draft paint booth) around the vehicle to sweep the overspray down and away from the freshly painted portions of the vehicle. The air is exhausted through a grating in the floor of the booth to the flood sheet where the air containing solvents and overspray is passed though the water to remove the particulate matter (PM).

To further limit VOC and ES emissions, a natural gas fired RTO with a control efficiency of 98% is used to control emissions from the primer/basecoat heated flash, clearcoat spray zones and the system's curing oven.

Waterborne purge solvents will be used to clean the application equipment where waterborne coatings are used. The cleaning in the primer surfacer operation is done at the end of a shift or where a change in the color is required. Primer colors are keyed to the basecoat color – dark colors may receive a black primer and light colors may receive a light grey primer. With the basecoat operation, the application equipment has purge solvent circulated through the system every time the vehicle color changes. This may be as frequently as every vehicle or every few vehicles.

The water in the water wash system will be circulated between the paint booths and the sludge pool. In the sludge room the water will be treated to remove paint sludge and the clean water will be returned to the booths. The booth walls, applicators, applicator support equipment, and ovens will be periodically cleaned with various solvents and/or high-pressure water. Water reducible maskings may be applied to the booth walls, and grease may be applied to the exposed conveyor tracks to minimize cleaning efforts. Good work practices will be used to minimize emissions. Clean-up materials are part of Process Category No. 28.

After leaving the primary body paint system, the vehicles will be inspected for paint defects. If minor defects are identified, offline spot repairs will be performed in a paint booth equipped with a 99% efficient dry filter system. Spot repairs consist of repairs to small areas, usually less than a few square inches. These repairs will be made using polishing compounds and airbrushes. If major paint defects are identified, the vehicle will be sent back to the main spray booth.

Other coatings may be applied to the vehicle body prior to being sent to assembly shop. These materials (e.g. wheel blackout, radiator blackout, cavity waxes) will be applied manually or automatically to the specified areas of the vehicle and allowed to air dry. The Blackout Booth is part of Process Category No. 26, while the cavity wax and underbody touch-up booths are part of Process Categories No. 27 and No. 29, respectively.

Category 25 – Plastics Shop

Manufacturing (molding, painting and assembly) of plastic exterior parts and various interior parts will be performed in the plastic parts shop. The process of molding plastic parts will involve material storage, material transfer and injection molding. Plastic material in pellet form will be stored onsite in material silos. Plastic pellets for molding plastic parts will be pneumatically transferred from the storage silos and tanks through an enclosed piping system. Both the silos and the conveyance system will be controlled with cartridge filter systems ($PM/PM_{10}/PM_{2.5}$ are controlled) with an outlet grain loading of less than 0.002 gr/scf. To form the various plastic parts, molding operations (30 TAC 106.394) will be performed. The pellets will be transferred to an injection molding machine where the plastic will be melted using electric heat and is forced into the mold under high pressure. A mold release material that prevents the part from sticking in the mold will also be employed. The plastic manufacturing operations also include slush molding which involves heating a hollow mold, filling with resin, curing, cooling and removing the finished part. A mold release material will also be employed.

After molding is complete, coating of the miscellaneous plastic parts will be performed in the plastic parts shop. The process of coating plastic exterior parts starts with cleaning the parts manually with a solvent. Once the part is dry, it will proceed to the primer booth where a waterborne primer material will be applied using high transfer efficiency application equipment and then proceed through a heated flash zone into the topcoat booth where a waterborne basecoat material will be applied. After application of the basecoat material, the part will proceed through another heated flash zone and then into the solvent borne clearcoat booth which will have VOC and ES emissions controlled by a 98% efficient RTO. The part will then proceed to the natural gas fired curing oven. The topcoat materials will be applied using high transfer efficiency application equipment such as HVLP or electrostatic spray. To control particulate emissions from paint overspray, each booth will be controlled with a water wash system with a control efficiency of 99%.

The coating of interior parts with waterborne basecoats will be performed in a single booth equipped with a 99% efficient water wash system to control $PM/PM_{10}/PM_{2.5}$ emissions. After paint application, a natural gas fired curing oven will be used to dry the paint. The coating materials to be employed in this process will be applied using HVLP or electrostatic application equipment.

All coating materials will be supplied to the booths from mix tanks in the plastic parts paint mix room via a central paint circulating system. In the paint mix room, the coating material is reduced as required with the appropriate thinners. These paint thinners are included as part of the VOC content of the paint (“as sprayed VOC” or “as applied”) when estimating emissions from the plastic bumper covers and interior parts coating operations.

Waterborne purge solvents will be used to clean the waterborne paint lines to prepare the lines for a color change and/or to clean the application equipment. The water in the water wash system will be circulated between the paint booths and the sludge pool. In the sludge pool, the water will be treated to remove the paint sludge and the clean water will be returned to the booths. Solvent borne paint systems will utilize solvent based cleaners and be directed to a collection system. The booth walls, applicator and applicator support equipment, grating, etc. will be periodically cleaned as well as the ovens with various solvents and/or high-pressure water. Various water reducible maskings may be applied to the booth walls and grease may be applied to the exposed conveyor tracks to minimize cleaning efforts. Clean-up materials are part of Process Category No. 28.

Category 26 - Miscellaneous Metal Coating Process

After the vehicle is largely assembled it will pass through the dry filtered (99% efficient) blackout booth. Small areas in the wheel wells and under the vehicle are coated black with HVLP application equipment to make these areas less visible. VOCs resulting from the use of cleanup materials have been included in the Process Category No. 28 (Miscellaneous Process Cleaners).

Category 27 - Miscellaneous Body Coatings

Various sealers and adhesives will be used throughout the assembly process, including the Bodyweld Shop, Paint Shop and Assembly shop. The majority of these materials are to be used in the Bodyweld/Paint Shop and are required to keep water from the vehicle interior at the weldments between panels and to reduce noise and keep vehicle exhaust from the interior of the vehicle. The remaining materials are used in the vehicle assembly line, primarily for the window installation area where materials to be used must meet Federal Motor Vehicle Safety Standards (MVSS). The process of installing the vehicle windshield involves the application of three materials that are essential to meet the (MVSS). The three materials used in this process are: 1) black windshield primer; 2) black prime on window frame, and 3) urethane. This process will involve applying the clear and black windshield prime to the edges of the windshield robotically, followed by robotically applying the urethane. Prior to the windshield installation, the black primer will also be applied to the window frame to form the required seal.

Also included in the miscellaneous body coatings category are the sealer application, sound deadener and, PVC U-coat coating application operations performed prior to the primer surfacer/topcoat operations, cavity wax application performed after the topcoat application, and vehicle wax (underbody, engine and hub) application in the assembly shop.

These various materials will be applied (manually or automatically sprayed) to the specified areas of the vehicle. Emissions from body coatings and adhesives will be in the form of volatile organic compounds (VOCs) and particulate matter ($PM/PM_{10}/PM_{2.5}$) due to material overspray). Low VOC content, high solid materials will be used and wet or dry filtration with a 99% control efficiency will be used.

Category 28 - Miscellaneous Process Cleaning

Cleaners will be used in the Stamping/Bodyweld Shop, Paint Shop, Plastic Shop, and general assembly areas. Functions to be performed will include, but will not be limited to, preparing the vehicle body for painting, purging of internal paint lines, paint applicator/spray booth/oven cleaning, and routine housekeeping requirements. Emissions will be limited through by minimizing the amount of cleaners required for cleanup and paint line purging and use low VOC content or water based cleaners due to the use of waterborne coatings and incorporate a purge cleaner capture system for the solvent borne clearcoat operations.

Category 29 - Paint Repair

After general assembly, any paint defects will be corrected in the paint repair system, which will consist of a prep operation, a dry filtered (99% efficient) spray booth for major repair, and spot repair facilities. Paint repair operations will be located on the final portion of the assembly line. Major repairs are those repairs where entire vehicle panels will be repainted (i.e. hood, door, etc.). In these cases, the area not being repaired will be masked to protect the remainder of the vehicle from paint overspray. These repairs will be performed in the main repair dry filtered paint spray booth using HVLP application equipment. Spot repairs consist of repairs to small areas, usually less than a few square inches. These repairs will be performed in a spray area using polishing compound and airbrushes. In paint repair, bake ovens or heat lamps will be used to cure painted areas. Scuff and/or heavy sanding may be done in the prep operation. On rare occasions, should sanding through to bare metal be necessary, a spot primer may be applied. Miscellaneous solvents may also be used in the prep operation. Emissions of VOCs resulting from the use of purge solvents and cleanup materials have been included in Process Category No. 28 (Miscellaneous Solvents, Cleanup, and Purge Usage).

