

# Appendix D

## **Energy Technical Appendix**



## **Energy Technical Appendix**

1. Assumptions
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  - a. 11111 Jefferson Blvd. Construction Emissions
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## **1. Assumptions**

# 11111 Jefferson Boulevard Assumptions

Analysis Date: 12/14/2020

## CalEEMod Inputs (Non-Default information only)

Project Location				
County	Los Angeles			
Air District	SCAQMD			
Climate Zone	11			
Construction Year start	2022			
Operational Year Project	2025			
Utility Provider	Southern California Edison			
Source Receptor Area (SCAQMD)	2			
	2022	2025	2020	2008
CO intensity	462.58	401.15	503.95	631.82
% renewable	38.50%	46.67%	33.00%	16.00%

1 Southern California Edison, 2018. ESG/Sustainability Template. Report date: September 27, 2018. Available: <https://www.edison.com/content/dam/eix/documents/sustainability/eix-esg-pilot-quantitative-section-sce.pdf>. Accessed April 5, 2019.

2 SCE 2017 Power Content Label [https://www.sce.com/sites/default/files/inline-files/2017PCL\\_0.pdf](https://www.sce.com/sites/default/files/inline-files/2017PCL_0.pdf)

3 SB-100 California Renewables Portfolio Standard Program: Emissions of Greenhouse Gases, [https://leginfo.ca.gov/faces/billNavClient.xhtml?bill\\_id=201720180](https://leginfo.ca.gov/faces/billNavClient.xhtml?bill_id=201720180)

### Project Description

Jefferson Park LLC, the Applicant, proposes to develop a mixed-use residential and commercial project (Project) on an approximately 3.43-acre (149,553 square feet [sf]) triangular shaped site (Project Site) located in the City of Culver City (Culver City or City). The Project Site is located at 11111 Jefferson Boulevard in the southern part of the City. The Project Site is generally bounded by Jefferson Boulevard to the east, Machado Road to the north and Sepulveda Boulevard to the west. The Project Site is surrounded by the Sunkist Park neighborhood to the west and southwest, the Heritage Park and Lindberg Park neighborhoods to the north, the Studio Village Shopping Center to the east, and the Blanco Park neighborhood to the southeast.

Land Use	Building SQFT	Building KFS	Units/ Spaces	Acres	CalEEMod Category
Residential:	244,609	244.61	230	1.00	Apartment Mid-rise
Market:	38,600	38.60		0.15	Convenience market
High Turnover Sit-down:	3,300	3.30		0.15	High Turnover Sit-down:
Fast Food:	4,900	4.90		0.15	Fast food - no drive-thru
Coffee & Bakery:	2,400	2.40		0.15	Fast food - no drive-thru
Office:	11,450	11.45		0.15	General Office Building
Retail:	3,900	3.90		0.15	Strip Mall
Gym/Fitness:	1,950	1.95		0.15	Health Club
Parking:	555,221	555.22	653	0.513	Enclosed Parking w/ Elevator
Parling Lot:				0.513	Other Asphalt
Park :				0.35	City Park
Total				3.43	

## Construction Schedule

Phase Name	CalEEMod Phase Name	Start Date	End Date	Days/week	Workdays
Total		5/1/2022	6/30/2024		792
Demolition	Demolition	5/1/2022	6/30/2022	7.00	61
Site Preparation	Site Preparation	6/1/2022	6/30/2022	7	30
Grading/Excavation	Grading	9/1/2022	11/30/2022	7	91
Drainage/Utilities/ Trenching	Trenching	12/1/2022	12/31/2022	7	31
Foundations/ Concrete Pour	Builing Construcion	12/1/2022	4/30/2023	7	151
Building Construction	Builing Construcion	5/1/2023	5/31/2024	7	397
Paving	Paving	5/1/2024	6/30/2024	7	61
Archetecutal Coating	Archetecutural Coating	4/1/2024	5/31/2024	7	61
<u>Consturction will occur:</u>		7 days per week			
	Monday through Friday:	8:00 AM	8:00 PM		
	Saturday:	9:00 AM	7:00 PM		
	Sunday:	10:00 AM	7:00 PM		

