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**SUBJECT: REGIONAL HOUSING NEEDS ASSESSMENT REZONE ENERGY TABLES**

The following Energy Tables were prepared for the proposed Regional Housing Needs Assessment Rezone Project (referred to as “proposed Project”) within the City of Redlands. The proposed Project will propose a total of 151,048.46-sf for public/institutional uses and 2,436 dwelling units for multi-family housing.

**CONSTRUCTION ENERGY DEMANDS**

Future development pursuant to the proposed Project would be required to comply with best management practices for construction activity and would incur additional CEQA review that may identify additional mitigation measures that would reduce construction energy demand.

**OPERATIONAL ENERGY DEMANDS**

Energy consumption in support of or related to proposed Project operations would include transportation energy demands (energy consumed by passenger car vehicles accessing the Project site) and facilities energy demands (energy consumed by operations and site maintenance activities).

**TRANSPORTATION ENERGY DEMANDS**

**APPROVED TRANSPORTATION ENERGY DEMANDS**

The City Approved General Plan currently designates the 24 Project sites for 1,656,699.86-sf of commercial/industrial, 552,340.90-sf for commercial, and 111 dwelling units for multi-family housing uses. The estimated transportation energy demands from the Approved General Plan Buildout are summarized on Table 1.

**TABLE 1: APPROVED GENERAL PLAN BUILDOUT -GENERATED TRAFFIC ANNUAL FUEL CONSUMPTION**

| Vehicle Type                               | Annual VMT        | Estimated Annual Fuel Consumption (gallons) |
|--|-------------------|---|
| <b>APPROVED GP BUILDOUT (ALL VEHICLES)</b> | <b>93,509,476</b> | <b>4,330,815</b>                            |

**PROPOSED PROJECT TRANSPORTATION ENERGY DEMANDS**

Energy that would be consumed by proposed Project-generated traffic is a function of total VMT and estimated vehicle fuel economies of vehicles accessing the Project site. Table 2 presents the estimated annual VMT and annual fuel consumption from project-generated traffic.

As with worker and vendors trips, operational vehicle fuel efficiencies were estimated using information generated within EMFAC2021 developed by CARB. EMFAC2021 was run for the San Bernardino South Coast sub-area for the 2035 calendar years.

As summarized on Table 2 the proposed Project will result in an estimated net decrease of 32,072,628 annual VMT and annual fuel consumption of 2,249,606 gallons of fuel as compared to the Approved General Plan Buildout.

**TABLE 2: PROJECT-GENERATED TRAFFIC ANNUAL FUEL CONSUMPTION**

| Vehicle Type                                 | Average Vehicle Fuel Economy (mpg) | Annual VMT <sup>1</sup> | Estimated Annual Fuel Consumption (gallons) |
|--|------------------------------------|-------------------------|---|
| LDA  | 39.94                              | 29,560,918              | 740,041                                     |
| LDT1   | 30.29                              | 2,006,017               | 66,234                                      |
| LDT2   | 30.34                              | 14,420,934              | 475,322                                     |
| MDV  | 25.15                              | 9,321,507               | 370,627                                     |
| LHD1   | 23.08                              | 1,667,662               | 72,259                                      |
| LHD2   | 21.02                              | 455,739                 | 21,678                                      |
| MHD  | 12.16                              | 1,238,093               | 101,833                                     |
| HHD  | 7.82                               | 1,254,368               | 160,374                                     |
| OBUS   | 8.08                               | 32,700                  | 4,046                                       |
| UBUS   | 12.86                              | 17,884                  | 1,391                                       |
| MCY  | 43.29                              | 1,214,606               | 28,060                                      |
| SBUS   | 7.28                               | 62,867                  | 8,637                                       |
| MH   | 5.98                               | 183,552                 | 30,707                                      |
| <b>TOTAL (ALL VEHICLES)</b>                  |                                    | <b>61,436,848</b>       | <b>2,081,210</b>                            |
| <i>APPROVED GP BUILDOUT (ALL VEHICLES)</i>   |                                    | <i>93,509,476</i>       | <i>4,330,815</i>                            |
| <b>NET (PROPOSED – APPROVED GP BUILDOUT)</b> |                                    | <b>-32,072,628</b>      | <b>-2,249,606</b>                           |

<sup>1</sup> Total VMT may not match CalEEMod output due to rounding.