Category 30 - Assembly Final Line

After the Paint Shop, the painted vehicle components are routed to general assembly. In general assembly, vehicle interior and exterior trim components and windshield will be installed on the vehicle body. Simultaneously, the chassis, wheels/tires, and power train components will be assembled in the chassis and power train areas. On the final assembly line, the chassis, power train and completed vehicle body will be merged to form a complete vehicle assembly. Vehicle fluids will then be added, after which the vehicle will be started and tested for mechanical/electrical operation. Any necessary mechanical or paint repairs will be made accordingly.

The vehicle will then proceed to either the paint repair area to correct minor imperfections or to the brake test operations. Once the brakes have been checked, the vehicle will proceed to the wax application booth where a variety of waxes will be manually applied to the vehicle. The wax application booth is considered part of Process Category No. 27 (Miscellaneous Body Coating).

Planned MSS Activities

For the coating operations the startup and shutdown of the coating operation has no emissions that are different in character (composition) than the emissions during the normal operations and the emissions from startup and shutdown are intrinsically less than normal operation. The annual emissions from startup and shutdown are already included in the emission calculations since they are based on the maximum amount of coating and solvent that may be used on an annual basis. The maintenance of spray booth filters has short term emission rates far less than the emission rates while operating and the activity has an annual emission rate of less than 0.001 tpy since the sticky paint droplets adhere to the filter media.

For the natural gas fired AMUs and furnaces the startup and shutdown periods for these units are only a few minutes in duration. The NO_x emission rates are lower during startup and shutdown since the maximum temperature in the combustion chamber is lower than during full firing rates and as such less NO_x is formed. CO emissions on a concentration basis will be higher due to the lower combustion chamber temperatures but will be no higher than full fire on a mass basis since the maximum amount of fuel is not being fired during startup or shut down. The emission rates for SO_2, PM, PM_{10}, and $PM_{2.5}$ cannot be higher during startup and shutdown since the emission rate is dependent only on fuel flow and the firing rate during these periods is lower than at full fire.

Emissions from the coating operations will not occur while the RTOs are down for maintenance and repair. The permit requires that the emission controls be at normal operating temperature before coating application and cleaning operations are started and maintained at normal operating temperature after coating application ceases and equipment cleanup are completed. The natural gas fired oxidizers have emissions during startup and shutdown that are lower than when coating is being applied since the combustion of the solvents result in a higher emission rate for products of combustion. Startup and shutdown times for the oxidizers are less than one hour and the emissions from the combustion of natural gas are based on full firing rates on an hourly basis and on the maximum anticipated annual operating schedule.

Additional planned MSS activities at the site are authorized under a permit by rule (30 TAC 106) or as a de Minimis source (30 TAC 116.119) and are listed in Attachments I and II.

Pollution Prevention, Sources, Controls and BACT- [30 TAC 116.111(a)(2)(C)]

The control technology proposed for this project is based on applicable state and federal rules, a top down best available control technology (BACT) analysis or a TCEQ Three Tier BACT analysis, as appropriate, as well as an RACT/BACT/LAER Clearinghouse (RBLC) search.

Rule Required Controls
The proposed new Plant 2 and changes to Plant 1 are subject to Maximum Achievable Control Technology (MACT) standards found in Title 40 of the Code of Federal Regulations (40 CFR), Part 63 which are as follows:

- The Surface Coating of Plastic Parts and Products MACT standards in 40 CFR Part 63, Subpart PPPP.
- The Surface Coating of Miscellaneous Metal Parts and Products MACT standards in 40 CFR Part 63, Subpart MMMM.
- The Surface Coating of Automobiles and Light-Duty Trucks MACT standards in 40 CFR Part 63, Subpart IIII.
- The Organic Liquids Distribution (Non-Gasoline) MACT standards in 40 CFR Part 63, Subpart EEEE.
- The Industrial, Commercial, and Institutional Boilers and Process Heaters standards in 40 CFR Part 63, Subpart DDDDD.
- The Stationary Reciprocating Internal Combustion Engine standards in 40 CFR Part 63, Subpart ZZZZ.

The sources covered by these standards meet these standards and in some cases, exceed the standards when consideration is given to TCEQ BACT requirements and the results of RBLC searches. Given the promulgation date of these standards, they also apply to the existing Plant 1 sources.

The proposed new Plant 2 and changes to Plant 1 are subject to New Source Performance Standards (NSPS) found in 40 CFR Part 60 which are as follows:

- The coating operations shall comply with the NSPS for Automobile and Light-Duty Truck Surface Coating Operations in 40 CFR Part 60, Subpart MM.
- The storage tanks shall comply with 40 CFR Part 60, NSPS Subpart Kb.
- The compression ignition internal combustion engines shall comply with 40 CFR Part 60, Subpart IIII.

The sources covered by these standards meet these standards and in some cases, exceed the standards when consideration is given to TCEQ BACT requirements and the results of RBLC searches. Given the promulgation date of these standards, they also apply to the existing Plant 1 sources.

BACT Evaluation
As part of the BACT review process, the Texas Commission on Environmental Quality (TCEQ) evaluates information from the Environmental Protection Agency's (EPA's) RACT/BACT/LAER Clearinghouse (RBLC), on-going permitting in Texas and other states, and the TCEQ's continuing review of emissions control developments for pollutants triggering a PSD

review. PSD review is triggered for NOx, CO, PM_{10}, $PM_{2.5}$, VOC, and greenhouse gases (GHGs), and state level review is triggered for all other regulated pollutants and individual PM, VOC and exempt solvent (ES) species. An RBLC search of recently issued federal permits identified automobile and light duty truck assembly plants located in several states. Control technologies used at these sites include heaters and ovens with low NO_x burners, the use of good combustion practices, sulfur content limits on fuel, thermal oxidizers for VOC and ES, wet and dry PM control systems for the painting operations, low VOC content coating and high transfer efficiency application equipment.

An automobile and light duty truck assembly plant consists of a number of processes conducted sequentially and facility support sources and are as follows:

Proposed Plant 1 Project Sources	
Process Category	Process Type
Category 16	Urea and Diesel Fuel Storage Tanks
Category 15	Stamping Shop/Bodyweld Shop
Category 14	Truck Panel Painting (E-Coat, Primer Surfacer and Topcoat)

Proposed Plant 2	
Process Category	Process Type
Category No. 20	Natural Gas Combustion
Category No. 21	Emergency Support Equipment
Category No. 22	Bulk Material Storage Tanks
Category No. 23	Stamping Shop/Bodyweld Shop
Category No. 24	Primary Paint Shop (E-Coat, Primer Surfacer and Topcoat)
Category No. 25	Plastic Painting
Category No. 26	Miscellaneous Metal Coating Process
Category No. 27	Miscellaneous Body Coatings
Category No. 28	Miscellaneous Process Cleaning
Category No. 29	Paint Repair
Category No. 30	Assembly Final Line

Natural Gas Combustion

Pipeline quality natural gas is used plant wide to provide heat for a number of the processes such as:

- Heating the pretreatment (phosphating) baths and E-coat (aka - electrodepostion primer operation [ELPO]) baths;
- Curing ovens for the painting operations;
- Heated flash zone in the base coat operations;
- Fuel for the regenerative thermal oxidizers (RTOs) to control volatile organic compounds (VOC) and exempt solvent (ES) emissions;
- Air makeup units to provide temperature and humidity control in the paint booths;

- HVAC units for comfort heating;

These units (67 for the project) range in size from 0.15 to 22.2 MMBtu/hr.

NO_x Emissions
Emissions of NO_x are limited through the combustion of gaseous fuels and the use of low NO_x burners which are required to meet an emission rate of 0.05 lb NO_x/MMBtu. A similar level of control was achieved at the General Motors Arlington Assembly Plant (Permit No. 19156) for the comfort heaters in the new body shop and in the new pretreatment and ELPO operations for the process heaters, ovens and RTO. Alternative NO_x controls, such as flue gas recirculation (FGR) and selective catalytic reduction (SCR) have not been applied to sources in the firing rate ranges proposed and this level of control is consistent with TCEQ BACT requirements.