### Notes:

- 1 **Concrete Pour could be up to 16 hour days.**
- 2 **Modeled to keep emissions in the same year for conservative equipment emissions.**

## Trips and VMT

Phase	Workers/day	Worker Trips	Vendor Trips	Haul Trips	Total Haul Trucks
Demolition	20	40	10	20	362
Site Preparation	30	60	30	200	430
Grading/Excavation	30	60	30	200	9,100
Drainage/Utilities/ Trenching	20	40			
Foundations/ Concrete Pour	120	240	4	600	2,127
Building Construction	200	400	4		
Paving	20	40			
Archetecutal Coating	40	80			
miles/trip		14.70	6.90	30	

\* Trips represent total number of one way trips per day.

Total Disposal Haul Trucks	9,892
Total Vendor Trucks	6,432

## Construction Phasing

### Demolition:

35,011	square feet	building demolition
159	Total Trucks	
108,530	square feet	hardscape demolition
2,010	cubic yards	
2,051	tons	
203	Total Trucks	
30	miles	Disposal Site Distance

### *Equipment:*

<i>Type</i>	<b>#</b>	<b>Hrs/day</b>	<b>CalEEMod Designation</b>
Concrete/Industrial Saw	1	8	Concrete/Industrial Saw
Crawler Tractor	1	8	Crawler Tractor
Excavator	3	8	Excavator
Jackhammer	1	8	Generator
Rubber tired dozer	2	8	Rubber tired dozer
Tractor/Loader/Backhoe	1	8	Tractor/Loader/Backhoe
Vendor Trucks	5		Modeled outside CalEEMod

### Site Preparation:

6,012	cubic yards	total export
1,250	cubic yards	daily export
430	Total Trucks	
100	Daily Trucks	
30	miles	Disposal Site Distance

### *Equipment:*

<i>Type</i>	<b>#</b>	<b>Hrs/day</b>	<b>CalEEMod Designation</b>
Crawler Tractor	1	8	Crawler Tractor
Rubber tired dozer	3	8	Rubber tired dozer
Tractor/Loader/Backhoe	5	8	Tractor/Loader/Backhoe
Vendor Trucks	15		Modeled outside CalEEMod

## Grading:

88,000	cubic yards	total export
8,800	Total Trucks	
30	miles	Disposal Site Distance
3,000	cubic yards	total import
150	cubic yards	daily import
300	tota trucks	
50	daily trucks	
30	miles	Disposal Site Distance

## **Equipment:**

<b>Type</b>	<b>#</b>	<b>Hrs/day</b>	<b>CalEEMod Designation</b>
Compactor	1	8	Plate Compactor
Crawler Tractor	1	8	Crawler Tractor
Excavator	1	8	Excavator
Grader	1	8	Grader
Rubber tired dozer	1	8	Rubber tired dozer
Rubber tired loader	1	8	Rubber tired loader
Skid Steer Loader	1	8	Skid Steer Loader
Tractor/Loader/Backhoe	4	8	Tractor/Loader/Backhoe
Vendor Trucks	15		Modeled outside CalEEMod

## Drainage/Utilities/Trenching

### **Equipment:**

<b>Type</b>	<b>#</b>	<b>Hrs/day</b>	<b>CalEEMod Designation</b>
Compactor	2	8	Plate Compactor
Forklift	2	8	Forklift
Rough terrain Forklifts	1	8	Rough terrain Forklifts
Skid Steer Loader	1	8	Skid Steer Loader
Tractor/Loader/Backhoe	4	8	Tractor/Loader/Backhoe
Trencher	2	8	Trencher
Vendor Trucks	2		Modeled outside CalEEMod

## Foundation/Concrete Pour

21,272	cubic yards	Total concrete
3,000	cubic yards	Daily concrete
2,127		Total Trucks
300		Daily Trucks