**ENERGY DEMANDS**

**APPROVED GENERAL PLAN BUILDOUT ENERGY DEMANDS**

The City Approved General Plan currently designates the 24 Project sites for 1,656,699.86-sf of

commercial/industrial, 552,340.90-sf for commercial, and 111 dwelling units for multi-family housing uses. The estimated energy demands from the Approved General Plan Buildout uses are summarized on Table 3 and are based on CalEEMod defaults.

**TABLE 3: APPROVED GENERAL PLAN BUILDOUT ANNUAL OPERATIONAL ENERGY DEMAND SUMMARY**

| Land Use                                  | Natural Gas Demand<br>(kBTU/year) | Electricity Demand<br>(kWh/year) |
|---|-----------------------------------|----------------------------------|
| <b>APPROVED GP BUILDOUT ENERGY DEMAND</b> | <b>31,062,419</b>                 | <b>19,869,824</b>                |

**PROPOSED ENERGY DEMANDS**

Building operations and site maintenance activities for future implementing developments would result in the consumption of natural gas and electricity. Natural gas would be supplied to the future developments by Southern California Gas (SoCalGas) and electricity would be supplied to the future developments by SCE. As previously stated, the analysis herein assumes compliance with the 2022 Title 24 and CALGreen standards Annual natural gas and electricity demands of future development pursuant to the proposed Project are summarized in Table 4.

**TABLE 4: PROJECT ANNUAL OPERATIONAL ENERGY DEMAND SUMMARY**

| Land Use                                     | Natural Gas Demand<br>(kBTU/year) | Electricity Demand<br>(kWh/year) |
|--|-----------------------------------|----------------------------------|
| Multi-family Housing                         | 26,886,569                        | 10,514,171                       |
| Public/Institutional                         | 3,636,128                         | 979,777                          |
| <b>TOTAL PROJECT ENERGY DEMAND</b>           | <b>30,522,697</b>                 | <b>11,493,948</b>                |
| <i>APPROVED GP BUILDOUT ENERGY DEMAND</i>    | <i>31,062,419</i>                 | <i>19,869,824</i>                |
| <b>NET (PROPOSED – APPROVED GP BUILDOUT)</b> | <b>-539,722</b>                   | <b>-8,375,876</b>                |

kBTU – kilo-British Thermal Units; kWh - Kilo Watt Hours

**OPERATIONAL ENERGY EFFICIENCY/CONSERVATION MEASURES**

Energy efficiency/energy conservation attributes of future developments pursuant to the Project would be complemented by increasingly stringent state and federal regulatory actions addressing vehicle fuel economies and vehicle emissions standards; and enhanced building/utilities energy efficiencies mandated under California building codes (e.g., Title 24, California Green Building Standards Code).

**ENHANCED VEHICLE FUEL EFFICIENCIES**

The proposed Project annual fuel consumption estimates presented previously in Table 2 represent likely potential maximums that would occur for future developments pursuant to the Project. Under subsequent future conditions, average fuel economies of vehicles accessing the Project site can be

expected to improve as older, less fuel-efficient vehicles are removed from circulation, and in response to fuel economy and emissions standards imposed on newer vehicles entering the circulation system.

Enhanced fuel economies realized pursuant to federal and state regulatory actions, and related transition of vehicles to alternative energy sources (e.g., electricity, natural gas, biofuels, hydrogen cells) would likely decrease future gasoline fuel demands per VMT. Location of the Project proximate to regional and local roadway systems tends to reduce VMT within the region, acting to reduce regional vehicle energy demands.