CO and VOC Emissions
Emissions of CO and VOC are limited through the use of gaseous fuels, well-designed burners and good combustion practices. A search of the RBLC revealed that no natural gas fired sources in the size ranges proposed limited emissions through the use of oxidation catalysts and the use of well-designed burners and good combustion practices are consistent with TCEQ BACT requirements.

$PM/PM_{10}/PM_{2.5}$ Emissions
Emissions of $PM/PM_{10}/PM_{2.5}$ are limited through the use of gaseous fuels, well-designed burners and good combustion practices and this level of control is consistent with TCEQ BACT requirements.

SO_2 Emissions
Emissions of SO_2 are limited through the use of pipeline quality natural gas which has a sulfur content of less than 5 grains per 100 dry standard cubic feet (dscf). This represents BACT for SO_2 emissions.

Emergency Support Equipment
The emergency support equipment consists of two 1200-kilowatt (kW) emergency generators and one emergency fire pump rated at 214 kilowatts (kW). All of these engines fire low sulfur distillate oil that meets the requirements of 40 CFR 80.510(c) (<15 ppm S) and their operation is limited to less than 100 hr/yr. In addition, the engines meet the requirements of 40 CFR Part 60, Subpart IIII and 40 CFR Part 63, Subpart ZZZZ which require the installation of low emission engines (Tier II and Tier III) and proper operation and maintenance. The level of control achieved with the proposed engines represents BACT for all air contaminants.

Storage Tanks – Diesel, Urea and Bulk Storage of Automotive Fluids

In order to support the assembly operations, storage tanks are proposed that hold low vapor pressure automotive fluids such as automatic transmission, power steering, and brake fluids as well as antifreeze and gear oil. Two of the tanks will store diesel fuel and urea which also have a low vapor pressure. The fixed roof tanks will be painted white and will be equipped with submerged fill pipes. This is consistent with TCEQ BACT requirements for fixed roof storage tanks with low vapor pressure compounds.

The white fixed roof gasoline tanks are equipped with a vapor balance loading system and only leak tested trucks are allowed to deliver fuel to the site. This is consistent with TCEQ BACT requirements for gasoline storage tanks.

The R134A refrigerant used in the air conditioning systems has a vapor pressure that is above atmospheric pressure and as such is stored in a pressure tank that has no emissions to the atmosphere.

Metal Stamping Shop
Sheet steel blanks are delivered to the site and are moved to the Stamping Shop to form body panels such as doors, deck lid, hood, roof, tailgates and side panels. The blanks are loaded into the press and coated with a die lubricant that prevents the blank from sticking in the dies mounted on the hydraulic stamping press. The material used consists of a blend of petroleum distillates and a number of other solids and high molecular weight (nonvolatile) species that protect the parts and the dies from sticking. Limited information was found in the RBLC and BACT was determined to be procedures to minimize lubricant usage.

Welding Shop
Sheet metal body components are loaded into jigs and fixtures which accurately align the parts to be welded together to form the vehicle body. The welding is done using resistance welding (spot welding) which passes an electric current through the metal parts and heats them until the metal parts between the electrodes fuse together. This welding technology has no emissions.

Metal Inert gas (MIG) and laser welding (CO_2 is used as the shield or cover gas) will be used in the fabrication of suspension components. MIG welding will be performed manually, as well as automatically, and will be in several locations within the Bodyweld Shop. Particulate matter air pollutant emissions from MIG and laser welding will be collected and removed using dry filtration systems with 99% control efficiency. This level of control is a common requirement in welding operations in general and has been used in the Nissan North America facility in Canton, MS and represents BACT for this type of welding.

Pretreatment and E-coat
The first step of the surface coating process includes a pre-treatment and phosphate application. The purpose of pretreatment is to remove the die lubricant and grease that may have accumulated on the vehicle body parts. These cleaners are applied to the vehicle surface using a combination of spray nozzles and/or dip tanks. The tanks consist of hot water (gas fired heaters) and detergent and water rinse stages. This process has negligible emissions and the process chemicals used represent BACT.

The phosphate system, which follows the pre-phosphate washers and rinse stations, prepares the vehicle surface for painting. The vehicles are passed through dip tanks which contain a dilute solution of phosphoric acid which reacts with the steel to form a thin layer of iron phosphate. Following the phosphate stage, the vehicle is rinsed to remove any remaining phosphoric acid. This process has negligible emissions and the process chemicals used represent BACT.
After pretreatment and phosphating, the vehicle will enter the electrodeposition dip prime process known as ELPO or E-coat. The vehicle will be submerged in a tank (100% transfer efficiency) consisting of waterborne coating (0.10 lb VOC/gallon applied coating solids) made up of a mixture of resins, pigments and water. In the tank, the vehicle serves as one electrode and other specially designed tank components serve as the other electrode. An electric current is passed through the tank and charged paint particles are deposited on the oppositely charged metal body. The vehicle will then be rinsed with deionized water and will enter the E-coat oven to cure the coating. The dip tank and the natural gas fired oven are exhausted though a 98% efficient RTO. GM-Arlington is in the process of completing a new ELPO system (permitted 2015) which vents the dip tank and oven to a 95% efficient RTO and the coating has a VOC content of 0.42 lb VOC/gallon applied coating solids. The RBLC search revealed that all of the other facilities permitted since 2006 had lower control efficiencies on the RTO and all controlled only the oven and only three facilities had a lower coating VOC content. When considering the RTO efficiency, the sources controlled and the VOC content the proposed ELPO operation is the best controlled of all sources and represents BACT.

Primer Surfacer and Topcoat
Upon exiting the ELPO oven, the body will have sealers, sound dampening materials and a PVC under coat applied (see below) and then proceed to the primary paint shop where anti-chip, primer surfacer, basecoat and clearcoat will be applied.

VOC and Exempt Solvent Controls
In the primer surfacer booth, anti-chip materials and waterborne primer surfacer coatings (interior and exterior) will then be applied to the vehicle using high transfer efficiency application equipment such as high volume low pressure (HVLP), electrostatic spray and turbo disks or turbo bells. The vehicle will then travel through a heated flash zone. The heated flash zone drives off the water and a portion of the glycol ether co-solvents before the application of topcoat.
In the topcoat spray zone, basecoat (color coat) will be applied to the vehicle parts using high transfer efficiency application equipment such as high volume low pressure (HVLP), electrostatic spray and turbo disks or turbo bells. After the application of waterborne basecoat, the vehicle will proceed through a heated flash zone and continue down the line until it reaches the clearcoat application area. Clearcoat is applied using high transfer efficiency application equipment as noted above. After clearcoat application the vehicle enters a natural gas fired cure oven to bake the primer surfacer, basecoat and the other coatings applied in the paint shop. The heated flash zones and the clearcoat oven will be exhausted through a 98% efficient RTO.

This combination of coatings, high transfer efficiency application equipment and add-on emission controls results in an emission rate of 4.8 lb VOC/gallon applied coating solids. The RBLC search revealed only one other facility with this coating line configuration and it was limited to an emission rate of 4.8 lb VOC/gallon applied coating solids. As a result the proposed operations are considered to represent BACT.

PM Controls

In addition to the use of high transfer efficiency application equipment, the spray booths will control particulate matter emissions from paint overspray by incorporating a 99% efficient water wash system. In a water wash system, the booth air and overspray is directed downward around the vehicle to sweep the overspray down and through a grating in the floor of the booth to the flood sheet where the air containing solvents and overspray is passed though the water to remove the particulate matter (PM). This value is higher than the requirements for GM-Arlington (95%) and Plant 1 (98 to 98.5%) and is consistent with the TCEQ BACT requirements for spray applied coatings.

Plastics Shop Molding

Plastic material in pellet form will be stored onsite in material silos or storage tanks. Plastic pellets for molding plastic parts will be pneumatically transferred from the storage silos and tanks through an enclosed piping system. Both the silos and the conveyance system will be controlled with cartridge filter systems ($PM/PM_{10}/PM_{2.5}$ are controlled) with an outlet grain loading of less than 0.002 gr/scf. This level of control meets current TCEQ BACT requirements for material handling.

To form the various plastic parts, both injection molding and slush molding will be performed. A mold release material that prevents the part from sticking in the mold for both types of molding will be used. The process uses tiny amounts of release material per part (<0.001 gal/part) which will result in emissions of approximately 4.0 tpy of VOC. BACT for this operation is the minimization of the use of material for the molding processes.