### **Equipment:**

#### **Type**

	<b>#</b>	<b>Hrs/day</b>	<b>CalEEMod Designation</b>
Concrete/Industrial Saw	3	8	Plate Compactor
Compactor	2	8	Compactor
Crane	1	8	Crane
Forklifts	3	8	Forklifts
Generator Sets	1	8	Generator Sets
Pumps	2	8	Pumps
Rough Terrain Forklifts	1	8	Rough Terrain Forklifts
Skid Steer Loader	1	8	Skid Steer Loader
tractor/loader backhoe	6	8	tractor/loader backhoe
Welder	1	8	Welder
Vendor Trucks	2		Modeled outside CalEEMod



## **Building Construction**

### ***Equipment:***

<b><i>Type</i></b>	<b>#</b>	<b>Hrs/day</b>	<b>CalEEMod Designation</b>
Air Compressor	10	8	Air Compressor
Crane	2	8	Crane
Forklifts	5	8	Forklifts
Generator Sets	1	8	Generator Sets
Pumps	2	8	Pumps
Rough Terrain Forklifts	1	8	Rough Terrain Forklifts
Skid Steer Loader	1	8	Skid Steer Loader
tractor/loader backhoe	3	8	tractor/loader backhoe
Welder	1	8	Welder

## **Paving**

### ***Equipment:***

<b><i>Type</i></b>	<b>#</b>	<b>Hrs/day</b>	<b>CalEEMod Designation</b>
Cement/Mortar Mixers	2	8	Cement/Mortar Mixers
Pavers	1	8	Pavers
Paving Equipment	2	8	Paving Equipment
Rollers	2	8	Rollers
Sweeper/Scrubbers	1	8	Sweeper/Scrubbers
tractor/loader backhoe	1	8	tractor/loader backhoe

## **Architectural Coating**

### ***Equipment:***

<b><i>Type</i></b>	<b>#</b>	<b>Hrs/day</b>	<b>CalEEMod Designation</b>
Air compressor	1	8	Air compressor
Cement/Mortar Mixers	1	8	Cement/Mortar Mixers
Forklifts	1	8	Forklifts
Sweeper/Scrubbers	1	8	Sweeper/Scrubbers

## 11111 Jefferson Boulevard Operational Assumptions

Existing to be removed

Land Use	Building SQFT	Building KFS	Units/ Spaces	Acres	CalEEMod Category
U.S. Post Office	27,225	27.23		2.67	General Office
High Turnover Sit-down	6,064	6.06		0.59	Convenience market
Valvoline Instant Oil Change	1,722	1.72		0.17	Valvoline Instant Oil Change
Total				3.43	

### Mobile source emissions

Land Use	PM Trips	% Total	Daily Trips	Trips/size	VMT
<b>Existing</b>					
Highturnover sit-down:			1,579	57.982	
Automtoive Service Center:			352	57.982	
Post Office:			100	57.982	
Total:	203		2,030		
<b>Project</b>					
Residential:	86	18%	890	3.868	
Market:	245	51%	2,534	65.654	
High Turnover Sit-down:	22	5%	228	68.959	
Fast Food:	96	20%	993	136.028	
Coffee & Bakery:					
Office:	11	2%	114	9.937	
Retial:	10	2%	103	26.523	
Gym/Fitness:	7	1%	72	37.132	
Total:	477		4,934		
Daily VMT				32,558	
Annual VMT					11,883,670

Source: Fehr & Peers 2020. 11111 Jefferson Project. December

Notes:

- VMT per trip in CalEEMod adjusted to result in Annual VMT consistent with the Traffic Study.

-CalEEMod updated to EMFAC 2017 with SAFE adjusted emission factors.

### Area Sources

Defaults used		
No wood hearth or wood stoves (SCAQMD Regulations)		
11.5		
195.5	0.894736842	206
23	0.105263158	24

**Solid Waste**

Default used and adjusted for 44% recycle/reuse rate achieved by California.

Source: CalRecycle 2020. California's Statewide Recycling Rate. Available:  
<https://www.calrecycle.ca.gov/75percent/RecycleRate/> Accessed December 2020.

