

## **APPENDIX C**

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### Air Quality and Greenhouse Gas Emissions Calculations

**PG&E R-687 L-215 San Joaquin River Crossing Replacement Project**  
**Phase 1: Site Support/Project Management**

**OFF-ROAD SOURCES**

Source	Fuel	BHP	Number	Total Hours per Source	Emission Factors: pounds/BHP-hr <sup>1</sup>								Total English Tons							
					NO <sub>x</sub>	ROG	PM10	PM2.5	CO	CO2	CH4	N2O	NO <sub>x</sub>	ROG	PM10	PM2.5	CO	CO2	CH4	N2O
Excavator	Diesel	310	0	0	0.00173	0.00015	0.00005	0.00005	0.00096	0.44473	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Light plant	Diesel	20	4	672	0.00742	0.00093	0.00035	0.00032	0.00482	0.92723	0.000023	0.000010	0.20	0.02	0.01	0.01	0.13	24.92	0.001	0.000
Generator (40 KW)	Diesel	60	1	672	0.00033	0.00033	0.00003	0.00003	0.00389	0.37887	0.000023	0.000010	0.01	0.01	0.00	0.00	0.08	7.64	0.000	0.000
Air compressor	Diesel	50	1	672	0.00259	0.00018	0.00008	0.00007	0.00277	0.37887	0.000023	0.000010	0.04	0.00	0.00	0.00	0.05	6.37	0.000	0.000
Welding machine	Diesel	20	0	0	0.00453	0.00062	0.00022	0.00020	0.00287	0.56374	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Slide-boom pipelayer	Diesel	260	0	0	0.00488	0.00039	0.00020	0.00018	0.00207	0.49875	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Skid-steer loader	Diesel	75	0	0	0.00202	0.00015	0.00009	0.00008	0.00286	0.42879	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Backhoe	Diesel	75	0	0	0.01026	0.00131	0.00082	0.00076	0.00435	0.42882	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Dozer (D6)	Diesel	215	0	0	0.00488	0.00039	0.00020	0.00018	0.00207	0.49875	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
HDD drill rig	Diesel	700	0	0	0.00136	0.00012	0.00005	0.00004	0.00109	0.59053	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Mud pump	Diesel	600	0	0	0.00124	0.00008	0.00005	0.00005	0.00083	0.34080	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Fill pump	Gasoline	10	0	0	0.00710	0.00948	0.00407	0.00307	0.34576	0.65330	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Pipe flush pump	Gasoline	20	0	0	0.00710	0.00948	0.00407	0.00307	0.34576	0.65330	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Concrete pump	Diesel	300	0	0	0.00097	0.00008	0.00003	0.00003	0.00065	0.34080	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
					<b>0.26</b>	<b>0.03</b>	<b>0.01</b>	<b>0.01</b>	<b>0.26</b>	<b>38.93</b>	<b>0.001</b>	<b>0.001</b>								

**ON-ROAD SOURCES**

On Road Sources	Miles/Trip <sup>2</sup>	Total Trips	Emission Factors, grams/mile <sup>3</sup>								Total English Tons							
			NO <sub>x</sub>	ROG	PM10	PM2.5	CO	CO2	CH4	N2O	NO <sub>x</sub>	ROG	PM10	PM2.5	CO	CO2	CH4	N2O
Light-duty truck (LD12)	40	168	0.12375	0.02129	0.00139	0.00128	1.29305	331.5704	0.00466	0.00908	0.0009	0.0002	0.0000	0.0000	0.0096	2.4561	0.0000	0.0001
Medium-duty truck (MDV)	40	84	0.07819	0.01228	0.00847	0.00619	0.18535	346.6425	0.00057	0.05449	0.0003	0.0000	0.0000	0.0000	0.0007	1.2839	0.0000	0.0002
Heavy-duty truck (T6 instate)	0	0	3.88892	0.15147	0.08338	0.07977	0.55408	973.1576	0.00704	0.15297	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water Truck (on-site) <sup>4</sup>	20	84	3.88892	0.15147	0.08338	0.07977	0.55408	973.1576	0.00704	0.15297	0.0072	0.0003	0.0002	0.0001	0.0010	1.8021	0.0000	0.0003
<b>Totals =&gt;</b>											<b>0.0084</b>	<b>0.0005</b>	<b>0.0002</b>	<b>0.0002</b>	<b>0.0113</b>	<b>5.5421</b>	<b>0.0001</b>	<b>0.0006</b>

Off-Road & On-Road Source Totals      0.268      0.035      0.012      0.011      0.266      44.489      0.002      0.001

Notes:

<sup>1</sup> Emission factors from OFFROAD 2017 (ver 1.0.1) for the San Joaquin Valley Air Basin

<sup>2</sup> Round trip distance to Modesto

<sup>3</sup> Emission factors from EMFAC 2017 for Stanislaus County year 2020 annual emissions

<sup>4</sup> Assumes 20 miles per day cycling through work areas, total trips=work days

**Greenhouse Gas Emissions Summary**

Metric Tons	39.705	0.001	0.001
CO2E	39.705	0.039	0.282
Total CO2E			<b>40.0</b>

**PG&E R-687 L-215 San Joaquin River Crossing Replacement Project**  
**Phase 1: Pipe/Materials Procurement**

**OFF-ROAD SOURCES**

Source	Fuel	BHP	Number	Total Hours per Source	Emission Factors: pounds/BHP-hr <sup>1</sup>								Total English Tons							
					NO <sub>x</sub>	ROG	PM10	PM2.5	CO	CO2	CH4	N2O	NO <sub>x</sub>	ROG	PM10	PM2.5	CO	CO2	CH4	N2O
Excavator	Diesel	310	2	48	0.00173	0.00015	0.00005	0.00005	0.00096	0.44473	0.000023	0.000010	0.03	0.00	0.00	0.00	0.01	6.62	0.000	0.000
Light plant	Diesel	20	0	0	0.00742	0.00093	0.00035	0.00032	0.00482	0.92723	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Generator (40 KVA)	Diesel	60	0	0	0.00033	0.00033	0.00003	0.00003	0.00389	0.37887	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Air compressor (185 cfm)	Diesel	50	0	0	0.00259	0.00018	0.00008	0.00007	0.00277	0.37887	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Welding machine	Diesel	20	0	0	0.00453	0.00062	0.00022	0.00020	0.00287	0.56374	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Side-boom pipelayer	Diesel	260	0	0	0.00488	0.00039	0.00020	0.00018	0.00207	0.49875	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Skid-steer loader	Diesel	75	0	0	0.00202	0.00015	0.00009	0.00008	0.00266	0.42879	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Backhoe	Diesel	75	0	0	0.01026	0.00131	0.00082	0.00076	0.00435	0.42882	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Dozer (D6)	Diesel	215	0	0	0.00488	0.00039	0.00020	0.00018	0.00207	0.49875	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
HDD drill rig	Diesel	700	0	0	0.00136	0.00012	0.00005	0.00004	0.00169	0.59053	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Mud pump	Diesel	600	0	0	0.00124	0.00008	0.00005	0.00005	0.00063	0.34080	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Fill pump	Gasoline	10	0	0	0.00710	0.00948	0.00407	0.00307	0.34576	0.85330	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Pipe flush pump	Gasoline	20	0	0	0.00710	0.00948	0.00407	0.00307	0.34576	0.85330	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Concrete pump	Diesel	300	0	0	0.00097	0.00008	0.00003	0.00003	0.00065	0.34080	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
													<b>0.026</b>	<b>0.002</b>	<b>0.001</b>	<b>0.001</b>	<b>0.014</b>	<b>6.618</b>	<b>0.0003</b>	<b>0.0001</b>

**ON-ROAD SOURCES**

On Road Sources	Miles/Trip	Total Trips	Emission Factors, grams/mile <sup>3</sup>								Total English Tons							
			NO <sub>x</sub>	ROG	PM10	PM2.5	CO	CO2	CH4	N2O	NO <sub>x</sub>	ROG	PM10	PM2.5	CO	CO2	CH4	N2O
Light-duty truck (LDT2) <sup>2,4</sup>	40	24	0.12375	0.02129	0.00139	0.00128	1.29305	331.5704	0.00496	0.00908	0.0001	0.0000	0.0000	0.0000	0.0014	0.3509	0.0000	0.0000
Medium-duty truck (MDV)	0	0	0.07819	0.01228	0.00647	0.00619	0.18535	346.6425	0.00057	0.05449	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Heavy-duty truck (T6 instate) <sup>5</sup>	100	30	3.88892	0.15147	0.08338	0.07977	0.55408	973.1576	0.00704	0.15297	0.0129	0.0005	0.0003	0.0003	0.0018	3.2181	0.0000	0.0005
Water Truck (on-site) <sup>5</sup>	0	0	3.88892	0.15147	0.08338	0.07977	0.55408	973.1576	0.00704	0.15297	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Totals =&gt;</b>											<b>0.0130</b>	<b>0.0005</b>	<b>0.0003</b>	<b>0.0003</b>	<b>0.0032</b>	<b>3.5690</b>	<b>0.0000</b>	<b>0.0005</b>

**Off-Road & On-Road Source Totals**      **0.039**      **0.003**      **0.001**      **0.001**      **0.017**      **10.187**      **0.0004**      **0.0007**

**Notes:**

<sup>1</sup> Emission factors from OFFROAD 2017 (ver 1.0.1) for the San Joaquin Valley Air Basin

<sup>2</sup> Round trip distance to Modesto

<sup>3</sup> Emission factors from EMFAC 2017 for Stanislaus County year 2020 annual emissions

<sup>4</sup> Assumes two workers per truck, one round trip per day

<sup>5</sup> Materials delivery

**Greenhouse Gas Emissions Summary**

<b>Metric Tons</b>	<b>9.095</b>	<b>0.000</b>	<b>0.001</b>
<b>CO2E</b>	<b>9.095</b>	<b>0.009</b>	<b>0.157</b>
<b>Total CO2E</b>			<b>9.3</b>