Plastic Shop Coating Operations

VOC and ES Controls

After molding is complete, exterior parts such as bumper covers will proceed to the primer booth where a waterborne primer material will be applied using high transfer efficiency application equipment such as electrostatic spray and then proceed through a heated flash zone into the topcoat booth where a waterborne basecoat material will be applied. After application of the basecoat material, the part will proceed through another heated flash zone and then into the solvent borne clearcoat booth which will have VOC and ES emissions controlled by a 98% efficient RTO. The part will then proceed to the natural gas fired curing oven. The topcoat materials will be applied using high transfer efficiency application equipment such as HVLP or electrostatic spray.

The coating of interior parts with waterborne basecoats will be performed in a single booth equipped with a 99% efficient water wash system to control $PM/PM_{10}/PM_{2.5}$ emissions. After paint application, a natural gas fired curing oven will be used to dry the paint. The coating materials to be employed in this process will be applied using HVLP or electrostatic application equipment.

High solids coatings with a VOC content of 2.2 lb VOC/ gallon averaged across the primer and topcoat for the exterior parts will be used and the interior coating will be limited to 3.2 lb VOC/gal. The RBLC search revealed that many of the sites have no add on controls have coating VOC contents similar to the levels proposed by TMMTX. The 98% efficient RTO on the clearcoat booth is more efficient than any other RTO found (typically 95%) in the RBLC search. For the sources included in the RBLC search, the RTOs control both the booth and oven in some cases while in other cases only the oven is controlled. Based on testing that Plant 1 conducted on the plastics shop, it was determined that very few solvents are emitted from the oven and controlling the clearcoat booth is the only portion of the line what will result in significant VOC reductions. The combination of high transfer efficiency application equipment, high solids coatings and the use of a 98% efficient RTO represents BACT for plastic parts painting.

PM Controls

To control particulate emissions from paint overspray, each booth will be controlled with a water wash system with a control efficiency of 99%. The RBLC Search revealed no sources that achieve this level of controls and is consistent with the TCEQ BACT requirements for spray applied coatings.

Miscellaneous Metal Coating

After the vehicle is largely assembled the it will pass through the dry filtered (99% efficient) blackout booth. Small areas in the wheel wells and under the vehicle are coated black with HVLP application equipment to make these areas less visible. The proposed VOC content for this material is1.0 lb VOC/gal and this is consistent with the results from the RBLC search.

As such, the combination of coating VOC content and the use of high transfer efficiency application equipment represents BACT for VOC emissions. The RBLC contained no information for the control of PM other than the use of either wet or dry filtration systems at TMMTX Plant 1. However, the proposed level of control is consistent with the TCEQ BACT requirements for spray applied coatings.

Miscellaneous Body Coating
Sealers and adhesives will be used throughout the assembly process. The majority of these materials are to be used in the Bodyweld / Paint Shop and in final assembly and are required to keep water from the vehicle interior at the weldments between panels and to reduce noise and keep vehicle exhaust from the interior of the vehicle. Also included in the miscellaneous body coatings category are the sealer application, sound deadener and PVC U-coat coating application operations performed prior to the primer surfacer/topcoat operations, cavity wax application performed after the topcoat application, and vehicle wax (underbody, engine and hub) application in the assembly shop.
These materials will be applied (manually or automatically sprayed) to the specified areas of the vehicle. Emissions from body coatings and adhesives will be in the form of volatile organic compounds (VOCs) and particulate matter ($PM/PM_{10}/PM_{2.5}$) due to material overspray. Low VOC content, high solids materials will be applied where appropriate using high transfer efficiency application equipment and wet or dry filtration. The proposed level of control is consistent with the TCEQ BACT requirements for spray applied coatings.

Miscellaneous Process Cleaning
Cleaners will be used in the Stamping/Bodyweld Shop, Paint Shop, Plastic Shop, and general assembly areas. Cleaning operations will include, but not limited to, preparing the vehicle body for painting, purging of internal paint lines, paint applicator/spray booth/oven cleaning, and routine housekeeping requirements. Emissions will be limited through by minimizing the amount of cleaners required for cleanup and paint line purging and use low VOC content or water based cleaners due to the use of waterborne coatings and incorporate a purge cleaner capture system for the solvent borne clearcoat operations. The booth walls, applicator and applicator support equipment, grating, etc. will be periodically cleaned as well as the ovens with solvents and/or high-pressure water. Various water reducible maskings may be applied to the booth walls and grease may be applied to the exposed conveyor tracks to minimize cleaning efforts. The use of water based cleaners, solvent recovery, minimization of solvent use and the application of maskants to equipment surfaces to reduce cleaning requirements is consistent with TCEQ BACT requirements and the results of the RBLC search.

Paint Repair
After general assembly, any paint defects will be corrected in the paint repair system, which will consist of a prep operation, a dry filtered (99% efficient) spray booth for major repair (a whole body panel), and spot repair facilities. Major repairs will be performed in the main repair dry filtered paint spray booth using HVLP application equipment. Spot repairs consist of repairs to small areas, usually less than a few square inches. These repairs will be performed in a spray area using polishing compound and airbrushes. In paint repair, bake ovens or heat lamps will be used to cure painted areas.
The coating VOC content is limited to 4.8 lb VOC/ gal and is consistent with the limits for GM- Arlington and all of the other sources in the RBLC search and represents BACT for VOC control.
The RBLC included sources for PM control and all of the sources used dry filters at a lower efficiency than those proposed by TMMTX. However, the proposed level of control is consistent with the TCEQ BACT requirements for spray applied coatings.

Assembly Final Line
In general assembly, vehicle interior and exterior trim components and windshield will be installed on the vehicle body. Simultaneously, the chassis, wheels/tires, and power train components will be assembled in the chassis and power train areas. On the final assembly line, the chassis, power train and completed vehicle body will be merged to form a complete vehicle assembly. Vehicle fluids will then be added, after which the vehicle will be started and tested for mechanical/electrical operation.
Of all the emission sources in general assembly (fluid fill is negligible: < 1.0 tpy VOC), only the window install has any significant emissions. Here, small amounts of primers are applied to the body and the glass and then a very low VOC content urethane sealant is applied. The sealant VOC content is 0.3 lb VOC/gal and is equal to or lower than any source in the RBLC search and, as such, represents BACT.

Planned MSS
In addition to a review of control technology for steady state operations, the BACT analysis includes startup and shutdown

emissions for the stamping, welding, coating, combustion and other miscellaneous operations.

Startup and shutdown emissions are already included in the emission estimates for both hourly and annual emissions for the stamping operation. The during startup and shutdown have no different character of emissions than during normal operations. In addition, the short term emission rates are no higher than normal operations and the emission control techniques for normal operations are considered acceptable for startup and shut down.

Startup and shutdown emissions are already included in the emission estimates for both hourly and annual emissions for the welding operation since this a process that is instantaneously on or off and no additional analysis is necessary.

Startup and shutdown emissions are already included in the emission estimates for both hourly and annual emissions for the coating operations and cleaning of the booths and application equipment. The coating operations during startup and shutdown have no different character of emissions than during normal operations. In addition, the short term emission rates are no higher than normal operations and the emission control techniques for normal operations are considered acceptable for startup and shut down since all control equipment must be fully operation prior to start of operations and after the coating operation is completed. Emissions from filter replacement are limited through the use of work practices that limit the emissions of captured overspray.

For the natural gas fired units the startup and shutdown periods for these small units are only a few minutes in duration. The NO_x emission rates are lower during startup and shutdown since the maximum temperature in the combustion chamber is lower than during full firing rates and as such less NO_x is formed. CO emissions on a concentration basis will be higher due to the lower combustion chamber temperatures but will be no higher than full fire on a mass basis since the maximum amount of fuel is not being fired during startup or shut down. The emission rates for SO_2, PM, PM_{10}, and $PM_{2.5}$ cannot be higher during startup and shutdown since the emission rate is dependent only on fuel flow and the firing rate during these periods is lower than at full fire.

GHG Emissions
The construction of Plant 2 and modifications to Plant 1will result in GHG emissions from the combustion of natural gas in the process equipment and the RTOs used to control emissions from the surface coating operations, the emergency engines and the Metal Inert Gas (MIG) welding in the body shops.