Land Use	Default	Adjusted
	<b>Existing</b>	
Highturnover sit-down:	72.110	40.382
Automtoive Service Center:	6.570	3.679
Post Office:	25.320	14.179
	<b>Project</b>	
Residential:	106	59.265
Market:	218	121.912
High Turnover Sit-down:	39	21.991
Fast Food:	84	47.090
Coffee & Bakery:		
Office:	11	5.964
Retial:	4	2.290
Gym/Fitness:	11	6.227

**Water and Wastewater**

Source: Kimley Horn 2020. 11111 Jefferson Boulevard Utility Infrastructure Technical Report: Water, Wastewater, and Dry Utilities. September 10.

Land Use	GPD	GPY
	<b>Existing</b>	
Highturnover sit-down:	6,064	2,213,360.00
Automtoive Service Center:	172	62,780.00
Post Office:	2,723	993,895.00
	<b>Project</b>	
Residential:	35,880	13,096,200.00
Market:	5,790	2,113,350.00
High Turnover Sit-down:	3,300	1,204,500.00
Fast Food:	4,900	1,788,500.00
Coffee & Bakery:	2,400	876,000.00
Office:	2,290	835,850.00
Retial:	585	213,525.00
Gym/Fitness:	1,170	427,050.00

Note: Based on technical report the analysis assumes 100% indoor water use

**Energy Use**

Uses default rates adjusted for 2013 (Existing) and 2019 (Project) Title 24 rates

% change from 2016 (CalEEMod Default)

	2013			2019		
	Electric	Lighting	NG	Electric	Lighting	NG
Residential	28.00%	28.00%	28.00%	2.00%	0.00%	5.00%
Non-Residential	5.00%	5.00%	5.00%	10.70%	0.00%	1.00%

  

Land Use	Default			Adjusted		
	Electric	Lighting	NG	Electric	Lighting	NG
<b>Existing</b>						
Highturnover sit-down:	8	7.87	42.980	8.516	8.264	45.129
Automotive Service Center:	2	3.10	13.650	2.363	3.255	14.333
Post Office:	5	3.77	10.020	4.830	3.959	10.521
<b>Project</b>						
Residential:	165	741.44	4,385.940	161.249	741.440	4166.643
Market:	4	7.03	9.830	3.947	7.030	9.732
High Turnover Sit-down:	8	7.87	42.980	7.242	7.870	42.550
Fast Food:	8	7.87	42.980	7.242	7.870	42.550
Office:	5	3.77	10.020	4.108	3.770	9.920
Retail:	4	6.26	1.150	3.581	6.260	1.139
Gym/Fitness:	2	3.10	13.650	2.009	3.100	13.514
Enclosed Parking w/ Elevator:	3.92	1.75	0	3.50056	1.75	0
<b>Project - BAU</b>						
Residential:				210.611	949.043	5614.003
Market:				4.641	7.382	10.322
High Turnover Sit-down:				8.516	8.264	45.129
Fast Food:				8.516	8.264	45.129
Office:				4.830	3.959	10.521
Retail:				4.211	6.573	1.208
Gym/Fitness:				2.363	3.255	14.333
Enclosed Parking w/ Elevator:				4.116	1.838	0.000

<sup>1</sup> Culver City solar power requirements are assumed to be included as part of 2019 Title 24 energy efficiency requirements

### Stationary Sources

Emergency Stand-by Generator

500 kWh<sup>1</sup>  
1.341022108 hp/kWh<sup>2</sup>  
670.241287 horsepower

2 hours per day operation (max testing/maintenance)  
50 hours per year operation (max testing/maintenance)  
0.85 load factor

Generator is an EPA Tier 2 generator with a DPF filter. Power rating of 85%.

Emissions Rates for the Generator are as follows:

g/hp-hr	pollutant
6.9	Nox + NMHC <sup>1</sup>
5.244	NOx <sup>3</sup>
1.656	ROG <sup>3</sup>
0.45	CO <sup>1</sup>
0.03	PM <sup>1</sup>
0.00494	SO <sub>2</sub> <sup>3</sup>
1.15	CO <sub>2</sub> <sup>3</sup>
0.0073	CH <sub>4</sub> <sup>3</sup>

(in lbs/hp-hr)

Sources:

<sup>1</sup> Rolls-Royce Group. *Diesel Generator Set MTU 10v1600 Ds500 Specification Sheet.*

<sup>2</sup> onlineconversion.com. *Energy Conversion.* Accessed February 2021.