**PG&E R-687 L-215 San Joaquin River Crossing Replacement Project**  
**Phase 1: Excavation**

**OFF-ROAD SOURCES**

Source	Fuel	BHP	Number	Total Hours per Source	Emission Factors: pounds/BHP-hr <sup>1</sup>								Total English Tons							
					NO <sub>x</sub>	ROG	PM10	PM2.5	CO	CO2	CH4	N2O	NO <sub>x</sub>	ROG	PM10	PM2.5	CO	CO2	CH4	N2O
Excavator	Diesel	310	2	144	0.00173	0.00015	0.00005	0.00005	0.00096	0.44473	0.000023	0.000010	0.08	0.01	0.00	0.00	0.04	19.85	0.001	0.000
Light plant	Diesel	20	0	0	0.00742	0.00093	0.00035	0.00032	0.00482	0.92723	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Generator (40 KV)	Diesel	60	0	0	0.00033	0.00033	0.00003	0.00003	0.00389	0.37887	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Air compressor (185 cfm)	Diesel	50	1	144	0.00299	0.00018	0.00008	0.00007	0.00277	0.37887	0.000023	0.000010	0.01	0.00	0.00	0.00	0.01	1.36	0.000	0.000
Welding machine	Diesel	20	0	0	0.00453	0.00062	0.00022	0.00020	0.00287	0.56374	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Slide-boom pipelayer	Diesel	260	0	0	0.00488	0.00039	0.00020	0.00018	0.00207	0.49875	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Skid-steer loader	Diesel	75	0	0	0.00202	0.00015	0.00009	0.00008	0.00266	0.42879	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Backhoe	Diesel	75	0	0	0.01026	0.00131	0.00062	0.00076	0.00435	0.42882	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Dozer (D6)	Diesel	215	0	0	0.00488	0.00039	0.00020	0.00018	0.00207	0.49875	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
HDD drill rig	Diesel	700	0	0	0.00136	0.00012	0.00005	0.00004	0.00109	0.59053	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Mud pump	Diesel	600	0	0	0.00124	0.00008	0.00005	0.00005	0.00063	0.34080	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Fill pump	Gasoline	10	0	0	0.00710	0.00948	0.00407	0.00307	0.34576	0.65330	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Pipe flush pump	Gasoline	20	0	0	0.00710	0.00948	0.00407	0.00307	0.34576	0.65330	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Concrete pump	Diesel	300	0	0	0.00097	0.00008	0.00003	0.00003	0.00065	0.34080	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
													0.087	0.007	0.003	0.002	0.053	21.217	0.0011	0.0005

**ON-ROAD SOURCES**

On Road Sources	Miles/Trip	Total Trips	Emission Factors, grams/mile <sup>3</sup>								Total English Tons							
			NO <sub>x</sub>	ROG	PM10	PM2.5	CO	CO2	CH4	N2O	NO <sub>x</sub>	ROG	PM10	PM2.5	CO	CO2	CH4	N2O
Light-duty truck (LD <sub>2</sub> ) <sup>2,4</sup>	40	72	0.12375	0.02129	0.00139	0.00128	1.29305	331.5704	0.00496	0.00908	0.0004	0.0001	0.0000	0.0000	0.0041	1.0526	0.0000	0.0000
Medium-duty truck (MDV)	0	0	0.07819	0.01228	0.00647	0.00619	0.18535	346.6425	0.00057	0.05449	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Heavy-duty truck (T6 instate)	0	0	3.88892	0.15147	0.08338	0.07977	0.55408	973.1576	0.00704	0.15297	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water Truck (on-site) <sup>5</sup>	0	0	3.88892	0.15147	0.08338	0.07977	0.55408	973.1576	0.00704	0.15297	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Totals =>											0.0004	0.0001	0.0000	0.0000	0.0041	1.0526	0.0000	0.0000

Off-Road & On-Road Source Totals      0.087      0.007      0.003      0.002      0.057      22.269      0.0011      0.0005

**Notes:**

<sup>1</sup> Emission factors from OFFROAD 2017 (ver 1.0.1) for the San Joaquin Valley Air Basin

<sup>2</sup> Round trip distance to Modesto

<sup>3</sup> Emission factors from EMFAC 2017 for Stanislaus County year 2020 annual emissions

<sup>4</sup> Assumes two workers per truck, one round trip per day

<sup>5</sup> Assumes 20 miles per day cycling through work areas, total trips=work days

**Greenhouse Gas Emissions Summary**

Metric Tons	19.883	0.001	0.000
CO2E	19.883	0.029	0.121
Total CO2E			20.0



**PG&E R-687 L-215 San Joaquin River Crossing Replacement Project**  
**Phase 1: Pipe String Welding**

**OFF-ROAD SOURCES**

Source	Fuel	BHP	Number	Total Hours per Source	Emission Factors: pounds/BHP-hr <sup>1</sup>								Total English Tons							
					NO <sub>x</sub>	ROG	PM10	PM2.5	CO	CO2	CH4	N2O	NO <sub>x</sub>	ROG	PM10	PM2.5	CO	CO2	CH4	N2O
Excavator	Diesel	310	2	304	0.00173	0.00015	0.00005	0.00005	0.00096	0.44473	0.000023	0.000010	0.16	0.01	0.00	0.00	0.09	41.91	0.002	0.001
Light plant	Diesel	20	0	0	0.00742	0.00093	0.00035	0.00032	0.00482	0.92723	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Generator (40 KW)	Diesel	60	0	0	0.00033	0.00033	0.00003	0.00003	0.00389	0.37887	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Air compressor (185 cfm)	Diesel	50	0	0	0.00259	0.00018	0.00008	0.00007	0.00277	0.37887	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Welding machine	Diesel	20	6	304	0.00453	0.00062	0.00022	0.00020	0.00287	0.56374	0.000023	0.000010	0.08	0.01	0.00	0.00	0.05	10.28	0.000	0.000
Side-boom pipelayer	Diesel	260	1	304	0.00488	0.00039	0.00020	0.00018	0.00207	0.49675	0.000023	0.000010	0.19	0.02	0.01	0.01	0.08	19.71	0.001	0.000
Skid-steer loader	Diesel	75	0	0	0.00202	0.00015	0.00009	0.00008	0.00266	0.42879	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Backhoe	Diesel	75	0	0	0.01026	0.00131	0.00082	0.00076	0.00435	0.42862	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Dozer (D6)	Diesel	215	0	0	0.00468	0.00039	0.00020	0.00018	0.00207	0.49675	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
HDD drill rig	Diesel	700	0	0	0.00136	0.00012	0.00005	0.00004	0.00109	0.59053	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Mud pump	Diesel	600	0	0	0.00124	0.00008	0.00005	0.00005	0.00063	0.34060	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Fill pump	Gasoline	10	0	0	0.00710	0.00948	0.00407	0.00307	0.34576	0.65330	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Pipe flush pump	Gasoline	20	0	0	0.00710	0.00948	0.00407	0.00307	0.34576	0.65330	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Concrete pump	Diesel	300	0	0	0.00097	0.00008	0.00003	0.00003	0.00065	0.34060	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
													<b>0.439</b>	<b>0.041</b>	<b>0.017</b>	<b>0.016</b>	<b>0.225</b>	<b>71.905</b>	<b>0.0036</b>	<b>0.0015</b>

**ON-ROAD SOURCES**

On Road Sources	Miles/Trip <sup>2</sup>	Total Trips	Emission Factors, grams/mile <sup>3</sup>								Total English Tons							
			NO <sub>x</sub>	ROG	PM10	PM2.5	CO	CO2	CH4	N2O	NO <sub>x</sub>	ROG	PM10	PM2.5	CO	CO2	CH4	N2O
Light-duty truck (LDT2) <sup>4</sup>	40	380	0.12375	0.02129	0.00139	0.00128	1.28305	331.5704	0.00498	0.00908	0.0021	0.0004	0.0000	0.0000	0.0217	5.5554	0.0001	0.0002
Medium-duty truck (MDV)	40	266	0.07819	0.01228	0.00647	0.00619	0.18535	346.6425	0.00057	0.05449	0.0009	0.0001	0.0001	0.0001	0.0022	4.0656	0.0000	0.0006
Heavy-duty truck (T6 instate)	0	0	3.88992	0.15147	0.08338	0.07977	0.55406	973.1576	0.00704	0.15297	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water Truck (on-site) <sup>5</sup>	0	0	3.88992	0.15147	0.08338	0.07977	0.55406	973.1576	0.00704	0.15297	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Totals =&gt;</b>											<b>0.0030</b>	<b>0.0005</b>	<b>0.0001</b>	<b>0.0001</b>	<b>0.0238</b>	<b>9.6210</b>	<b>0.0001</b>	<b>0.0006</b>

**Off-Road & On-Road Source Totals**      **0.442**      **0.041**      **0.017**      **0.016**      **0.248**      **81.526**      **0.0036**      **0.0023**

**Notes:**

<sup>1</sup> Emission factors from OFFROAD 2017 (ver 1.0.1) for the San Joaquin Valley Air Basin

<sup>2</sup> Round trip distance to Modesto

<sup>3</sup> Emission factors from EMFAC 2017 for Stanislaus County year 2020 annual emissions

<sup>4</sup> Assumes two workers per truck, one round trip per day

<sup>5</sup> Assumes 20 miles per day cycling through work areas, total trips=work days

**Greenhouse Gas Emissions Summary**

<b>Metric Tons</b>	<b>72.791</b>	<b>0.003</b>	<b>0.002</b>
<b>CO2E</b>	<b>72.791</b>	<b>0.091</b>	<b>0.547</b>
<b>Total CO2E</b>			<b>73.4</b>