The natural gas fired units (67 for the project) range in size from 0.15 to 22.2 MMBtu/hr. For the control of carbon dioxide (CO_2) carbon capture and storage (CCS) technology was one of several technologies evaluated. CCS technology, used for the control of greenhouse gases (GHG), is currently in various stages of development and is not commercially available. There have been no CCS demonstration projects to date (and none planned) for natural gas-fired equipment used at automobile and light duty truck assembly plants. The TCEQ searched the RBLC database and recently issued PSD permits for GHG emissions from natural gas-fired facilities and found that none of the issued (or pending applications) proposed CCS as BACT. There are no currently operating natural gas-fired facilities utilizing CCS. In all cases, CCS was ruled out as BACT due to technical infeasibility and/or economic impracticability.

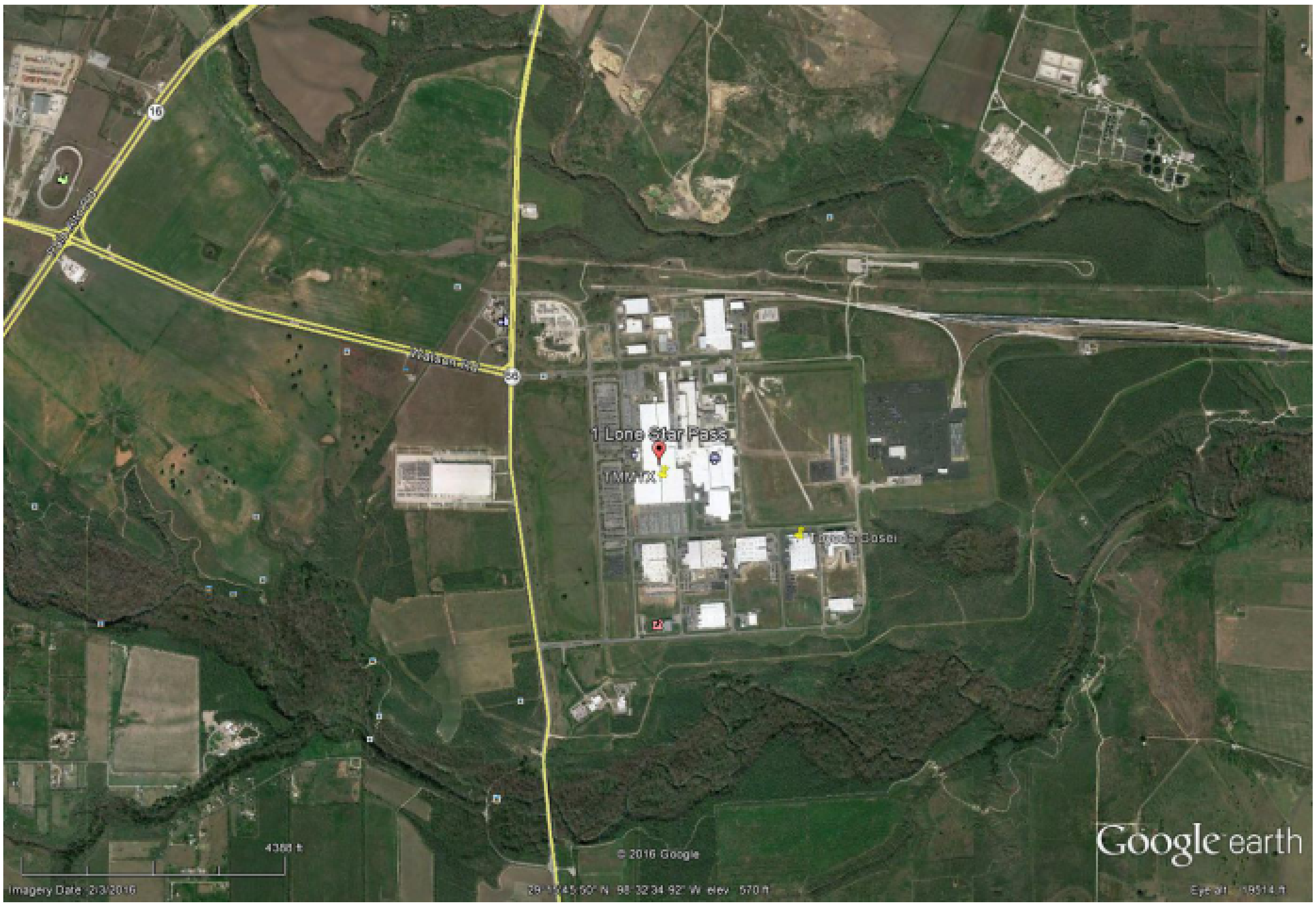
However, the RBLC search and the review of other recently permitted sources in Texas revealed that a number of sites proposed the use of energy efficient burners to reduce fuel consumption, the use of good combustion practices and regular maintenance of the equipment to reduce fuel consumption. In addition, pipeline quality natural gas was proposed in every case since it has the lowest carbon density of any other available fuel. This combination of equipment selection, operational and maintenance procedures and the use of pipeline quality natural gas, represents BACT for GHGs for these sources.

The emergency generator and fire pump engines have GHG emissions of 197 tpy and a search of the RBLC revealed a large number of emergency engines for which BACT was determined to be compliance with NSPS Subpart IIII, MACT Subpart ZZZZ, good operating and maintenance practices and a limited operating schedule. The proposed engines will utilize all of these emission control techniques and this level of control is considered to represent BACT.

The CO_2 emissions from the MIG welding are 13.1 tpy for each plant and the replacement of the shield or cover gas is not technically feasible. BACT is the use of good welding practices that minimize the amount of shield gas used.

Impacts Evaluation - 30 TAC 116.111(a)(2)(J)

Was modeling conducted?	**Yes**	Type of Modeling:	**AERMOD**
Will GLC of any air contaminant cause violation of NAAQS?			**No**
Is this a sensitive location with respect to nuisance?			**No**
[§116.111(a)(2)(A)(ii)] Is the site within 3000 feet of any school?			**No**
Additional site/land use information: The Toyota Assembly Plant is located south of San Antonio in an area of undeveloped land with a few scattered residences and small businesses.			



Summary of Modeling Results

The air quality analysis (AQA), as supplemented by the TCEQ Air Dispersion Modeling Team (ADMT), is acceptable for all review types and pollutants. The results are summarized below.

A. De Minimis Analysis

A De Minimis analysis was initially conducted to determine if a full impacts analysis would be required. The De Minimis analysis modeling results indicate that $PM_{2.5}$ and NO_2 exceed the respective de minimis concentrations and require a full impacts analysis. The De Minimis analysis modeling results for PM_{10} and CO indicate that the project is below the respective de minimis concentrations and no further analysis is required.

The justification for selecting the EPA's interim 1-hr NO_2 De Minimis level was based on the assumptions underlying EPA's development of the 1-hr NO_2 De Minimis level. As explained in EPA guidance memoranda1, the EPA believes it is reasonable as an interim approach to use a De Minimis level that represents 4% of the 1-hr NO_2 NAAQS.

The $PM_{2.5}$ and ozone De Minimis levels are the EPA recommended De Minimis levels. The use of the EPA recommended De Minimis levels is sufficient to conclude that a proposed source will not cause or contribute to a violation of an ozone and $PM_{2.5}$ NAAQS or Increment based on the analyses documented in EPA guidance and policy memorandums[2].

While the De Minimis levels for both the NAAQS and increment are identical for $PM_{2.5}$ in the table below, the procedures to determine significance (that is, predicted concentrations to compare to the De Minimis levels) are different. This difference occurs because the NAAQS for $PM_{2.5}$ are statistically-based, but the corresponding increments are exceedance-based.

Modeling Results for PSD De Minimis Analysis in Micrograms Per Cubic Meter (µg/m³)

Pollutant	Averaging Time	GLC_{max} (µg/m³)	De Minimis (µg/m³)
PM_{10}	24-hr	4	5
PM_{10}	Annual	0.6	1
$PM_{2.5}$ (NAAQS)	24-hr	3	1.2
$PM_{2.5}$ (NAAQS)	Annual	0.6	0.2
$PM_{2.5}$ (Increment)	24-hr	3.8	1.2
$PM_{2.5}$ (Increment)	Annual	0.6	0.2
NO_2	1-hr	128	7.5
NO_2	Annual	3	1
CO	1-hr	414	2000
CO	8-hr	75	500

The 24-hr and annual $PM_{2.5}$ (NAAQS) and 1-hr NO_2 GLC_{max} are based on the highest five-year averages of the maximum predicted concentrations determined for each receptor.