<sup>3</sup> Ohio Environmental Protection Agency. *Calculation of Nox Emissions for Compression Ignition, Internal Combustion Engines.* - NOx is 76% of NOx + NMHC and VOC/ROG is 24%.

<sup>3</sup> CalEEMod 2017. *California Emissions Estimator Model Appendix D. Default Tables.* October.

## **2. Energy Calculation Summary**

# 11111 Jefferson Boulevard Energy Summary

## Construction Fuel Consumption Summary

Phase	gallons		# Years
	Diesel	Gas	
<b>Tank Site</b>	<b>844,682</b>	<b>113,624</b>	2.17
Annual Average	389,279	52,364	
<b>County Usage<sup>1</sup></b>	246,000,000	3,189,000,000	
<b>Project % County</b>	0.1582%	0.0016%	

Construction	Total Gallons		
<b>Tank Site</b>			
Onsite Equipment	310,323	diesel	
Haul Trucks	528,879	diesel	534,359
Vendor Trucks	5,480	diesel	
Worker Trips	113,624	gasoline	

## 11111 Jefferson Boulevard Construction Emissions

	Total CO <sub>2</sub> MT/yr	Fuel Type	Factor KGCO <sub>2</sub> /gal	Gallons
<b>Onsite</b>				
Demolition	130.06	diesel	10.21	12,738
Site Preparation	65.11	diesel	10.21	6,377
Grading/Excavation	198.59	diesel	10.21	19,451
Drainage/Utilities/ Trenching	39.09	diesel	10.21	3,829
Foundations/ Concrete Pour	1,000.08	diesel	10.21	97,951
Building Construction (2022)	1,516.64	diesel	10.21	148,545
Building Construction (2023)	132.97	diesel	10.21	13,024
Paving	63.11	diesel	10.21	6,181
Architectural Coating	22.75	diesel	10.21	2,228
		<b>Haul</b>	<b>Vendor</b>	<b>Worker</b>
		<b>gallons</b>	<b>gallons</b>	<b>gallons</b>
<b>Onroad</b>				
Demolition	5,561	520	1,305	
Site Preparation	27,351	767	962	
Grading	82,965	2,326	2,919	
Drainage/Utilities/Trenching	0	0	249	
Foundations	413,002	515	19,375	
Building Construction	0	1,353	84,900	
Paving	0	0	1,305	
Architectural Coating	0	0	2,609	
Total	528,879	5,480	113,624	

Source: CalEEMod:  
EMFAC2017:

*11111 Jefferson Blvd. Construction Emissions  
Jefferson - EMFAC2017 (12142020)*



# 11111 Jefferson Boulevard

## Energy Summary

### Annual Operational Energy Consumption

	gallons		MMBTU/yr	GWh/yr
	Diesel	Gas	Natural Gas	Electric
Existing (2020)	35,623	212,337	2,214.19	0.66
Project (2025)	75,693	386,824	6,606.75	6.03
Net Project	40,070.76	174,486.98	4,392.56	5.37
% of County	0.0163%	0.00547%	0.00144%	0.008%
%SCE/SoCal (2019)			0.00081%	0.006%

	kBTU	MMBTU	kWh	GWh	MWh
Existing <sup>2</sup>	1,741,734	1,741.73	657,165	0.66	
Total Project <sup>2</sup>	5,518,430	5,518.43	6,027,199	6.03	
Los Angeles (2019) <sup>8</sup>		304,832,096		66,120	
SCE (2018) <sup>7</sup>				87,143	
SoCal Gas (2019)		542,471,132			

#### Operational Vehicle Consumption

	Existing	Project	
Gasoline	212,337	386,824	gallons
Diesel	35,623	74,238	gallons
Electric	0	0	GWh
Natural Gas	472	1,088	MMBTU

	Total CO <sub>2</sub> MT/yr	Fuel Type	Factor KGCO <sub>2</sub> /gal	Gallons
Diesel Generator Emissions	14.86	diesel	10.21	1,455