**PG&E R-687 L-215 San Joaquin River Crossing Replacement Project**  
**Phase 1: Pipe Installation**

**OFF-ROAD SOURCES**

Source	Fuel	BHP	Number	Total Hours per Source	Emission Factors: pounds/BHP-hr <sup>1</sup>								Total English Tons							
					NO <sub>x</sub>	ROG	PM10	PM2.5	CO	CO2	CH4	N2O	NO <sub>x</sub>	ROG	PM10	PM2.5	CO	CO2	CH4	N2O
Excavator	Diesel	310	2	88	0.00173	0.00015	0.00005	0.00005	0.00096	0.44473	0.000023	0.000010	0.05	0.00	0.00	0.00	0.03	12.13	0.001	0.000
Light plant	Diesel	20	0	0	0.00742	0.00093	0.00035	0.00032	0.00482	0.92723	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Generator (40 KW)	Diesel	60	0	0	0.00033	0.00033	0.00003	0.00003	0.00399	0.37887	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Air compressor (185 cfm)	Diesel	50	1	88	0.00259	0.00018	0.00008	0.00007	0.00277	0.37887	0.000023	0.000010	0.01	0.00	0.00	0.00	0.01	0.83	0.000	0.000
Welding machine	Diesel	20	2	88	0.00453	0.00062	0.00022	0.00020	0.00287	0.56374	0.000023	0.000010	0.01	0.00	0.00	0.00	0.01	0.99	0.000	0.000
Side-boom pipelayer	Diesel	260	0	0	0.00488	0.00039	0.00020	0.00018	0.00207	0.49875	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Skid-steer loader	Diesel	75	0	0	0.00202	0.00015	0.00009	0.00008	0.00266	0.42879	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Backhoe	Diesel	75	0	0	0.01026	0.00131	0.00082	0.00076	0.00435	0.42882	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Dozer (D6)	Diesel	215	0	0	0.00488	0.00039	0.00020	0.00018	0.00207	0.49875	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
HDD drill rig	Diesel	700	0	0	0.00136	0.00012	0.00005	0.00004	0.00109	0.59053	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Mud pump	Diesel	600	0	0	0.00124	0.00008	0.00005	0.00005	0.00063	0.34080	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Fill pump	Gasoline	10	0	0	0.00710	0.00948	0.00407	0.00307	0.34576	0.65330	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Pipe flush pump	Gasoline	20	0	0	0.00710	0.00948	0.00407	0.00307	0.34576	0.65330	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Concrete pump	Diesel	300	0	0	0.00097	0.00008	0.00003	0.00003	0.00065	0.34080	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
													0.061	0.006	0.002	0.002	0.037	13.968	0.0007	0.0003

**ON-ROAD SOURCES**

On Road Sources	Miles/Trip	Total Trips	Emission Factors, grams/mile <sup>3</sup>								Total English Tons							
			NO <sub>x</sub>	ROG	PM10	PM2.5	CO	CO2	CH4	N2O	NO <sub>x</sub>	ROG	PM10	PM2.5	CO	CO2	CH4	N2O
Light-duty truck (LDT) <sup>2,4</sup>	40	66	0.12375	0.02129	0.00139	0.00128	1.29305	331.5704	0.00496	0.00908	0.0004	0.0001	0.0000	0.0000	0.0038	0.9649	0.0000	0.0000
Medium-duty truck (MDV) <sup>2</sup>	40	33	0.07819	0.01228	0.00647	0.00619	0.18535	346.6425	0.00057	0.05449	0.0001	0.0000	0.0000	0.0000	0.0003	0.5044	0.0000	0.0001
Heavy-duty truck (T6 instate)	0	0	3.88892	0.15147	0.08338	0.07977	0.55408	973.1576	0.00704	0.15297	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water Truck (on-site) <sup>5</sup>	0	0	3.88892	0.15147	0.08338	0.07977	0.55408	973.1576	0.00704	0.15297	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Totals =>											0.0005	0.0001	0.0000	0.0000	0.0040	1.4693	0.0000	0.0001

Off-Road & On-Road Source Totals      0.061      0.006      0.002      0.002      0.041      15.427      0.0007      0.0004

**Notes:**

- <sup>1</sup> Emission factors from OFFROAD 2017 (ver 1.0.1) for the San Joaquin Valley Air Basin
- <sup>2</sup> Round trip distance to Modesto
- <sup>3</sup> Emission factors from EMFAC 2017 for Stanislaus County year 2020 annual emissions
- <sup>4</sup> Assumes two workers per truck, one round trip per day
- <sup>5</sup> Assumes 20 miles per day cycling through work areas, total trips=work days

**Greenhouse Gas Emissions Summary**

Metric Tons	13.774	0.001	0.000
CO2E	13.774	0.019	0.099
Total CO2E			13.9

**PG&E R-687 L-215 San Joaquin River Crossing Replacement Project**  
**Phase 1: HDD Operation**

**OFF-ROAD SOURCES**

Source	Fuel	BHP	Number	Total Hours per Source	Emission Factors: pounds/BHP-hr <sup>1</sup>								Total English Tons							
					NO <sub>x</sub>	ROG	PM10	PM2.5	CO	CO2	CH4	N2O	NO <sub>x</sub>	ROG	PM10	PM2.5	CO	CO2	CH4	N2O
Excavator	Diesel	310	2	480	0.00173	0.00015	0.00005	0.00005	0.00096	0.44473	0.000023	0.000010	0.26	0.02	0.01	0.01	0.14	66.18	0.003	0.001
Light plant	Diesel	20	0	0	0.00742	0.00093	0.00035	0.00032	0.00482	0.92723	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Generator (40 KVA)	Diesel	60	0	0	0.00033	0.00033	0.00003	0.00003	0.00389	0.37887	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Air compressor (185 cfm)	Diesel	50	0	0	0.00259	0.00018	0.00008	0.00007	0.00277	0.37887	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Welding machine	Diesel	20	0	0	0.00453	0.00062	0.00022	0.00020	0.00287	0.56374	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Side-boom pipelayer	Diesel	260	0	0	0.00488	0.00039	0.00020	0.00018	0.00207	0.49875	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Skid-steer loader	Diesel	75	2	480	0.00202	0.00015	0.00009	0.00008	0.00286	0.42879	0.000023	0.000010	0.07	0.01	0.00	0.00	0.10	15.44	0.001	0.000
Backhoe	Diesel	75	0	0	0.01026	0.00131	0.00082	0.00076	0.00435	0.42882	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Dozer (D6)	Diesel	215	1	480	0.00488	0.00039	0.00020	0.00018	0.00207	0.49875	0.000023	0.000010	0.25	0.02	0.01	0.01	0.11	25.74	0.001	0.001
HDD drill rig	Diesel	700	2	600	0.00136	0.00012	0.00005	0.00004	0.00109	0.59053	0.000023	0.000010	0.57	0.05	0.02	0.02	0.46	248.02	0.010	0.004
Mud pump	Diesel	600	2	600	0.00124	0.00008	0.00005	0.00005	0.00063	0.34080	0.000023	0.000010	0.45	0.03	0.02	0.02	0.23	122.69	0.008	0.004
Fill pump	Gasoline	10	0	0	0.00710	0.00948	0.00407	0.00307	0.34576	0.65330	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Pipe flush pump	Gasoline	20	0	0	0.00710	0.00948	0.00407	0.00307	0.34576	0.65330	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Concrete pump	Diesel	300	0	0	0.00097	0.00008	0.00003	0.00003	0.00065	0.34080	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
													<b>1.600</b>	<b>0.127</b>	<b>0.060</b>	<b>0.054</b>	<b>1.030</b>	<b>478.06</b>	<b>0.0238</b>	<b>0.0102</b>

**ON-ROAD SOURCES**

On Road Sources	Miles/Trip	Total Trips	Emission Factors, grams/mile <sup>3</sup>								Total English Tons							
			NO <sub>x</sub>	ROG	PM10	PM2.5	CO	CO2	CH4	N2O	NO <sub>x</sub>	ROG	PM10	PM2.5	CO	CO2	CH4	N2O
Light-duty truck (LDT2) <sup>2,4</sup>	40	630	0.12375	0.02129	0.00139	0.00128	1.29305	331.5704	0.00496	0.00908	0.0034	0.0006	0.0000	0.0000	0.0359	9.2103	0.0001	0.0003
Medium-duty truck (MDV)	0	0	0.07819	0.01228	0.00547	0.00619	0.18535	346.6425	0.00057	0.05449	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Heavy-duty truck (T6 instate)	40	120	3.88892	0.15147	0.08338	0.07977	0.55408	973.1576	0.00704	0.15297	0.00206	0.00008	0.0004	0.0004	0.0029	5.1490	0.0000	0.0008
Heavy-duty truck (T6 instate) <sup>5</sup>	40	260	3.88892	0.15147	0.08338	0.07977	0.55408	973.1576	0.00704	0.15297	0.00206	0.00008	0.0004	0.0004	0.0029	5.1490	0.0000	0.0008
Water Truck (on-site) <sup>6</sup>	0	0	3.88892	0.15147	0.08338	0.07977	0.55408	973.1576	0.00704	0.15297	0.00206	0.00008	0.0004	0.0004	0.0029	5.1490	0.0000	0.0008
<b>Totals =&gt;</b>											<b>0.0686</b>	<b>0.0031</b>	<b>0.0014</b>	<b>0.0014</b>	<b>0.0452</b>	<b>25.5154</b>	<b>0.0003</b>	<b>0.0143</b>

**Off-Road & On-Road Source Totals**      1.668      0.130      0.061      0.056      1.075      503.574      0.0240      0.0244

**Notes:**

<sup>1</sup> Emission factors from OFFROAD 2017 (ver 1.0.1) for the San Joaquin Valley Air Basin

<sup>2</sup> Round trip distance to Modesto

<sup>3</sup> Emission factors from EMFAC 2017 for Stanislaus County year 2020 annual emissions

<sup>4</sup> Assumes two workers per truck, one round trip per day

<sup>5</sup> Water import, assumes 40 miles round trip

<sup>6</sup> Assumes 20 miles per day cycling through work areas, total trips=work days

**Greenhouse Gas Emissions Summary**

Metric Tons	449.619	0.021	0.022
CO2E	449.619	0.601	5.783
<b>Total CO2E</b>			<b>456.0</b>