The 24-hr $PM_{2.5}$ (Increment) GLC_{max} is based on the maximum high, second high (H2H) predicted concentration across five years of meteorological data instead of the maximum predicted concentration across five years of meteorological data. However, the applicant conducted a full increment analysis so this discrepancy does not affect the overall conclusions.

The GLC_{max} for all other pollutants and averaging times represent the maximum predicted concentrations over five years of meteorological data.

1 www.tceq.texas.gov/assets/public/permitting/air/memos/guidance_1hr_no2naaqs.pdf

2 www.tceq.texas.gov/permitting/air/modeling/epa-mod-guidance.html

To evaluate secondary $PM_{2.5}$ impacts, the applicant provided an analysis based on a Tier 1 demonstration approach consistent with the EPA's Guideline on Air Quality Models (GAQM). Specifically, the applicant used a Tier 1 demonstration tool developed by the EPA referred to as Modeled Emission Rates for Precursors (MERPs). The basic idea behind the MERPs is to use technically credible air quality modeling to relate precursor emissions and peak secondary pollutants impacts from a source. Using data associated with the 500 tpy Guadalupe County source, the applicant estimated 24-hr and annual secondary $PM_{2.5}$ concentrations of 0.03 $\mu g/m^3$ and 0.001 $\mu g/m^3$, respectively. The applicant did not support using the low stack release as the basis for the MERPs. However, using a high stack release will not significantly affect the overall results. When these estimates are added to the GLC_{max} listed in the table above, the results are above than the De Minimis levels. Since the combined direct and secondary 24-hr and annual $PM_{2.5}$ impacts are above the De minimis levels, a full impacts analysis is required.

Modeling Results for Ozone PSD De Minimis Analysis in Parts per Billion (ppb)

Pollutant	Averaging Time	GLCmax (ppb)	De Minimis (ppb)
O_3	8-hr	0.65	1

The applicant performed an O_3 analysis as part of the PSD AQA. The applicant evaluated project emissions of O_3 precursor emissions (NO_x and VOC).

For the project NO_x and VOC emissions, the applicant provided an analysis based on a Tier 1 demonstration approach consistent with the EPA's GAQM. Specifically, the applicant used a Tier 1 demonstration tool developed by the EPA referred to as MERPs. As noted above, the basic idea behind the MERPs is to use technically credible air quality modeling to relate precursor emissions and peak secondary pollutants impacts from a source. Using data associated with the 500 tpy Guadalupe County source for NO_x and the 1000 tpy Guadalupe County source for VOC, the applicant estimated an 8-hr O_3 concentration of 0.65 part per billion (ppb). When the estimates of ozone concentrations from the project emissions are added together, the results are less than the De Minimis level.

B. Air Quality Monitoring

The De Minimis analysis modeling results indicate that PM_{10}, NO_2, and CO are below their respective monitoring significance level.

Modeling Results for PSD Monitoring Significance Levels

Pollutant	Averaging Time	GLC_{max} ($\mu g/m^3$)	Significance ($\mu g/m^3$)
PM_{10}	24-hr	4	10
NO_2	Annual	3	14
CO	8-hr	75	575

The GLC_{max} for all pollutants and averaging times represent the maximum predicted concentrations over five years of meteorological data.

The applicant evaluated ambient $PM_{2.5}$ monitoring data to satisfy the requirements for the pre-application air quality analysis.

Background concentrations for $PM_{2.5}$ were obtained from the EPA AIRS monitor 480290059 at 14620 Laguna Rd., San Antonio, Bexar County. The three-year average (2014-2016) of the 98th percentile of the annual distribution of the 24-hr concentrations was used for the 24-hr value (19 µg/m^3). The three-year average (2014-2016) of the annual concentrations was used for the annual value (8.4 µg/m^3). The ADMT reviewed more recent data and determined the overall conclusions would not change. The use of this monitor is reasonable based on similar land use and the ADMT's quantitative review of emissions sources in the surrounding area of the monitor site relative to the project site. These background concentrations for $PM_{2.5}$ noted above were also used as part of the NAAQS analysis.

Background concentrations for NO_2 were obtained from the EPA AIRS monitor 480290059 at 14620 Laguna Rd., San Antonio, Bexar County. The three-year average (2014-2016) of the 98th percentile of the annual distribution of the maximum daily 1-hr concentrations was used for the 1-hr value. The annual concentration from 2016 was used for the annual value. The ADMT reviewed more recent data and determined the overall conclusions would not change. The use of this monitor is reasonable based on the ADMT's quantitative review of emissions sources in the surrounding area of the monitor site relative to the project site.

Since the project has a net emissions increase of 100 tons per year (tpy) or more of volatile organic compounds or nitrogen oxides, the applicant evaluated ambient O_3 monitoring data to satisfy requirements in 40 CFR §52.21 (i)(5)(i)(f).

A background concentration for O_3 was obtained from the EPA AIRS monitor 480290059 located at 14620 Laguna Rd, San Antonio, Bexar County. The three-year average (2014-2016) of the annual fourth highest daily maximum 8-hr concentrations was used in the analysis (64 ppb). The ADMT reviewed more recent data and determined the overall conclusions would not change. The use of the monitor is reasonable based on the applicant's analysis of the surrounding land use and the ADMT's quantitative review of emissions sources in the surrounding area of the monitor site relative to the project site.

C. National Ambient Air Quality Standard (NAAQS) Analysis

The De Minimis analysis modeling results indicate that $PM_{2.5}$ and NO_2 exceed the respective de minimis concentration and require a full impacts analysis. The full NAAQS modeling results indicate the total predicted concentrations will not result in an exceedance of the NAAQS.

Total Concentrations for PSD NAAQS (Concentrations > De Minimis)

Pollutant	Averaging Time	GLC_{max} (µg/m^3)	Background (µg/m^3)	Total Conc. = [Background + secondary + GLC_{max}] (µg/m^3)	Standard (µg/m^3)
$PM_{2.5}$	24-hr	12	19	31	35
$PM_{2.5}$	Annual	3	8	11	12
NO_2	1-hr	120	60	180	188
NO_2	Annual	5	7	12	100

The 24-hr $PM_{2.5}$ GLC_{max} is the highest five-year average of the 98th percentile of the annual distribution of predicted 24-hr concentrations determined for each receptor.

The annual $PM_{2.5}$ GLC_{max} is the maximum five-year average of the predicted annual concentrations determined for each receptor.

The 1-hr NO_2 GLC_{max} is the highest five-year average of the 98^{th} percentile of the annual distribution of predicted daily maximum 1-hr concentrations determined for each receptor.

The annual NO_2 GLC_{max} is the maximum predicted concentration over five years of meteorological data. As stated above, to evaluate secondary $PM_{2.5}$ impacts, the applicant provided an analysis based on a Tier 1 demonstration approach consistent with the EPA's GAQM. Specifically, the applicant used a Tier 1 demonstration tool developed by the EPA referred to as MERPs. Using data associated with the 500 tpy Guadalupe County source, the applicant estimated 24-hr and annual secondary $PM_{2.5}$ concentrations of 0.03 $\mu g/m^3$ and 0.001 $\mu g/m^3$, respectively. The applicant did not support using the low stack release as the basis for the MERPs. However, using a high stack release will not significantly affect the overall results. When these estimates are added to the GLC_{max} listed above, the results are less than the NAAQS. The GLC_{max} for 24-hr and annual $PM_{2.5}$ reported above represents the total predicted concentration associated with modeling the direct $PM_{2.5}$ emissions and the contributions associated with secondary $PM_{2.5}$ formation.

D. Increment Analysis

The De Minimis analysis modeling results indicate that $PM_{2.5}$ and NO_2 exceed the respective de minimis concentrations and require a PSD increment analysis.

Results for PSD Increment Analysis

Pollutant	Averaging Time	GLC_{max} ($\mu g/m^3$)	Increment ($\mu g/m^3$)
$PM_{2.5}$	24-hr	3.8	9
$PM_{2.5}$	Annual	0.6	4
NO_2	Annual	4.6	25

The GLC_{max} for 24-hr $PM_{2.5}$ is the maximum high, second high (H2H) predicted concentration across five years of meteorological data.