# 11111 Jefferson Boulevard

## Energy Summary

### Assumptions/Constants

8.78 Kg of CO <sub>2</sub> per gallon of Gasoline	
10.21 Kg of CO <sub>2</sub> per gallon of Diesel	
1040 MMBtu/MMCF	1040 MMBtu
1 MWh=	0.001 GWh
100,000 BTU/therm	
0.10 MMBtu/therm	
53.12 kg CO <sub>2</sub> / thousand cubic feet <sup>8</sup>	
1037 btu/cubic foot <sup>9</sup>	
3175 Mmcf/day	1,158,875 per year
3175000000 cf/day	
3.29248E+12 BTU/day	
3,292,475 Mmbtu/day	1,201,753,375
3048320959 Los Angeles (2019) Therms <sup>5</sup>	
5424711319 SoCalGas (2019) Therms <sup>6</sup>	
1.21192053 hundred cubic feet of natural gas per gallon	

Construction	diesel	Used for trucks (haul and vendor) and off-road equipment
	gasoline	worker vehicles
Operation	diesel	Majority of trucks and buses
	gasoline	remaining vehicle mix

LCFS & Pavley assumed for on-road vehicles after year 2011

### Sources:

- 1 California Energy Commission, 2019. California Retail Fuel Outlet Annual Reporting (CEC-A15) Results. <https://www.energy.ca.gov/data-reports/energy-almanac/transportation-energy/california-retail-fuel-outlet-annual-reporting> Accessed, December 2020.
- 2 ESA, 2020 CalEEMod Output - 11111 Jefferson Blvd - Project Operational
- 3 ESA, 2020 CalEEMod Output - Jefferson - Existing Operational Only
- 4 ESA, 2020 EMFAC2017 Output - Jefferson - EMFAC2017 (12142020)
- 5 <http://www.ecdms.energy.ca.gov/gasbycounty.aspx>
- 6 <http://www.ecdms.energy.ca.gov/gasbyutil.aspx>
- 7 Southern California Edison, 2018. 2018 Annual Report, p. 2. Available: <https://www.edison.com/content/dam/eix/documents/investors/corporate-governance/eix-sce-2018-annual-report.pdf>. Accessed December 2020
- 8 Edison International and Southern California Edison, 2018. 2018 Annual Report. Available: <https://www.edison.com/content/dam/eix/documents/investors/corporate-governance/eix-sce-2018-annual-report.pdf>. Accessed October, 2019.
- 9 <https://www.eia.gov/energyexplained/units-and-calculators/energy-conversion-calculators.php>

### **3. EMFAC2017**

#### **a. 11111 Jefferson Blvd. Construction Emissions**

**Template**  
**Total On-Road Fuel Consumption**

**Template**  
**Total On-Road Fuel Consumption**

	gal/mile	gal/min
2022Hauling Hauling	0.15194685	1.49226E-05
2022Vendor Vendor	0.12346263	8.98135E-06
2022Worker Worker	0.03636982	2.00421E-06

Construction Phase	Daily One-Way Trips	Haul Days per Phase (days)	Work Hours per Day (hours/day)	One-Way Trip Distance per Day (miles)	Idling per Day (minutes)
<u>Demolition</u>	2022				
Total Haul Trips	362				
Hauling	20	61	10	30	15
Vendor	10	61	10	6.9	15
Worker	40	61	10	14.7	0
<u>Site Preparation</u>	2022				
Total Haul Trips	430				
Hauling	200	30	10	30	15
Vendor	30	30	10	6.9	15
Worker	60	30	10	14.7	0
<u>Grading</u>	2022				
Total Haul Trips	9100				
Hauling	200	91	10	30	15
Vendor	30	91	10	6.9	15
Worker	60	91	10	14.7	0
<u>Drainage/Utilities/Trenching</u>	2022				
Total Haul Trips	0				
Hauling	0	31	10	30	15
Vendor	0	31	10	6.9	15
Worker	15	31	10	14.7	0
<u>Foundations</u>	2022				
Total Haul Trips	2127				
Hauling	600	151	10	30	15
Vendor	4	151	10	6.9	15
Worker	240	151	10	14.7	0
<u>Building Construction</u>	2022				
Total Haul Trips	0				
Hauling	0	397	10	30	15
Vendor	4	397	10	6.9	15
Worker	400	397	10	14.7	0