**PG&E R-687 L-215 San Joaquin River Crossing Replacement Project**  
**Phase 1: Pipe String Pull-back**

**OFF-ROAD SOURCES**

Source	Fuel	BHP	Number	Total Hours per Source	Emission Factors: pounds/BHP-hr <sup>1</sup>								Total English Tons							
					NO <sub>x</sub>	ROG	PM10	PM2.5	CO	CO2	CH4	N2O	NO <sub>x</sub>	ROG	PM10	PM2.5	CO	CO2	CH4	N2O
Excavator	Diesel	310	4	16	0.00173	0.00015	0.00005	0.00005	0.00096	0.44473	0.000023	0.000010	0.02	0.00	0.00	0.00	0.01	4.41	0.000	0.000
Light plant	Diesel	20	8	8	0.00742	0.00063	0.00035	0.00032	0.00482	0.92723	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.59	0.000	0.000
Generator (40 KVV)	Diesel	60	0	0	0.00033	0.00033	0.00003	0.00003	0.00389	0.37887	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Air compressor (185 cfm)	Diesel	50	0	0	0.00259	0.00018	0.00008	0.00007	0.00277	0.37887	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Welding machine	Diesel	20	2	16	0.00453	0.00062	0.00022	0.00020	0.00287	0.56374	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.18	0.000	0.000
Slide-boom pipelayer	Diesel	260	3	16	0.00488	0.00039	0.00020	0.00018	0.00207	0.49875	0.000023	0.000010	0.03	0.00	0.00	0.00	0.01	3.11	0.000	0.000
Skid-steer loader	Diesel	75	0	0	0.00202	0.00015	0.00009	0.00008	0.00286	0.42879	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Backhoe	Diesel	75	1	16	0.01026	0.00131	0.00082	0.00076	0.00435	0.42882	0.000023	0.000010	0.01	0.00	0.00	0.00	0.00	0.26	0.000	0.000
Dozer (D6)	Diesel	215	0	0	0.00488	0.00039	0.00020	0.00018	0.00207	0.49875	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
HDD drill rig	Diesel	700	0	0	0.00136	0.00012	0.00005	0.00004	0.00109	0.59053	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Mud pump	Diesel	600	0	0	0.00124	0.00008	0.00005	0.00005	0.00063	0.34080	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Fill pump	Gasoline	10	0	0	0.00710	0.00948	0.00407	0.00307	0.34576	0.65330	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Pipe flush pump	Gasoline	20	0	0	0.00710	0.00948	0.00407	0.00307	0.34576	0.65330	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Concrete pump	Diesel	300	0	0	0.00097	0.00008	0.00003	0.00003	0.00095	0.34080	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
													0.060	0.006	0.003	0.002	0.029	8.555	0.0004	0.0002

**ON-ROAD SOURCES**

On Road Sources	Miles/Trip <sup>2</sup>	Total Trips	Emission Factors, grams/mile <sup>3</sup>								Total English Tons							
			NOx	ROG	PM10	PM2.5	CO	CO2	CH4	N2O	NOx	ROG	PM10	PM2.5	CO	CO2	CH4	N2O
Light-duty truck (LDT2) <sup>4</sup>	40	11	0.12375	0.02129	0.00139	0.00128	1.29305	331.5704	0.00496	0.00908	0.0001	0.0000	0.0000	0.0000	0.0006	0.1608	0.0000	0.0000
Medium-duty truck (MDV)	40	2	0.07819	0.01228	0.00647	0.00619	0.18535	346.6425	0.00057	0.05449	0.0000	0.0000	0.0000	0.0000	0.0000	0.0306	0.0000	0.0000
Heavy-duty truck (T6 instate)	0	0	3.88892	0.15147	0.08338	0.07977	0.55408	973.1576	0.00704	0.15297	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water Truck (on-site) <sup>5</sup>	0	0	3.88892	0.15147	0.08338	0.07977	0.55408	973.1576	0.00704	0.15297	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Totals =>											0.0001	0.0000	0.0000	0.0000	0.0006	0.1914	0.0000	0.0000

Off-Road & On-Road Source Totals      0.060      0.006      0.003      0.002      0.030      8.746      0.0004      0.0002

**Notes:**

<sup>1</sup> Emission factors from OFFROAD 2017 (ver 1.0.1) for the San Joaquin Valley Air Basin

<sup>2</sup> Round trip distance to Modesto

<sup>3</sup> Emission factors from EMFAC 2017 for Stanislaus County year 2020 annual emissions

<sup>4</sup> Assumes two workers per truck, one round trip per day

<sup>5</sup> Assumes 20 miles per day cycling through work areas, total trips=work days

**Greenhouse Gas Emissions Summary**

Metric Tons	7.809	0.000	0.000
CO2E	7.809	0.010	0.044
Total CO2E			7.9

**PG&E R-687 L-215 San Joaquin River Crossing Replacement Project**  
**Phase 1: Strength Test and Caliper Pigg**

**OFF-ROAD SOURCES**

Source	Fuel	BHP	Number	Total Hours per Source	Emission Factors: pounds/BHP-hr <sup>1</sup>								Total English Tons							
					NO <sub>x</sub>	ROG	PM10	PM2.5	CO	CO2	CH4	N2O	NO <sub>x</sub>	ROG	PM10	PM2.5	CO	CO2	CH4	N2O
Excavator	Diesel	310	1	48	0.00173	0.00015	0.00005	0.00005	0.00096	0.44473	0.000023	0.000010	0.01	0.00	0.00	0.00	0.01	3.31	0.000	0.000
Light plant	Diesel	20	0	0	0.00742	0.00093	0.00035	0.00032	0.00482	0.92723	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Generator (40 KVA)	Diesel	60	0	0	0.00033	0.00033	0.00003	0.00003	0.00389	0.37887	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Air compressor (1600 cfm)	Diesel	580	2	48	0.00120	0.00009	0.00004	0.00004	0.00064	0.34080	0.000023	0.000010	0.03	0.00	0.00	0.00	0.02	9.49	0.001	0.000
Welding machine	Diesel	20	2	48	0.00453	0.00062	0.00022	0.00020	0.00287	0.56374	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.54	0.000	0.000
Side-boom pipelayer	Diesel	260	0	0	0.00488	0.00039	0.00020	0.00018	0.00207	0.49875	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Skid-steer loader	Diesel	75	0	0	0.00202	0.00015	0.00009	0.00008	0.00266	0.42879	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Backhoe	Diesel	75	0	0	0.01026	0.00131	0.00082	0.00076	0.00435	0.42882	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Dozer (D6)	Diesel	215	0	0	0.00488	0.00039	0.00020	0.00018	0.00207	0.49875	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
HDD drill rig	Diesel	700	0	0	0.00136	0.00012	0.00005	0.00004	0.00109	0.59053	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Mud pump	Diesel	600	0	0	0.00124	0.00008	0.00005	0.00005	0.00063	0.34080	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Fill pump	Gasoline	10	1	48	0.00710	0.00948	0.00407	0.00307	0.34576	0.65330	0.000023	0.000010	0.00	0.00	0.00	0.00	0.08	0.16	0.000	0.000
Pipe flush pump	Gasoline	20	0	0	0.00710	0.00948	0.00407	0.00307	0.34576	0.65330	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Concrete pump	Diesel	300	0	0	0.00097	0.00008	0.00003	0.00003	0.00065	0.34080	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
<b>Totals =&gt;</b>													<b>0.052</b>	<b>0.006</b>	<b>0.003</b>	<b>0.002</b>	<b>0.111</b>	<b>13.495</b>	<b>0.0009</b>	<b>0.0004</b>

**ON-ROAD SOURCES**

On Road Sources	Miles/Trip <sup>2</sup>	Total Trips	Emission Factors, grams/mile <sup>3</sup>								Total English Tons							
			NO <sub>x</sub>	ROG	PM10	PM2.5	CO	CO2	CH4	N2O	NO <sub>x</sub>	ROG	PM10	PM2.5	CO	CO2	CH4	N2O
Light-duty truck (LDT2) <sup>4</sup>	40	27	0.12375	0.02129	0.00139	0.00128	1.29305	331.5704	0.00496	0.00908	0.0001	0.0000	0.0000	0.0000	0.0015	0.3947	0.0000	0.0000
Medium-duty truck (MDV)	40	18	0.07819	0.01228	0.00647	0.00619	0.18535	346.6425	0.00057	0.05449	0.0001	0.0000	0.0000	0.0000	0.0001	0.2751	0.0000	0.0000
Heavy-duty truck (TG instate) <sup>5</sup>	18	60	3.88892	0.15147	0.08338	0.07977	0.55408	973.1576	0.00704	0.15297	0.0046	0.0002	0.0001	0.0001	0.0007	1.1585	0.0000	0.0002
Water Truck (on-site)	0	0	3.88892	0.15147	0.08338	0.07977	0.55408	973.1576	0.00704	0.15297	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Totals =&gt;</b>											<b>0.0048</b>	<b>0.0002</b>	<b>0.0001</b>	<b>0.0001</b>	<b>0.0023</b>	<b>1.8294</b>	<b>0.0000</b>	<b>0.0002</b>

Off-Road & On-Road Source Totals      0.057      0.007      0.003      0.003      0.113      15.323      0.0009      0.0006

**Notes:**

<sup>1</sup> Emission factors from OFFROAD 2017 (ver 1.0.1) for the San Joaquin Valley Air Basin

<sup>2</sup> Round trip distance to Modesto

<sup>3</sup> Emission factors from EMFAC 2017 for Stanislaus County year 2020 annual emissions

<sup>4</sup> Assumes two workers per truck, one round trip per day

<sup>5</sup> Trucking of 180,000 gallons of hydrostatic test water to Modesto WWTP