For annual $PM_{2.5}$, the GLC_{max} is the highest annual predicted concentration associated with five years of meteorological data.

For annual NO_2, the GLC_{max} is the maximum predicted concentration over five years of meteorological data.

The GLC_{max} for 24-hr and annual $PM_{2.5}$ reported above represents the total predicted concentration associated with modeling the direct $PM_{2.5}$ emissions and the contributions associated with secondary $PM_{2.5}$ formation (discussed above in the NAAQS Analysis section).

E. Additional Impacts Analysis

The applicant performed an Additional Impacts Analysis as part of the PSD AQA. The applicant conducted a growth analysis and determined that population will not significantly increase as a result of the proposed project. The applicant conducted a soils and vegetation analysis and determined that all evaluated criteria pollutant concentrations are below their respective secondary NAAQS. The applicant meets the Class II visibility analysis requirement by complying with the opacity requirements of 30 TAC Chapter 111. The Additional Impacts Analyses are reasonable and possible adverse impacts from this project are not expected.

The ADMT evaluated predicted concentrations from the proposed project to determine if emissions could adversely affect a Class I area. The nearest Class I area, Big Bend National Park, is located approximately 420 kilometers (km) from the proposed site.

The predicted concentrations of PM_{10}, $PM_{2.5}$, NO_2, and SO_2 for all averaging times, are all less than de minimis levels at a distance of 12 km from the proposed sources in the direction of Big Bend National Park. Big Bend National Park is an additional 408 km from the location where the predicted concentrations of PM_{10}, $PM_{2.5}$, NO_2, and SO_2 for all averaging times are less than de minimis. Therefore, emissions from the proposed project are not expected to adversely affect the Big Bend National Park Class I area.

F. Minor Source NSR and Air Toxics Analysis

Project-Related Modeling Results for State Property Line

Pollutant	Averaging Time	GLC_{max} (µg/m^3)	De Minimis (µg/m^3)
SO_2	1-hr	2.6	20.4

The justification for selecting the EPA' s interim 1-hr SO_2 De Minimis level was based on the assumptions underlying EPA' s development of the 1-hr SO_2 De Minimis level. As explained in EPA guidance memoranda3, the EPA believes it is reasonable as an interim approach to use a De Minimis level that represents 4% of the 1-hr SO_2 NAAQS.

Modeling Results for Minor NSR De Minimis

Pollutant	Averaging Time	GLC_{max} (µg/m^3)	De Minimis (µg/m^3)
SO_2	1-hr	2	7.8
SO_2	3-hr	1	25
SO_2	24-hr	0.2	5
SO_2	Annual	0.03	1

The 1-hr SO_2 GLC_{max} is based on the highest five-year average of the maximum predicted concentrations determined for each receptor. The 3-hr, 24-hr, and annual SO_2 GLC_{max} are the maximum predicted concentrations associated with five years of meteorological data.

The air toxics analysis for individual species starts with an initial model run for each emission point with an emission rate of 1.0 g/sec to develop a unit impact multiplier (UIM) (µg/m^3 per lb/hr) for each emission point. The actual emission rate for the species is then multiplied by the UIM to obtain a maximum off property concentration for each species for each emission point associated with the project. The impacts for each species were then summed independent of time and space to obtain a total maximum off property concentration. If the concentration was less than 10% of the ESL the analysis was complete as allowed by MERA Step 3. If not, all of the TMMTX sources were included in the analysis and the results were summed independent of time and space. If the impacts were less than the ESL the analysis was complete. The UIMs used in the analysis are as follows:

Generic Modeling Results

3 www.epa.gov/sites/production/files/2015-07/documents/appwso2.pdf

Source ID	Averaging Time	GLC$_{max}$ (μg/m^3 per g/s)
NADMIN	1-hr	130.62
NADMIN	Annual	0.90
NASSEM	1-hr	86.25
NASSEM	Annual	0.72
NWELD	1-hr	211.01
NWELD	Annual	0.79
NPAINT	1-hr	81.40
NPAINT	Annual	1.03
NPLAS	1-hr	170.36
NPLAS	Annual	0.91
NSTAMP	1-hr	128.84
NSTAMP	Annual	0.85
NUTIL	1-hr	173.29
NUTIL	Annual	0.92
NEPAINT	1-hr	105.16
NEPAINT	Annual	0.82
NEWELD	1-hr	160.05
NEWELD	Annual	0.72
TLS3	1-hr	52.5
TLS3	Annual	0.57
EADMIN	1-hr	164.5
EADMIN	Annual	0.77
EASSEM	1-hr	161.4

EASSEM	Annual	0.97
EPAINT	1-hr	106.0
EPAINT	Annual	0.73
EPLAS	1-hr	76.7
EPLAS	Annual	0.62
ERECEP	1-hr	195.8
ERECEP	Annual	1.28
EUTIL	1-hr	85.8
EUTIL	Annual	0.87
EWELD	1-hr	116.1
EWELD	Annual	0.68

For species that exceeded their ESL, the model was rerun using the surrogate stack parameters for Plant 2 and actual stack parameters for Plant 1 as a refined run. The results were then summed with the impacts from the onsite suppliers to determine a maximum site wide off property concentration. The results of the refined runs are as follows:

Minor NSR Site-wide Modeling Results for Health Effects

Pollutant & CAS#	Averaging Time	GLC_{max} (µg/m^3)	ESL (µg/m^3)
Formaldehyde 50-00-0	1-hr	8.8	15
isopropanol 67-63-0	1-hr	1904	4920
1-butanol 71-36-3	1-hr	540	610
4,4-methylene diphenyl diisocyanate 101-68-8	1-hr	1.25	0.7
4,4-methylene diphenyl diisocyanate 101-68-8	Annual	0.01	0.1
2-ethylhexyl alcohol 104-76-7	1-hr	642	540
2-ethylhexyl alcohol 104-76-7	Annual	19.2	54
1-methoxy-2-propanol 107-98-2	1-hr	452	3700
2-dimethylaminoethanol 108-01-0	1-hr	101	55
2-dimethylaminoethanol 108-01-0	Annual	2.7	50
methyl isobutyl ketone 108-10-1	1-hr	808	820
cyclohexanone 108-94-1	1-hr	417	800
2-butoxyethanol 111-76-2	1-hr	1918	2900
triethylamine 121-44-8	1-hr	24	40
n-butyl acetate 123-86-4	1-hr	2646	11000
Monoethanolamine 141-43-5	1-hr	120	97
Monoethanolamine 141-43-5	Annual	6.6	7
ethyl acetate 141-78-6	1-hr	1210	3100
ethyl-3-ethoxypropionate 763-69-9	1-hr	377	270
ethyl-3-ethoxypropionate 763-69-9	Annual	3.2	27
hexamethylene diisocyanate 822-06-0	1-hr	5	0.7
hexamethylene diisocyanate 822-06-0	Annual	0.04	0.1
N-methyl-2-pyrrolidone 872-50-4	1-hr	400	420

ethylene glycol mono-2-ethylhexyl ether (EEH) 1559-35-9	1-hr	431	420
ethylene glycol mono-2-ethylhexyl ether (EEH) 1559-35-9	Annual	13.9	42
1-propoxy-2-propanol 1569-01-3	1-hr	400	1000
2-propanol-1-butoxy 5131-66-8	1-hr	407	730
barium sulfate 7727-43-7	1-hr	10.6	50
Stoddard solvent 8052-41-3	1-hr	1585	3500
polymethylene polyphenyl isocyanate 9016-87-9	1-hr	4.1	8.7
titanium(IV) dioxide 13463-67-7	1-hr	19.4	50
Polyethylene glycol monobenzyl ether 26403-74-7	1-hr	2	8.7
hexamethylene diisocyanate polymer 28182-81-2	1-hr	5.9	8.7
dipropylene glycol monomethyl ether 34590-94-8	1-hr	705	3100
distillates (petroleum), hydrotreated light 64742-47-8	1-hr	1697	3500
solvent naphtha (petroleum), light aromatic 64742-95-6	1-hr	4393	4400
solvent naphtha (petroleum), light aromatic 64742-95-6	Annual	31.2	54
1,2-benzenedicarboxylic acid, di-C8-10-branched alkyl esters, C9-rich 68515-48-0	1-hr	14.4	50

Minor NSR Hours of Exceedance for Health Effects

Pollutant	Averaging Time	1 X ESL GLC_{ni}
4,4-methylene diphenyl diisocyanate	1-hr	3
2-ethylhexyl alcohol	1-hr	2
2-dimethylaminoethanol	1-hr	39
Monoethanolamine	1-hr	12
ethyl-3-ethoxypropionate	1-hr	2
ethylene glycol mono-2-ethylhexyl ether (EEH)	1-hr	1

Since the GLC_{max} were calculated independent of time and space, the locations were not determined. The applicant considered the GLC_{max} as the GLC_{ni}.

