

Appendix B-1
Energy Analysis



September 23, 2021

Ms. Julie Gilbert, Project Manager
ELMT Consulting, Inc.
2201 North Grand Avenue, Suite 10098
Santa Ana, CA 92711-0098

SUBJECT: Energy Calculation Memorandum for the San Marino Center Improvement Project

Dear Ms. Gilbert;

Birdseye Planning Group (BPG) is pleased to submit this memorandum quantifying energy consumption associated with the construction of the San Marino Center Improvement Project. The proposed action is subject to a discretionary review process by the City of San Marino; thus, an Environmental Impact Report (EIR) is being prepared to demonstrate California Environmental Quality Act (CEQA) compliance.

Project Description

The San Marino Center Improvement Project (Project) is located at 1800 Huntington Drive, San Marino, which is the south side of Huntington Drive, adjacent and east of the Huntington Middle School and west and adjacent to the Crowell Public Library, identified by Los Angeles County Assessor's Parcel Number (APNs) 5334-024-903. The site currently supports an existing community center. The Project proposes to change the San Marino Center (SMC) building façade from a Modern Colonial Revival to a Spanish Mediterranean architectural style which is similar to adjacent buildings. Other upgrades include rehabilitation of the building interior to include additional offices to accommodate six City Recreation Department staff, optimize the interior public gathering space, and repair/replace the heating/air conditioning, plumbing and electrical systems and light fixtures to current building code standards.

The proposed interior space reconfiguration will allow for an occupancy rating of 1,083. Access to the site is via two driveways – one fronting Huntington Drive and the other along West Street east of the site. Access would not be changed with implementation of the project.

Exterior improvements include the following are comprised of the following:

- Replace the decorative wrought iron posts with stucco columns;

- Replace the wood shingled roof with the terra cotta tile;
- Replace doors and windows to match existing rectangular and square shapes but with grid patterns similar to the library windows as appropriate;
- Add wood accents where appropriate and complimentary such as around windows and the entry door;
- Add an open patio area at the back of the building that will have a stucco wall and a wood trellis ceiling similar to the open space areas at the library;
- Remove canopies that were added to the building after its original construction will be removed.
- New paint and stucco repair that will match the color of the library.

Exterior features that will remain intact or will not be impacted by the proposed improvements include the following:

- The cornerstone of the building inscribed with “San Marino Women’s Club” near the building entry;
- Concrete walkway and concrete front patio; and
- Landscaping, including the large oak tree adjacent to the front entry, grassy areas and urban landscaping around the west and south of the building.

The project would not require ground disturbances associated with or grading. Minor demolition would be required. The majority of the work would be completed with hand tools or small pieces of equipment.

After construction, the proposed project is expected to generate 19 new vehicle trips (13 inbound trips and 6 outbound trips) during the weekday AM peak hour. During the weekday PM peak hour, the proposed project is expected to generate 25 new vehicle trips (12 inbound trips and 13 outbound trips). Over a 24-hour period, the proposed project is forecast to generate approximately 312 new daily trip ends (156 inbound trips and 156 outbound trips) during a typical weekday.

Energy Calculations

Based on the scope and sequence of construction activities, daily emissions were conservatively estimated using the most intensive mix of equipment over the 180-day construction period extending from June 2022 to November 2022. The common method is to calculate fuel demand based on the six phases of construction defined in California Emission Estimator Model (CalEEMod) 2020.4.0; demolition, site preparation, grading, building construction, paving and painting (i.e., architectural coating). However, for the purpose of determining maximum daily air emissions and annual greenhouse gas (GHG) emissions, three phases were used; demolition, building construction/improvements and architectural coating (i.e., painting). These data were used to conservatively estimate gasoline and diesel fuel demand during construction using the most equipment intensive operation as the basis for the calculations. Construction would require the following or a similar mix of equipment;

- Air compressor, 78 horsepower at 0.48 load factor;
- Concrete/Industrial saws; 81 horsepower at 0.73 load factor;
- Crane (or similar heavy lift equipment); 231 horsepower at 0.29 load factor;
- Fork-Lift (2); 89 horsepower, 0.2 load factor;
- Rubber-tired dozer; 287 horsepower, 0.4 load factor; and
- Tractor/Loader/Backhoe (2), 97 horsepower, 0.37 horsepower.

Because this equipment mix would not be required daily throughout the duration of the project, fuel consumption calculations likely overestimate actual diesel fuel demand. During operation, fuel demand associated with daily vehicle trips referenced above were estimated. Energy consumption (i.e., natural gas and electricity) estimated for operation of the San Marino Center post-construction are also provided herein.

Tables 1 and 2 show estimated gasoline demand for construction workers and construction equipment. All fuel calculations are based on the total Carbon Dioxide Equivalent (CO₂e) value calculated for the demolition, construction of the building improvements and application of architectural coating and off-site construction worker, vendor and hauling trips using CalEEMod 2020.4.0. Data are reported in annual metric tons of CO₂e. Metric tons are converted to kilogram CO₂e and then divided by a conversion factor used by the U.S. Environmental Protection Agency to estimate gallons of gasoline (8.87) and diesel fuel (10.18) consumed based on carbon emissions.

Table 1 shows the gasoline demand for construction workers for work occurring in 2022. Table 2 shows the diesel fuel demand for equipment operation in 2022.

Table 1
Construction Worker Gasoline Demand

| 2022 | CO ₂ E MT | Kg CO ₂ e | Gallons |
|-------------|----------------------|----------------------|---------|
| Worker Fuel | 4.22 | 4,220 | 476 |

Table 2
Construction Equipment Diesel Demand

| 2022 | CO ₂ E MT | Kg CO ₂ e | Gallons |
|----------------|----------------------|----------------------|---------|
| Equipment Fuel | 56.2 | 56,200 | 5,521 |

Table 3 shows annual gasoline demand projected for operation of the San Marino Center assuming a total of 312 daily trips and an average trip length of 16.6 miles. This is a default value in CalEEMod 2020.4.0 and likely overestimates actual fuel demand associated with daily trips to/from the San Marino Center.

Table 3
Operational Gasoline Demand

| Post-construction | CO2E MT | Kg CO2e | Gallons |
|-------------------|---------|---------|---------|
| User Fuel | 221 | 24,915 | 24,915 |

Operation of the San Marino Center post-construction would generate an annual demand of 194,543 kBTU of natural gas and 117,636 kWh of electricity.

Please let me know if you have questions. You can reach me via e-mail at 760-712-2199 or via e-mail ryan@birdseyeplanninggroup.com.

Regards,



Ryan Birdseye
Principal