**Greenhouse Gas Emissions Summary**

Metric Tons	13.681	0.001	0.001
CO2E	13.681	0.022	0.142
Total CO2E			13.8

**PG&E R-687 L-215 San Joaquin River Crossing Replacement Project**  
**Phase 1: Backfill/Site Restoration**

**OFF-ROAD SOURCES**

Source	Fuel	BHP	Number	Total Hours per Source	Emission Factors: pounds/BHP-hr <sup>1</sup>								Total English Tons							
					NO <sub>x</sub>	ROG	PM10	PM2.5	CO	CO2	CH4	N2O	NO <sub>x</sub>	ROG	PM10	PM2.5	CO	CO2	CH4	N2O
Excavator	Diesel	310	2	80	0.00173	0.00015	0.00005	0.00005	0.00096	0.44473	0.000023	0.000010	0.04	0.00	0.00	0.00	0.02	11.03	0.001	0.000
Light plant	Diesel	20	0	0	0.00742	0.00093	0.00035	0.00032	0.00482	0.92723	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Generator (40 KW)	Diesel	60	0	0	0.00033	0.00033	0.00003	0.00003	0.00389	0.37887	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Air compressor (185 cfm)	Diesel	50	1	80	0.00259	0.00018	0.00008	0.00007	0.00277	0.37887	0.000023	0.000010	0.01	0.00	0.00	0.00	0.01	0.76	0.000	0.000
Welding machine	Diesel	20	0	0	0.00453	0.00062	0.00022	0.00020	0.00287	0.56374	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Side-boom pipelayer	Diesel	260	0	0	0.00488	0.00039	0.00020	0.00018	0.00207	0.49875	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Skid-steer loader	Diesel	75	0	0	0.00202	0.00015	0.00009	0.00008	0.00266	0.42879	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Backhoe	Diesel	75	0	0	0.01026	0.00131	0.00082	0.00076	0.00435	0.42882	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Dozer (D6)	Diesel	215	0	0	0.00488	0.00039	0.00020	0.00018	0.00207	0.49875	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
HDD drill rig	Diesel	700	0	0	0.00136	0.00012	0.00005	0.00004	0.00109	0.59053	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Mud pump	Diesel	600	0	0	0.00124	0.00008	0.00005	0.00005	0.00063	0.34080	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Fill pump	Gasoline	10	0	0	0.00710	0.00948	0.00407	0.00307	0.34576	0.65330	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Pipe flush pump	Gasoline	20	0	0	0.00710	0.00948	0.00407	0.00307	0.34576	0.65330	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Concrete pump	Diesel	300	0	0	0.00097	0.00008	0.00003	0.00003	0.00065	0.34080	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
													<b>0.048</b>	<b>0.004</b>	<b>0.001</b>	<b>0.001</b>	<b>0.029</b>	<b>11.787</b>	<b>0.0006</b>	<b>0.0003</b>

**ON-ROAD SOURCES**

On Road Sources	Miles/Trip <sup>2</sup>	Total Trips	Emission Factors, grams/mile <sup>3</sup>								Total English Tons							
			NO <sub>x</sub>	ROG	PM10	PM2.5	CO	CO2	CH4	N2O	NO <sub>x</sub>	ROG	PM10	PM2.5	CO	CO2	CH4	N2O
Light-duty truck (LDT2) <sup>4</sup>	40	45	0.12375	0.02129	0.00139	0.00128	1.29305	331.5704	0.00496	0.00908	0.0002	0.0000	0.0000	0.0000	0.0026	0.6579	0.0000	0.0000
Medium-duty truck (MDV)	0	0	0.07819	0.01228	0.00647	0.00619	0.18535	346.6425	0.00057	0.05449	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Heavy-duty truck (T6 instate) <sup>5</sup>	40	60	3.88892	0.15147	0.08338	0.07977	0.55408	973.1576	0.00704	0.15297	0.0103	0.0004	0.0002	0.0002	0.0015	2.5745	0.0000	0.0004
Heavy-duty truck (T6 instate) <sup>6</sup>	100	89	3.88892	0.15147	0.08338	0.07977	0.55408	973.1576	0.00704	0.15297	0.0382	0.0015	0.0008	0.0008	0.0054	9.5471	0.0001	0.0015
Heavy-duty truck (T6 instate)	40	20	3.88892	0.15147	0.08338	0.07977	0.55408	973.1576	0.00704	0.15297	0.0034	0.0001	0.0001	0.0001	0.0005	0.8582	0.0000	0.0001
Water Truck (on-site) <sup>7</sup>	0	0	3.88892	0.15147	0.08338	0.07977	0.55408	973.1576	0.00704	0.15297	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Totals =&gt;</b>											<b>0.0521</b>	<b>0.0021</b>	<b>0.0011</b>	<b>0.0011</b>	<b>0.0190</b>	<b>13.6376</b>	<b>0.0001</b>	<b>0.0021</b>

**Off-Road & On-Road Source Totals**      **0.100**      **0.006**      **0.003**      **0.002**      **0.039**      **25.425**      **0.0007**      **0.0023**

**Notes:**

<sup>1</sup> Emission factors from OFFROAD 2017 (ver 1.0.1) for the San Joaquin Valley Air Basin

<sup>2</sup> Round trip distance to Modesto

<sup>3</sup> Emission factors from EMFAC 2017 for Stanislaus County year 2020 annual emissions

<sup>4</sup> Assumes two workers per truck, one round trip per day

<sup>5</sup> Hydrostatic test water disposal: 180,000 gallons

<sup>6</sup> Drill cuttings (1000 cy) and waste drilling fluid (10000 gallons) disposal

<sup>7</sup> Assumes 20 miles per day cycling through work areas, total trips=work days

**Greenhouse Gas Emissions Summary**

<b>Metric Tons</b>	22.701	0.001	0.002
<b>CO2E</b>	22.701	0.018	0.550
<b>Total CO2E</b>			<b>23.3</b>

**PG&E R-687 L-215 San Joaquin River Crossing Replacement Project**  
**Phase 1: Existing Pipeline Decommissioning**

**OFF-ROAD SOURCES**

Source	Fuel	BHP	Number	Total Hours per Source	Emission Factors: pounds/BHP-hr <sup>1</sup>								Total English Tons							
					NO <sub>x</sub>	ROG	PM10	PM2.5	CO	CO2	CH4	N2O	NO <sub>x</sub>	ROG	PM10	PM2.5	CO	CO2	CH4	N2O
Excavator	Diesel	310	1	48	0.00173	0.00015	0.00005	0.00005	0.00096	0.44473	0.000023	0.000010	0.01	0.00	0.00	0.00	0.01	3.31	0.000	0.000
Light plant	Diesel	20	0	0	0.00742	0.00093	0.00035	0.00032	0.00482	0.92723	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Generator (40 KW)	Diesel	60	0	0	0.00033	0.00033	0.00003	0.00003	0.00389	0.37887	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Air compressor (185 cfm)	Diesel	50	1	8	0.00259	0.00018	0.00008	0.00007	0.00277	0.37887	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.08	0.000	0.000
Welding machine	Diesel	20	1	12	0.00453	0.00062	0.00022	0.00020	0.00287	0.56374	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.07	0.000	0.000
Side-boom pipelayer	Diesel	260	0	0	0.00488	0.00039	0.00020	0.00018	0.00207	0.49875	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Skid-steer loader	Diesel	75	0	0	0.00202	0.00015	0.00009	0.00008	0.00266	0.42879	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Backhoe	Diesel	75	0	0	0.01026	0.00131	0.00082	0.00076	0.00435	0.42882	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Dozer (D6)	Diesel	215	0	0	0.00488	0.00039	0.00020	0.00018	0.00207	0.49875	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
HDD drill rig	Diesel	700	0	0	0.00136	0.00012	0.00005	0.00004	0.00109	0.59053	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Mud pump	Diesel	600	0	0	0.00124	0.00008	0.00005	0.00005	0.00063	0.34080	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Fill pump	Gasoline	10	0	0	0.00710	0.00948	0.00407	0.00307	0.34576	0.65330	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Pipe flush pump	Gasoline	20	1	8	0.00710	0.00948	0.00407	0.00307	0.34576	0.65330	0.000023	0.000010	0.00	0.00	0.00	0.00	0.03	0.05	0.000	0.000
Concrete pump	Diesel	300	1	4	0.00097	0.00008	0.00003	0.00003	0.00065	0.34080	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.20	0.000	0.000
													0.015	0.002	0.001	0.001	0.036	3.709	0.0002	0.0001

**ON-ROAD SOURCES**

On Road Sources	Miles/Trip <sup>2</sup>	Total Trips	Emission Factors, grams/mile <sup>3</sup>								Total English Tons							
			NO <sub>x</sub>	ROG	PM10	PM2.5	CO	CO2	CH4	N2O	NO <sub>x</sub>	ROG	PM10	PM2.5	CO	CO2	CH4	N2O
Light-duty truck (LD <sup>2</sup> ) <sup>4</sup>	40	13	0.12375	0.02129	0.00139	0.00128	1.29305	331.5704	0.00496	0.00908	0.0001	0.0000	0.0000	0.0000	0.0007	0.1901	0.0000	0.0000
Medium-duty truck (MDV)	0	0	0.07819	0.01228	0.00647	0.00619	0.18535	346.6425	0.00057	0.05449	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Heavy-duty truck (T6 instate)	40	7	3.88892	0.15147	0.08338	0.07977	0.55408	973.1576	0.00704	0.15297	0.0012	0.0000	0.0000	0.0000	0.0002	0.3004	0.0000	0.0000
Water Truck (on-site) <sup>5</sup>	0	0	3.88892	0.15147	0.08338	0.07977	0.55408	973.1576	0.00704	0.15297	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Totals =>											0.0013	0.0001	0.0000	0.0000	0.0009	0.4904	0.0000	0.0001

Off-Road & On-Road Source Totals      0.016      0.002      0.001      0.001      0.037      4.199      0.0002      0.0001

**Notes:**

- <sup>1</sup> Emission factors from OFFROAD 2017 (ver 1.0.1) for the San Joaquin Valley Air Basin  
<sup>2</sup> Round trip distance to Modesto  
<sup>3</sup> Emission factors from EMFAC 2017 for Stanislaus County year 2020 annual emissions  
<sup>4</sup> Assumes two workers per truck, one round trip per day  
<sup>5</sup> Assumes 20 miles per day cycling through work areas, total trips=work days

**Greenhouse Gas Emissions Summary**

Metric Tons	3.749	0.000	0.000
CO <sub>2</sub> E	3.749	0.005	0.032
Total CO <sub>2</sub> E			3.8

**PG&E R-687 L-215 San Joaquin River Crossing Replacement Project**  
**Phase 1: Air Pollutant and Greenhouse Gas Emissions Totals**