## Template

### Total On-Road Fuel Consumption

	gal/mile	gal/min
2022Hauling Hauling	0.15194685	1.49226E-05
2022Vendor Vendor	0.12346263	8.98135E-06
2022Worker Worker	0.03636982	2.00421E-06

Construction Phase	Daily One-Way Trips	Haul Days per Phase  (days)	Work Hours per Day  (hours/day)	One-Way Trip Distance per Day (miles)	Idling per Day (minutes)
<u>Paving</u>	2022				
Total Haul Trips	0				
Hauling	0	61	10	30	15
Vendor	0	61	10	6.9	15
Worker	40	61	10	14.7	0
 <u>Architectural Coating</u>	2022				
Total Haul Trips	0				
Hauling	0	61	10	30	15
Vendor	0	61	10	6.9	15
Worker	80	61	10	14.7	0
 <u>Mitigation - 120 Trips</u>	2022				
Total Haul Trips	0				
Hauling	120	151	10	30	15
Vendor	0	151	10	6.9	15
Worker	0	151	10	14.7	0

**T** **Template**  
**Total On-Road Fuel Consumption**

Construction Phase	Regional Emissions (gallons)			
	gal/mile	gal/min	gal/day	Total Gallons/yr
<u>Demolition</u>				
Total Haul Trips				
Hauling	0.15	1.49E-05	91	5,561
Vendor	0.12	8.98E-06	9	520
Worker	0.04	2.00E-06	21	1,305
<u>Site Preparation</u>				
Total Haul Trips				
Hauling	0.15	1.49E-05	912	27,351
Vendor	0.12	8.98E-06	26	767
Worker	0.04	2.00E-06	32	962
<u>Grading</u>				
Total Haul Trips				
Hauling	0.15	1.49E-05	912	82,965
Vendor	0.12	8.98E-06	26	2,326
Worker	0.04	2.00E-06	32	2,919
<u>Drainage/Utilities/Trenching</u>				
Total Haul Trips				
Hauling	0.15	1.49E-05	0	0
Vendor	0.12	8.98E-06	0	0
Worker	0.04	2.00E-06	8	249
<u>Foundations</u>				
Total Haul Trips				
Hauling	0.15	1.49E-05	2,735	413,002
Vendor	0.12	8.98E-06	3	515
Worker	0.04	2.00E-06	128	19,375
<u>Building Construction</u>				
Total Haul Trips				
Hauling	0.15	1.49E-05	0	0
Vendor	0.12	8.98E-06	3	1,353
Worker	0.04	2.00E-06	214	84,900

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**Template**  
**Total On-Road Fuel Consumption**

Construction Phase	Regional Emissions (gallons)			
	gal/mile	gal/min	gal/day	Total Gallons/yr
<u>Paving</u>				
Total Haul Trips				
Hauling	0.15	1.49E-05	0	0
Vendor	0.12	8.98E-06	0	0
Worker	0.04	2.00E-06	21	1,305
<u>Architectural Coating</u>				
Total Haul Trips				
Hauling	0.15	1.49E-05	0	0
Vendor	0.12	8.98E-06	0	0
Worker	0.04	2.00E-06	43	2,609
<u>Mitigation - 120 Trips</u>				
Total Haul Trips				
Hauling	0.15	1.49E-05	547	82,600
Vendor	0.12	8.98E-06	0	0
Worker	0.04	2.00E-06	0	0



**3. EMFAC2017**

**b. 11111 Jefferson Blvd - Project Operational**

**Template**  
**Operational Vehicle Fuel Consumption**

## Template Operational Vehicle Fuel Consumption

Unmitigated CO <sub>2</sub> e (MT/year)	<b>Existing</b>	<b>Op year 1</b>
Mitigated CO <sub>2</sub> e (MT/year)	2,274	4,249

Summary	Existing		Op year 1		
	Unmitigated	Mitigated	Unmitigated	Mitigated	
Gasoline	212,337	0	386,824	0	gallons
Diesel	35,623	0	74,238	0.00	gallons
Electric	0.00	0.00	0.00	0.00	GWh
Natural Gas	472.46	0.00	1,088.32	0.00	MBTU