The ADMT supplemented the results in Table 9 for ethyl-3-ethoxypropionate and Stoddard solvent based on the modeling output files.

For hexamethylene diisocyanate, the applicant did not provide hours of exceedance but this species is not expected to be emitted since it is contained in Part B of polyurethane coatings and reacts with the polyol in Part A to form the polyurethane resin.

For species with impacts below the Effects Screening Levels (ESL) established by the TCEQ Toxicology Division no adverse impact on human health or the environment is anticipated.

For species with maximum off property impacts above their respective ESLs, a site specific evaluation was conducted by the TCEQ Toxicology Division and the off property concentrations are not anticipated to result in any short- or long-term adverse health effects to occur among the general public.

G. Model Used and Modeling Techniques

AERMOD (Version 18081) was used in a refined screening mode for the NO_2 PSD NAAQS analysis. For all other analyses, AERMOD (Version 16216r) was used in a refined screening mode. The current version of AERMOD is 18081, and the current version should be used for future modeling demonstrations. The use of the older version does not affect the overall conclusions.

A unitized emission rate of 1 g/s was used to predict a generic short-term and long-term impact for each source. The generic impact was multiplied by the proposed pollutant specific emission rates to calculate a maximum predicted concentration for each source. The maximum predicted concentration for each source was summed to get a total predicted concentration for each pollutant. The maximum predicted concentrations were compared to 10 percent of their respective ESLs (step 3 of the Modeling and Effects Review Applicability [MERA] guidance).

For pollutants that did not meet Step 3 of the MERA guidance, site-wide impacts were evaluated. The project impacts, excluding the bed liner (Model ID TLS3), were summed independent of time and space with the unit modeling results from the bed liner, Avanzar Interior Technologies, Ltd. (Avanzar) (RN105885446), and Toyoda Gosei Texas LLC (Toyoda Gosei) (RN104320064). For the bed liner, the applicant used a higher unit impact multiplier in the calculations than the unit impact multiplier from the model output file, as determined by the ADMT. This is conservative.

For pollutants with impacts greater than the ESL, the applicant further refined the analysis by conducting pollutant specific modeling for all project sources except the bed liner. The results from the pollutant-specific modeling were summed independent of time and space with the unit modeling results from the bed liner, Avanzar, and Toyoda Gosei for the total site-wide impact.

The total emissions for each plant shop, except the Primary Paint shop, were modeled through a single stack in the center of each building. To justify this approach, the applicant modeled a unitized emission rate of 1 g/s to predict a generic short-term and long-term impact for each source. Additionally, a unitized emission rate of 0.5 g/s was modeled for two identical stacks, at the north and south ends of each large building, and was used to predict a generic short-term and long-term impact for each source. The applicant determined the single stack approach was more conservative and therefore, used in the analysis. Each stack was modeled with the parameters of the worst-case stack based on generic modeling.

For the Primary Paint shop, a representative stack location was chosen.

The applicant conducted the 1-hr and annual NO_2 NAAQS analyses using the Ambient Ratio Method 2 (ARM2) model option following EPA guidance.

Each source was modeled in a separate source group to determine source culpability.

H. Land Use

Medium roughness and elevated terrain were used in the modeling analysis. These selections are consistent with the AERSURFACE analysis, topographic map, DEMs, and aerial photography. The selection of medium roughness is reasonable.

I. Meteorological Data

Surface Station and ID: San Antonio, TX (Station #: 12921)
Upper Air Station and ID: Corpus Christi, TX (Station #: 12924)
Meteorological Dataset: 2012 for State Property Line and health effects analyses;
2011-2015 for all other analyses
Profile Base Elevation: 246.6 meters

J. Receptor Grid

The grid modeled was sufficient in density and spatial coverage to capture representative maximum ground-level concentrations and exceedances.

Some receptors on the north and south sides of the property were modeled on-site for the minor NSR analyses. This is conservative.

A single property line designation (SPLD) exists between Toyota Motor Manufacturing Texas, Inc., Avanzar Interior Technologies Ltd (RN105885446), Toyota Tsusho America Inc. (RN105504625), Millenium Steel of Texas LP (RN107673550), Green Metals Inc. (RN106404247), Toyoda Gosei Texas LLC (RN104320064), Reyes Automotive Group II LLC (RN105915870), Vutex Inc. (RN105727069), Toyotetsu Texas Inc. (RN105115497), Futaba Industrial Texas Corp (RN104553292), Metalsa Light Truck Inc. (RN105460877), Curtis-Maruyasu America Inc. (RN104478854), Tenneco Automotive Operating Company Inc. (RN104590872), Takumi Stamping Texas Inc. (RN104507108), MetoKote Corporation (RN104781158), Kautex, Inc. (RN104801907), Reyes-AMTEX Automotive, LLC (RN105915870), and Arvin Sango, Inc. For the PSD analyses, the modeled grid is based on the fence line. For all other analyses, the modeled grid is based on the SPLD boundary.

K. Building Wake Effects (Downwash)

Input data to Building Profile Input Program Prime (Version 04274) are consistent with the aerial photography, plot plan, and modeling report.

L. Modeling Emissions Inventory

The modeled emission point source parameters and rates were consistent with the modeling report. The source characterizations used to represent the sources were appropriate.

As noted above, a SPLD exists between Toyota Motor Manufacturing Texas, Inc., Avanzar Interior Technologies Ltd (RN105885446), Toyota Tsusho America Inc. (RN105504625), Millenium Steel of Texas LP (RN107673550), Green Metals Inc. (RN106404247), Toyoda Gosei Texas LLC (RN104320064), Reyes Automotive Group II LLC (RN105915870), Vutex Inc. (RN105727069), Toyotetsu Texas Inc. (RN105115497), Futaba Industrial Texas Corp (RN104553292), Metalsa Light Truck Inc. (RN105460877), Curtis-Maruyasu America Inc. (RN104478854), Tenneco Automotive Operating Company Inc. (RN104590872), Takumi Stamping Texas Inc. (RN104507108), MetoKote Corporation (RN104781158), Kautex, Inc. (RN104801907), Reyes-AMTEX Automotive, LLC (RN105915870), and Arvin Sango, Inc. Emissions of isopropanol, 1-butanol, 4,4-methylene diphenyl diisocyanate, methyl isobutyl ketone, cyclohexanone, 2-butoxyethanol, ethyl acetate, ethyl-3-ethoxypropionate, hexamethylene diisocyanate, N-methyl-2-pyrrolidone, Stoddard solvent, polymethylene polyphenyl isocyanate, titanium(IV) dioxide, hexamethylene diisocyanate polymer, and solvent naphtha (petroleum), light aromatic from these other entities were included in the site-wide modeling analysis, as applicable.

Maximum allowable hourly emission rates were used for both the short-term and annual averaging time analyses.

M. Greenhouse Gases

The TCEQ Executive Director has determined that air dispersion modeling is not required for GHG emissions as it would not determine air quality impacts from the proposed new facility or source modification. The impacts review for individual air contaminants classified as part of GHGs will continue to be addressed, as applicable, in the state's traditional minor and major NSR permits program per 30 TAC Chapter 116.

Since the off property concentrations of all criteria pollutants were below the NAAQS and the concentration of all non-criteria pollutants are acceptable to the TCEQ Toxicology Division for both normal operations and during planned MSS activities, it is anticipated that impacts from the site will not be detrimental to public health.

Permit Concurrence and Related Authorization Actions

Is the applicant in agreement with special conditions?	**Yes**
Company representative(s):	**Eric Anderson**
Contacted Via:	**e-mail**
Date of contact:	**07/27/2018**
Other permit(s) or permits by rule affected by this action:	**No**
List permit and/or PBR number(s) and actions required or taken:	**N/A**

			09/10/2018
Project Reviewer	Date	Section Manager	Date
Mike Coldiron, P.E.	September 7, 2018	Beryl Thatcher	