Task	Total English Tons					Metric Tons			
	NOx	ROG	PM10	PM2.5	CO	CO2	CH4	N2O	CO2E
Site Support/Project Management	0.258	0.035	0.012	0.011	0.266	39.705	0.001	0.001	40.0
Pipe/Materials Procurement	0.039	0.003	0.001	0.001	0.017	9.095	0.000	0.001	9.3
Excavation	0.087	0.007	0.003	0.002	0.057	19.883	0.001	0.000	20.0
Pipe String Welding	0.442	0.041	0.017	0.016	0.248	72.791	0.003	0.002	73.4
Pipe Installation	0.061	0.006	0.002	0.002	0.041	13.774	0.001	0.000	13.9
HDD Operation	1.668	0.130	0.061	0.056	1.075	449.619	0.021	0.022	456.0
Pipe String Pull-back	0.060	0.006	0.003	0.002	0.030	7.809	0.000	0.000	7.9
Strength Test and Caliper Pigging	0.057	0.007	0.003	0.003	0.113	13.681	0.001	0.001	13.8
Backfill/Site Restoration	0.100	0.006	0.003	0.002	0.039	22.701	0.001	0.002	23.3
Existing Pipeline Decommissioning	0.016	0.002	0.001	0.001	0.037	3.749	0.000	0.000	3.8
<b>Total</b>	<b>2.788</b>	<b>0.243</b>	<b>0.104</b>	<b>0.095</b>	<b>1.924</b>	<b>652.808</b>	<b>0.030</b>	<b>0.029</b>	<b>661.4</b>

3/6/2020



Totals



**PG&E R-687 L-215 San Joaquin River Crossing Replacement Project**  
**Phase 2: Mobilization**

**OFF-ROAD SOURCES**

Source	Fuel	BHP	Number	Total Hours per Source	Emission Factors: pounds/BHP-hr <sup>1</sup>								Total English Tons							
					NO <sub>x</sub>	ROG	PM10	PM2.5	CO	CO2	CH4	N2O	NO <sub>x</sub>	ROG	PM10	PM2.5	CO	CO2	CH4	N2O
Excavator	Diesel	310	0	0	0.00173	0.00015	0.00005	0.00005	0.00096	0.44473	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Wheel loader	Diesel	240	0	0	0.00224	0.00018	0.00007	0.00007	0.00101	0.42804	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Generator (60 KW)	Diesel	75	0	0	0.00033	0.00033	0.00003	0.00003	0.00389	0.37887	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Air compressor	Diesel	20	0	0	0.00485	0.00068	0.00023	0.00021	0.00287	0.80481	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Dive compressor	Diesel	50	0	0	0.00470	0.00092	0.00028	0.00026	0.00554	0.80125	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Welding machine	Diesel	20	0	0	0.00453	0.00062	0.00022	0.00020	0.00287	0.56374	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Crane (barge assembly)	Diesel	610	1	120	0.00231	0.00019	0.00009	0.00008	0.00153	0.33457	0.000023	0.000010	0.08	0.01	0.00	0.00	0.06	12.25	0.001	0.000
Crane (on barge)	Diesel	330	0	0	0.00286	0.00024	0.00012	0.00011	0.00112	0.33516	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Barge support vessel	Diesel	500	0	0	0.00201	0.00082	0.00042	0.00040	0.00181	0.35000	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Pipe flush pump	Gasoline	20	0	0	0.00710	0.00948	0.00407	0.00307	0.34576	0.65330	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Concrete pump	Diesel	300	0	0	0.00097	0.00008	0.00003	0.00003	0.00065	0.34080	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
													<b>0.086</b>	<b>0.007</b>	<b>0.003</b>	<b>0.003</b>	<b>0.066</b>	<b>12.245</b>	<b>0.0009</b>	<b>0.0004</b>

**ON-ROAD SOURCES**

On Road Sources	Miles/Trip <sup>2</sup>	Total Trips	Emission Factors, grams/mile <sup>3</sup>								Total English Tons							
			NO <sub>x</sub>	ROG	PM10	PM2.5	CO	CO2	CH4	N2O	NO <sub>x</sub>	ROG	PM10	PM2.5	CO	CO2	CH4	N2O
Light-duty truck (LDT2) <sup>4</sup>	40	40	0.12375	0.02129	0.00139	0.00128	1.29305	331.5704	0.00496	0.00908	0.0002	0.0000	0.0000	0.0000	0.0023	0.5848	0.0000	0.0000
Medium-duty truck (MDV)	0	0	0.07819	0.01228	0.00647	0.00619	0.18535	346.6425	0.00057	0.05449	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water truck (T6 instate) <sup>5</sup>	0	0	3.88892	0.15147	0.08338	0.07977	0.55408	973.1576	0.00704	0.15297	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Heavy-duty truck (T6 instate)	100	41	3.88892	0.15147	0.08338	0.07977	0.55408	973.1576	0.00704	0.15297	0.0176	0.0007	0.0004	0.0004	0.0025	4.3981	0.0000	0.0007
<b>Totals =&gt;</b>											<b>0.0178</b>	<b>0.0007</b>	<b>0.0004</b>	<b>0.0004</b>	<b>0.0048</b>	<b>4.9829</b>	<b>0.0000</b>	<b>0.0007</b>

**Off-Road & On-Road Source Totals**      **0.102**      **0.008**      **0.004**      **0.003**      **0.061**      **17.228**      **0.0009**      **0.0011**

**Notes:**

<sup>1</sup> Emission factors from OFFROAD 2017 (ver 1.0.1) for the San Joaquin Valley Air Basin, except vessel factors from San Pedro Bay Ports Emissions Inventory

<sup>2</sup> Round trip distance to Modesto (40 miles) for workers

<sup>3</sup> Emission factors from EMFAC 2017 for Stanislaus County year 2020 annual emissions

<sup>4</sup> Assumes two workers per truck, one round trip per day

<sup>5</sup> Assumes 20 miles per day cycling through work areas, total trips=work days

**Greenhouse Gas Emissions Summary**

<b>Metric Tons</b>	15.382	0.001	0.001
<b>CO2E</b>	15.382	0.022	0.254
<b>Total CO2E</b>			<b>15.7</b>

**PG&E R-687 L-215 San Joaquin River Crossing Replacement Project  
Phase 2: Pig and Flush Pipeline**

**OFF-ROAD SOURCES**

Source	Fuel	BHP	Number	Total Hours per Source	Emission Factors: pounds/BHP-hr <sup>1</sup>								Total English Tons							
					NO <sub>x</sub>	ROG	PM10	PM2.5	CO	CO2	CH4	N2O	NO <sub>x</sub>	ROG	PM10	PM2.5	CO	CO2	CH4	N2O
Excavator	Diesel	310	2	32	0.00173	0.00015	0.00005	0.00005	0.00096	0.44473	0.000023	0.000010	0.02	0.00	0.00	0.00	0.01	4.41	0.000	0.000
Wheeled loader	Diesel	240	2	32	0.00224	0.00018	0.00007	0.00007	0.00101	0.42804	0.000023	0.000010	0.02	0.00	0.00	0.00	0.01	3.29	0.000	0.000
Generator (60 KW)	Diesel	75	0	0	0.00033	0.00033	0.00003	0.00003	0.00389	0.37887	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Air compressor	Diesel	20	1	4	0.00485	0.00068	0.00023	0.00021	0.00287	0.60481	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.02	0.000	0.000
Dive compressor	Diesel	50	0	0	0.00470	0.00092	0.00028	0.00026	0.00554	0.60125	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Welding machine	Diesel	20	1	4	0.00453	0.00062	0.00022	0.00020	0.00287	0.56374	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.02	0.000	0.000
Crane (barge assembly)	Diesel	610	0	0	0.00231	0.00019	0.00009	0.00008	0.00153	0.33457	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Crane (on barge)	Diesel	330	0	0	0.00286	0.00024	0.00012	0.00011	0.00112	0.33516	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Barge support vessel	Diesel	500	0	0	0.00201	0.00082	0.00042	0.00040	0.00181	0.35000	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Pipe flush pump	Gasoline	20	1	12	0.00710	0.00948	0.00407	0.00307	0.34576	0.65330	0.000023	0.000010	0.00	0.00	0.00	0.00	0.04	0.08	0.000	0.000
Concrete pump	Diesel	300	0	0	0.00097	0.00008	0.00003	0.00003	0.00065	0.34080	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
													<b>0.036</b>	<b>0.004</b>	<b>0.002</b>	<b>0.001</b>	<b>0.059</b>	<b>7.824</b>	<b>0.0004</b>	<b>0.0002</b>

**ON-ROAD SOURCES**

On Road Sources	Miles/Trip	Total Trips	Emission Factors, grams/mile <sup>3</sup>								Total English Tons							
			NO <sub>x</sub>	ROG	PM10	PM2.5	CO	CO2	CH4	N2O	NO <sub>x</sub>	ROG	PM10	PM2.5	CO	CO2	CH4	N2O
Light-duty truck (LDT2) <sup>2,4</sup>	40	25	0.12375	0.02129	0.00139	0.00128	1.29305	331.5704	0.00496	0.00908	0.0001	0.0000	0.0000	0.0000	0.0014	0.3655	0.0000	0.0000
Medium-duty truck (MDV)	0	0	0.07819	0.01228	0.00647	0.00619	0.18535	346.6425	0.00057	0.05449	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water truck (T6 instate) <sup>5</sup>	20	4	3.88892	0.15147	0.08338	0.07977	0.55408	973.1576	0.00704	0.15297	0.0003	0.0000	0.0000	0.0000	0.0000	0.0858	0.0000	0.0000
Heavy-duty truck (T6 instate) <sup>6</sup>	40	30	3.88892	0.15147	0.08338	0.07977	0.55408	973.1576	0.00704	1.15297	0.0051	0.0002	0.0001	0.0001	0.0007	1.2872	0.0000	0.0015
Heavy-duty truck (T6 instate)	40	10	3.88892	0.15147	0.08338	0.07977	0.55408	973.1576	0.00704	0.15297	0.0017	0.0001	0.0000	0.0000	0.0002	0.4291	0.0000	0.0001
<b>Totals =&gt;</b>											<b>0.0073</b>	<b>0.0003</b>	<b>0.0002</b>	<b>0.0001</b>	<b>0.0025</b>	<b>2.1676</b>	<b>0.0000</b>	<b>0.0018</b>

**Off-Road & On-Road Source Totals**      **0.043**      **0.004**      **0.002**      **0.002**      **0.061**      **9.992**      **0.0004**      **0.0018**

**Notes:**

- <sup>1</sup> Emission factors from OFFROAD 2017 (ver 1.0.1) for the San Joaquin Valley Air Basin, except vessel factors from San Pedro Bay Ports Emissions Inventory
- <sup>2</sup> Round trip distance to Modesto (40 miles) for workers
- <sup>3</sup> Emission factors from: EMFAC 2017 for Stanislaus County year 2020 annual emissions
- <sup>4</sup> Assumes two workers per truck, one round trip per day
- <sup>5</sup> Assumes 20 miles per day cycling through work areas, total trips=work days
- <sup>6</sup> Flush water import, assume 40 miles round trip