Existing 2020

Unmitigated Calculations

	% Emissions	CO <sub>2</sub> e (MT)	CO <sub>2</sub> e (kg)	CO <sub>2</sub> e (lbs)	kg CO2/gallon	Gallons	Mcf	MBTU	GWh
Gasoline	0.830175983	1887.676067	1,887,676	NA	8.89	212,337	NA	NA	NA
Diesel	0.159170192	361.9253849	361,925	NA	10.16	35,623	NA	NA	NA
Electric	0	0	NA	0	NA	NA	NA	NA	0.00
Natural Gas	0.010653825	24.22494845	24,225	NA	NA	NA	456.04	472.46	NA

Mitigated Calculations

	% Emissions	CO <sub>2</sub> e (MT)	CO <sub>2</sub> e (kg)	CO <sub>2</sub> e (lbs)	kg CO2/gallon	Gallons	Mcf	MBTU	GWh
Gasoline	0.830175983	0	0	NA	8.89	0	NA	NA	NA
Diesel	0.159170192	0	0	NA	10.16	0	NA	NA	NA
Electric	0	0	NA	0	NA	NA	NA	NA	0.00
Natural Gas	0.010653825	0	0	NA	NA	NA	0.00	0.00	NA

Operational Year 1 2025

Unmitigated Calculations

	% Emissions	CO <sub>2</sub> e (MT)	CO <sub>2</sub> e (kg)	CO <sub>2</sub> e (lbs)	kg CO2/gallon	Gallons	Mcf	MBTU	GWh
Gasoline	0.809349851	3438.869243	3,438,869	NA	8.89	386,824	NA	NA	NA
Diesel	0.177516743	754.2558589	754,256	NA	10.16	74,238	NA	NA	NA
Electric	0	0	NA	0	NA	NA	NA	NA	0.00
Natural Gas	0.013133406	55.80289829	55,803	NA	NA	NA	1,050.51	1,088.32	NA

Mitigated Calculations

	% Emissions	CO <sub>2</sub> e (MT)	CO <sub>2</sub> e (kg)	CO <sub>2</sub> e (lbs)	kg CO2/gallon	Gallons	Mcf	MBTU	GWh
Gasoline	0.809349851	0	0	NA	8.89	0	NA	NA	NA
Diesel	0.177516743	0	0	NA	10.16	0	NA	NA	NA
Electric	0	0	NA	0	NA	NA	NA	NA	0.00
Natural Gas	0.013133406	0	0	NA	NA	NA	0.00	0.00	NA

## Template Operational Vehicle Fuel Consumption

### Emissions Percentage

	2020	2021	2022
Gasoline	0.830175983	0.825152152	0.820835292
Diesel	0.159170192	0.163720699	0.16753441
Electric	0	0	0
Natural Gas	0.010653825	0.011127148	0.011630299

### Conversion Factors:

1000 kg/MT			
8.89 kg CO <sub>2</sub> /gallon gasoline	<a href="https://www.eia.gov/environment/emissions/co2_vol_mass.php">https://www.eia.gov/environment/emissions/co2_vol_mass.php</a>		Feb. 2016
10.16 kg CO <sub>2</sub> /gallon diesel	<a href="https://www.eia.gov/environment/emissions/co2_vol_mass.php">https://www.eia.gov/environment/emissions/co2_vol_mass.php</a>		Feb. 2016
53.12 kg CO <sub>2</sub> / thousand cubic feet	<a href="https://www.eia.gov/environment/emissions/co2_vol_mass.php">https://www.eia.gov/environment/emissions/co2_vol_mass.php</a>		Feb. 2016
1036 btu/cubic foot			
503.95 CO <sub>2</sub> lbs/MWh	Project Specific Existing		
401.15 CO <sub>2</sub> lbs/MWh	Project Specific Op Year 1	2021	
CO <sub>2</sub> lbs/MWh	Project Specific Op Year 2	2035	
0.907185 MT/ton			
2000 lbs/ton			