**Greenhouse Gas Emissions Summary**

<b>Metric Tons</b>	8.921	0.000	0.002
<b>CO2E</b>	8.921	0.011	0.424
<b>Total CO2E</b>			<b>9.4</b>

**PG&E R-687 L-215 San Joaquin River Crossing Replacement Project  
Phase 2: Cementing Pipeline**

**OFF-ROAD SOURCES**

Source	Fuel	BHP	Number	Total Hours per Source	Emission Factors: pounds/BHP-hr <sup>1</sup>								Total English Tons							
					NO <sub>x</sub>	ROG	PM10	PM2.5	CO	CO2	CH4	N2O	NO <sub>x</sub>	ROG	PM10	PM2.5	CO	CO2	CH4	N2O
Excavator	Diesel	310	2	120	0.00173	0.00015	0.00005	0.00005	0.00096	0.44473	0.000023	0.000010	0.06	0.01	0.00	0.00	0.04	16.54	0.001	0.000
Wheeled loader	Diesel	240	2	120	0.00224	0.00018	0.00007	0.00007	0.00101	0.42804	0.000023	0.000010	0.06	0.01	0.00	0.00	0.03	12.33	0.001	0.000
Generator (60 KW)	Diesel	75	0	0	0.00033	0.00033	0.00003	0.00003	0.00389	0.37887	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Air compressor	Diesel	20	0	0	0.00485	0.00068	0.00023	0.00021	0.00287	0.60481	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Dive compressor	Diesel	50	0	0	0.00470	0.00092	0.00028	0.00026	0.00554	0.60125	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Welding machine	Diesel	20	1	12	0.00453	0.00062	0.00022	0.00020	0.00287	0.56374	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.07	0.000	0.000
Crane (barge assembly)	Diesel	610	0	0	0.00231	0.00019	0.00009	0.00008	0.00153	0.33457	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Crane (on barge)	Diesel	330	0	0	0.00286	0.00024	0.00012	0.00011	0.00112	0.33516	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Barge support vessel	Diesel	500	0	0	0.00201	0.00082	0.00042	0.00040	0.00181	0.35000	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Pipe flush pump	Gasoline	20	0	0	0.00710	0.00948	0.00407	0.00307	0.34576	0.65330	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Concrete pump	Diesel	300	1	24	0.00097	0.00008	0.00003	0.00003	0.00065	0.34080	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	1.23	0.000	0.000
													0.133	0.011	0.004	0.004	0.067	30.166	0.0016	0.0007

**ON-ROAD SOURCES**

On Road Sources	Miles/Trip <sup>2</sup>	Total Trips	Emission Factors, grams/mile <sup>3</sup>								Total English Tons							
			NO <sub>x</sub>	ROG	PM10	PM2.5	CO	CO2	CH4	N2O	NO <sub>x</sub>	ROG	PM10	PM2.5	CO	CO2	CH4	N2O
Light-duty truck (LD <sup>2</sup> ) <sup>4</sup>	40	40	0.12375	0.02129	0.00139	0.00128	1.29305	331.5704	0.00496	0.00908	0.0002	0.0000	0.0000	0.0000	0.0023	0.5848	0.0000	0.0000
Medium-duty truck (MDV)	0	0	0.07819	0.01228	0.00647	0.00619	0.18535	346.6425	0.00057	0.05449	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water truck (T6 instate) <sup>5</sup>	0	0	3.88892	0.15147	0.08338	0.07977	0.55408	973.1576	0.00704	0.15297	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Heavy-duty truck (T6 instate)	40	25	3.88892	0.15147	0.08338	0.07977	0.55408	973.1576	0.00704	0.15297	0.0043	0.0002	0.0001	0.0001	0.0006	1.0727	0.0000	0.0002
Totals =>											0.0046	0.0002	0.0001	0.0001	0.0029	1.6576	0.0000	0.0002

Off-Road & On-Road Source Totals      0.137      0.011      0.004      0.004      0.070      31.824      0.0016      0.0009

**Notes:**

<sup>1</sup> Emission factors from OFFROAD 2017 (ver 1.0.1) for the San Joaquin Valley Air Basin, except vessel factors from San Pedro Bay Ports Emissions Inventory

<sup>2</sup> Round trip distance to Modesto (40 miles) for workers

<sup>3</sup> Emission factors from EMFAC 2017 for Stanislaus County year 2020 annual emissions

<sup>4</sup> Assumes two workers per truck, one round trip per day

<sup>5</sup> Assumes 20 miles per day cycling through work areas, total trips=work days

**Greenhouse Gas Emissions Summary**

Metric Tons	28.414	0.001	0.001
CO2E	28.414	0.041	0.209
Total CO2E			28.7

**PG&E R-687 L-215 San Joaquin River Crossing Replacement Project**  
**Phase 2: Onshore Pipeline Removal**

**OFF-ROAD SOURCES**

Source	Fuel	BHP	Number	Total Hours per Source	Emission Factors: pounds/BHP-hr <sup>1</sup>								Total English Tons							
					NO <sub>x</sub>	ROG	PM10	PM2.5	CO	CO2	CH4	N2O	NO <sub>x</sub>	ROG	PM10	PM2.5	CO	CO2	CH4	N2O
Excavator	Diesel	310	2	80	0.00173	0.00015	0.00005	0.00005	0.00096	0.44473	0.000023	0.000010	0.04	0.00	0.00	0.00	0.02	11.03	0.001	0.000
Wheeled loader	Diesel	240	2	80	0.00224	0.00018	0.00007	0.00007	0.00101	0.42804	0.000023	0.000010	0.04	0.00	0.00	0.00	0.02	8.22	0.000	0.000
Generator (60 KW)	Diesel	75	0	0	0.00033	0.00033	0.00003	0.00003	0.00389	0.37987	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Air compressor	Diesel	20	0	0	0.00485	0.00068	0.00023	0.00021	0.00287	0.60481	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Dive compressor	Diesel	50	0	0	0.00470	0.00092	0.00028	0.00026	0.00554	0.60125	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Welding machine	Diesel	20	0	0	0.00453	0.00062	0.00022	0.00020	0.00287	0.56374	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Crane (barge assembly)	Diesel	610	0	0	0.00231	0.00019	0.00009	0.00008	0.00153	0.33457	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Crane (on barge)	Diesel	330	0	0	0.00286	0.00024	0.00012	0.00011	0.00112	0.33516	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Barge support vessel	Diesel	500	0	0	0.00201	0.00082	0.00042	0.00040	0.00181	0.35000	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Pipe flush pump	Gasoline	20	0	0	0.00710	0.00948	0.00407	0.00307	0.34576	0.65330	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Concrete pump	Diesel	300	0	0	0.00097	0.00006	0.00003	0.00003	0.00065	0.34080	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
													<b>0.088</b>	<b>0.007</b>	<b>0.003</b>	<b>0.003</b>	<b>0.043</b>	<b>19.248</b>	<b>0.0010</b>	<b>0.0004</b>

**ON-ROAD SOURCES**

On Road Sources	Miles/Trip <sup>2</sup>	Total Trips	Emission Factors, grams/mile <sup>3</sup>								Total English Tons							
			NO <sub>x</sub>	ROG	PM10	PM2.5	CO	CO2	CH4	N2O	NO <sub>x</sub>	ROG	PM10	PM2.5	CO	CO2	CH4	N2O
Light-duty truck (LDT2) <sup>4</sup>	40	25	0.12375	0.02129	0.00139	0.00128	1.29305	331.5704	0.00496	0.00908	0.0001	0.0000	0.0000	0.0000	0.0014	0.3655	0.0000	0.0000
Medium-duty truck (MDV)	0	0	0.07819	0.01228	0.00647	0.00619	0.18535	346.6425	0.00057	0.05449	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water truck (T6 instate) <sup>5</sup>	0	0	3.88892	0.15147	0.08338	0.07977	0.55408	973.1576	0.00704	0.15297	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Heavy-duty truck (T6 instate)	40	14	3.88892	0.15147	0.08338	0.07977	0.55408	973.1576	0.00704	0.15297	0.0024	0.0001	0.0001	0.0000	0.0003	0.6007	0.0000	0.0001
<b>Totals =&gt;</b>											<b>0.0025</b>	<b>0.0001</b>	<b>0.0001</b>	<b>0.0001</b>	<b>0.0018</b>	<b>0.9662</b>	<b>0.0000</b>	<b>0.0001</b>

**Off-Road & On-Road Source Totals**      **0.088**      **0.007**      **0.003**      **0.003**      **0.046**      **20.214**      **0.0010**      **0.0006**

**Notes:**

<sup>1</sup> Emission factors from OFFROAD 2017 (ver 1.0.1) for the San Joaquin Valley Air Basin, except vessel factors from San Pedro Bay Ports Emissions Inventory

<sup>2</sup> Round trip distance to Modesto (40 miles) for workers

<sup>3</sup> Emission factors from EMFAC 2017 for Stanislaus County year 2020 annual emissions

<sup>4</sup> Assumes two workers per truck, one round trip per day

<sup>5</sup> Assumes 20 miles per day cycling through work areas, total trips=work days

**Greenhouse Gas Emissions Summary**

<b>Metric Tons</b>	18.048	0.001	0.000
<b>CO2E</b>	18.048	0.026	0.129
<b>Total CO2E</b>			<b>18.2</b>

**PG&E R-687 L-215 San Joaquin River Crossing Replacement Project  
Phase 2: In-River Pipeline Removal**

**OFF-ROAD SOURCES**

Source	Fuel	BHP	Number	Total Hours per Source	Emission Factors: pounds/BHP-hr <sup>1</sup>								Total English Tons							
					NO <sub>x</sub>	ROG	PM10	PM2.5	CO	CO2	CH4	N2O	NO <sub>x</sub>	ROG	PM10	PM2.5	CO	CO2	CH4	N2O
Excavator	Diesel	310	0	0	0.00173	0.00015	0.00005	0.00005	0.00096	0.44473	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Wheeled loader	Diesel	240	0	0	0.00224	0.00018	0.00007	0.00007	0.00101	0.42804	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Generator (60 KW)	Diesel	75	1	30	0.00033	0.00033	0.00003	0.00003	0.00389	0.37987	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.43	0.000	0.000
Air compressor	Diesel	20	0	0	0.00485	0.00068	0.00023	0.00021	0.00287	0.60481	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Dive compressor	Diesel	50	1	180	0.00470	0.00092	0.00028	0.00026	0.00554	0.60125	0.000023	0.000010	0.02	0.00	0.00	0.00	0.02	2.71	0.000	0.000
Welding machine	Diesel	20	0	0	0.00453	0.00062	0.00022	0.00020	0.00287	0.56374	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Crane (barge assembly)	Diesel	610	0	0	0.00231	0.00019	0.00009	0.00008	0.00153	0.33457	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Crane (on barge)	Diesel	330	1	180	0.00286	0.00024	0.00012	0.00011	0.00112	0.33516	0.000023	0.000010	0.08	0.01	0.00	0.00	0.03	9.95	0.001	0.000
Barge support vessel	Diesel	500	1	180	0.00201	0.00082	0.00042	0.00040	0.00181	0.35000	0.000023	0.000010	0.09	0.04	0.02	0.02	0.08	15.75	0.001	0.000
Pipe flush pump	Gasoline	20	0	0	0.00710	0.00948	0.00407	0.00307	0.34576	0.65330	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Concrete pump	Diesel	300	0	0	0.00097	0.00008	0.00003	0.00003	0.00065	0.34080	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
													<b>0.197</b>	<b>0.049</b>	<b>0.024</b>	<b>0.022</b>	<b>0.144</b>	<b>28.836</b>	<b>0.0019</b>	<b>0.0008</b>

**ON-ROAD SOURCES**

On Road Sources	Miles/Trip <sup>2</sup>	Total Trips	Emission Factors, grams/mile <sup>3</sup>								Total English Tons							
			NO <sub>x</sub>	ROG	PM10	PM2.5	CO	CO2	CH4	N2O	NO <sub>x</sub>	ROG	PM10	PM2.5	CO	CO2	CH4	N2O
Light-duty truck (LDT2) <sup>4</sup>	40	90	0.12375	0.02129	0.00139	0.00128	1.29305	331.5704	0.00496	0.00908	0.0005	0.0001	0.0000	0.0000	0.0051	1.3158	0.0000	0.0000
Medium-duty truck (MDV)	0	0	0.07819	0.01228	0.00647	0.00619	0.18535	346.6425	0.00057	0.05449	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water truck (T6 instate) <sup>5</sup>	0	0	3.88892	0.15147	0.08338	0.07977	0.55408	973.1576	0.00704	0.15297	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Heavy-duty truck (T6 instate)	40	4	3.88892	0.15147	0.08338	0.07977	0.55408	973.1576	0.00704	0.15297	0.0007	0.0000	0.0000	0.0000	0.0001	0.1716	0.0000	0.0000
Totals =>											<b>0.0012</b>	<b>0.0001</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0062</b>	<b>1.4874</b>	<b>0.0000</b>	<b>0.0001</b>

Off-Road & On-Road Source Totals      0.198      0.049      0.024      0.022      0.149      30.323      0.0019      0.0009

**Notes:**

<sup>1</sup> Emission factors from OFFROAD 2017 (ver 1.0.1) for the San Joaquin Valley Air Basin, except vessel factors from San Pedro Bay Ports Emissions Inventory

<sup>2</sup> Round trip distance to Modesto (40 miles) for workers

<sup>3</sup> Emission factors from: EMFAC 2017 for Stanislaus County year 2020 annual emissions

<sup>4</sup> Assumes two workers per truck, one round trip per day

<sup>5</sup> Assumes 20 miles per day cycling through work areas, total trips=work days

**Greenhouse Gas Emissions Summary**

Metric Tons	27.075	0.002	0.001
CO2E	27.075	0.047	0.205
<b>Total CO2E</b>			<b>27.3</b>

**PG&E R-687 L-215 San Joaquin River Crossing Replacement Project  
Phase 2: Demobilization**

**OFF-ROAD SOURCES**

Source	Fuel	BHP	Number	Total Hours per Source	Emission Factors: pounds/BHP-hr <sup>1</sup>								Total English Tons							
					NO <sub>x</sub>	ROG	PM10	PM2.5	CO	CO2	CH4	N2O	NO <sub>x</sub>	ROG	PM10	PM2.5	CO	CO2	CH4	N2O
Excavator	Diesel	310	0	0	0.00173	0.00015	0.00005	0.00005	0.00096	0.44473	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Wheeled loader	Diesel	240	0	0	0.00224	0.00018	0.00007	0.00007	0.00101	0.42804	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Generator (60 KVV)	Diesel	75	0	0	0.00033	0.00033	0.00003	0.00003	0.00389	0.37887	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Air compressor	Diesel	20	0	0	0.00485	0.00068	0.00023	0.00021	0.00287	0.60481	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Dive compressor	Diesel	50	0	0	0.00470	0.00092	0.00028	0.00026	0.00554	0.60125	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Welding machine	Diesel	20	0	0	0.00453	0.00062	0.00022	0.00020	0.00287	0.56374	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Crane (barge assembly)	Diesel	610	1	120	0.00231	0.00019	0.00009	0.00008	0.00153	0.33457	0.000023	0.000010	0.08	0.01	0.00	0.00	0.06	12.25	0.001	0.000
Crane (on barge)	Diesel	330	0	0	0.00286	0.00024	0.00012	0.00011	0.00112	0.33516	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Barge support vessel	Diesel	500	0	0	0.00201	0.00082	0.00042	0.00040	0.00181	0.35000	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Pipe flush pump	Gasoline	20	0	0	0.00710	0.00948	0.00407	0.00307	0.34576	0.65330	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
Concrete pump	Diesel	300	0	0	0.00097	0.00008	0.00003	0.00003	0.00065	0.34080	0.000023	0.000010	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
													<b>0.086</b>	<b>0.007</b>	<b>0.003</b>	<b>0.003</b>	<b>0.056</b>	<b>12.245</b>	<b>0.0009</b>	<b>0.0004</b>

**ON-ROAD SOURCES**

On Road Sources	Miles/Trip <sup>2</sup>	Total Trips	Emission Factors, grams/mile <sup>3</sup>								Total English Tons							
			NO <sub>x</sub>	ROG	PM10	PM2.5	CO	CO2	CH4	N2O	NO <sub>x</sub>	ROG	PM10	PM2.5	CO	CO2	CH4	N2O
Light-duty truck (LDT2) <sup>4</sup>	40	40	0.12375	0.02129	0.00139	0.00128	1.29305	331.5704	0.00496	0.00908	0.0002	0.0000	0.0000	0.0000	0.0023	0.5848	0.0000	0.0000
Medium-duty truck (MDV)	0	0	0.07919	0.01228	0.00647	0.00619	0.18535	346.6425	0.00057	0.05449	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water truck (T6 instate) <sup>5</sup>	0	0	3.88892	0.15147	0.08338	0.07977	0.55408	973.1578	0.00704	0.15297	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Heavy-duty truck (T6 instate) <sup>5</sup>	40	30	3.88892	0.15147	0.08338	0.07977	0.55408	973.1578	0.00704	0.15297	0.0051	0.0002	0.0001	0.0001	0.0007	1.2872	0.0000	0.0002
Heavy-duty truck (T6 instate)	100	55	3.88892	0.15147	0.08338	0.07977	0.55408	973.1578	0.00704	0.15297	0.0236	0.0009	0.0005	0.0005	0.0034	5.8999	0.0000	0.0009
<b>Totals =&gt;</b>											<b>0.0289</b>	<b>0.0012</b>	<b>0.0006</b>	<b>0.0006</b>	<b>0.0064</b>	<b>7.7719</b>	<b>0.0001</b>	<b>0.0011</b>
<b>Off-Road &amp; On-Road Source Totals</b>											<b>0.113</b>	<b>0.008</b>	<b>0.004</b>	<b>0.004</b>	<b>0.062</b>	<b>20.017</b>	<b>0.0009</b>	<b>0.0016</b>

**Notes:**

<sup>1</sup> Emission factors from OFFROAD 2017 (ver 1.0.1) for the San Joaquin Valley Air Basin, except vessel factors from San Pedro Bay Ports Emissions Inventory

<sup>2</sup> Round trip distance to Modesto (40 miles) for workers

<sup>3</sup> Emission factors from EMFAC 2017 for Stanislaus County year 2020 annual emissions

<sup>4</sup> Assumes two workers per truck, one round trip per day

<sup>5</sup> Assumes 20 miles per day cycling through work areas, total trips=work days

**Greenhouse Gas Emissions Summary**

<b>Metric Tons</b>	<b>17.872</b>	<b>0.001</b>	<b>0.001</b>
<b>CO2E</b>	<b>17.872</b>	<b>0.023</b>	<b>0.358</b>
<b>Total CO2E</b>			<b>18.3</b>

**PG&E R-687 L-215 San Joaquin River Crossing Replacement Project**  
**Phase 2: Air Pollutant and Greenhouse Gas Emissions Totals**

Task	Total English Tons					Metric Tons			
	NOx	ROG	PM10	PM2.5	CO	CO2	CH4	N2O	CO2E
Mobilization	0.102	0.008	0.004	0.003	0.061	15.382	0.001	0.001	15.7
Pigging and Flushing Pipeline	0.043	0.004	0.002	0.002	0.061	8.921	0.000	0.002	9.4
Cementing Pipeline	0.137	0.011	0.004	0.004	0.070	28.414	0.001	0.001	28.7
Onshore Pipeline Removal	0.088	0.007	0.003	0.003	0.045	18.048	0.001	0.000	18.2
In-River Pipeline Removal	0.198	0.049	0.024	0.022	0.149	27.075	0.002	0.001	27.3
Demobilization	0.113	0.008	0.004	0.004	0.062	17.872	0.001	0.001	18.3
<b>Total</b>	<b>0.683</b>	<b>0.088</b>	<b>0.040</b>	<b>0.037</b>	<b>0.449</b>	<b>115.713</b>	<b>0.006</b>	<b>0.006</b>	<b>117.5</b>

3/6/2020



Totals