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## **APPENDIX B**

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Energy Consumption Analysis



# **Audi Fletcher Jones Automotive Center Project**

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## **Energy Consumption Analysis**

Costa Mesa, California

Prepared For:  
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ECORP Consulting, Inc. has assisted public and private land owners with environmental regulation compliance since 1987. We offer full service capability, from initial baseline environmental studies through environmental planning review, permitting negotiation, liaison to obtain legal agreements, mitigation design, construction monitoring, and compliance reporting.

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**CONTENTS**

1.0 INTRODUCTION ..... 1  
    1.1 Project Description and Location..... 1  
  
2.0 ENERGY CONSUMPTION..... 2  
    2.1 Existing Setting..... 2  
    2.2 Regulatory Framework..... 4  
    2.3 Energy Consumption Impact Assessment..... 5  
  
3.0 REFERENCES..... 8

**LIST OF TABLES**

Table 2-1. Non-Residential Electricity Consumption in Orange county 2013-2017..... 3  
Table 2. Non-Residential Natural Gas Consumption in Orange County 2013-2017 ..... 3  
Table 2-3. Automotive Fuel Consumption in Orange County 2013–2017 ..... 4  
Table 2-4. Audi Fletcher Jones Automotive Center Energy Consumption ..... 6

**ATTACHMENTS**

Attachment A – Project Automotive Fuel Consumption

## 1.0 INTRODUCTION

Energy consumption is analyzed due to the potential direct and indirect environmental impacts associated with the Project. Such impacts include the depletion of nonrenewable resources (oil, natural gas, coal, etc.) and emissions of pollutants during both the construction and long-term operational phases.

### 1.1 Project Description and Location

The Project site is located in the City of Costa Mesa. The site is approximately 5.14 acres and located on the south side of the juncture of State Route 55 (SR-55) and State Route 73 (SR-73) at 1275 Bristol Street, the previous site of the Costa Mesa Ganahl Lumber Facility. Surrounding land uses include the SR-73 and SR-55 interchange to the north, SR-73 to the east, commercial (storage facility, restaurant) and multi-family residential land uses to the south, and commercial (offices), single-family residential, and recreation (Santa Ana Country Club) land uses to the west. The Project site currently contains 55,540 square feet of building/shed area that accommodated the recently closed Ganahl Lumber Facility.

The site is designated as General Commercial in the City of Costa Mesa 2015-2035 General Plan. The General Commercial designation is intended to permit a wide range of commercial uses that serve both local and regional needs. According to the General Plan, General Commercial lands have exposure and access to major transportation routes since significant traffic can be generated. General Commercial areas are insulated from the most sensitive land uses either through buffers of less-sensitive uses or on-site design features. Appropriate uses include markets, drug stores, retail shops, financial institutions, service establishments, support office uses, smaller retail stores, theaters, restaurants, hotels and motels, and automobile sales and service establishments.

The Project proposes to demolish the existing 55,540 square feet of building space on the site and construct a 68,282-square foot automotive center, including a ground-up two (2)-story sales and service center for Audi. The 2-story auto dealership would include an auto display area, service garage with parking bays, and a sales/office and service operation area with a parked roof above the service operation. The sales/office spaces would consist of the following departments: Sales, Finance and Insurance, Delivery, Showroom, Service Write-up, and Administrative offices. The Proposed Project would include service spaces including 36 service bays, 1 alignment bay, a car wash area, employee facilities (lockers and breakroom), and a parts department. The Project proposes 343 parking spaces.

The Project proposes a 14-month construction time frame starting in September/October 2019 through November/December 2020.

## 2.0 ENERGY CONSUMPTION

To better integrate the energy analysis with the rest of CEQA, the Governor’s Office of Planning Research (OPR) has added relevant questions regarding potential energy impacts currently contained in CEQA Guidelines Appendix F to the sample environmental checklist in Appendix G, holding that CEQA-related environmental analysis must quantify energy use during construction and operations, including energy associated with transportation associated with the Project, and also consider the availability of measures to reduce reliance on fossil fuels.

### 2.1 Existing Setting

#### ***Electricity/Natural Gas Services***

Southern California Edison (SCE) provides electrical services to Costa Mesa through State-regulated public utility contracts. SCE, the largest subsidiary of Edison International, is the primary electricity supply company for much of Southern California. It provides 14 million people with electricity across a service territory of approximately 50,000 square miles. SCE has met or exceeded all Renewable Portfolio Standard requirements to date, procuring renewable energy from diverse sources, including biomass, biowaste, geothermal, hydroelectric, solar and wind. This Standard requires all California utilities to generate 33 percent of their electricity from renewables by 2020, 0 percent of their electricity from renewables by 2030, and 100 percent by 2045.

The Southern California Gas Company provides natural gas services to the Project area. As the nation's largest natural gas distribution utility, the Southern California Gas Company delivers natural gas energy to 21.6 million consumers through 5.9 million meters in more than 500 communities. The Southern California Gas Company’s service territory encompasses approximately 20,000 square miles throughout Central and Southern California, from Visalia to the Mexican border.

#### ***Energy Consumption***

Electricity use is measured in kilowatt-hours (kWh), and natural gas use is measured in therms. Vehicle fuel use is typically measured in gallons (e.g. of gasoline or diesel fuel), although energy use for electric vehicles is measured in kWh.

The electricity consumption attributable to non-residential land uses (commercial and industrial) in Orange County from 2013 to 2017 is shown in **Table 2-1**. As indicated, the demand has decreased since 2013.

<b>Table 2-1. Non-Residential Electricity Consumption in Orange county 2013-2017</b>	
<b>Year</b>	<b>Non-Residential Electricity Consumption (kilowatt hours)</b>
2017	13,285,465,398
2016	13,479,185,717
2015	13,799,566,708
2014	13,807,333,656
2013	13,571,280,615

Source: ECDMS 2018

The natural gas consumption attributable to non-residential land uses in Orange County from 2013 to 2017 is shown in **Table2- 2**. As shown, natural gas demand has declined slightly since 2013.

<b>Table 2. Non-Residential Natural Gas Consumption in Orange County 2013-2017</b>	
<b>Year</b>	<b>Non-Residential Natural Gas Consumption (therms)</b>
2017	232,285,127
2016	232,223,485
2015	227,551,930
2014	225,550,853
2013	237,982,223

Source: ECDMS 2018

Automotive fuel consumption in Orange County from 2013 to 2018 is shown in **Table 2-3**.

<b>Year</b>	<b>On-Road Automotive Fuel Consumption (gallons)</b>	<b>Off-Road Equipment Fuel Consumption (gallons)</b>
2018	1,398,074,830	15,744,768
2017	1,425,711,535	15,320,669
2016	1,437,461,980	14,905,956
2015	1,438,960,670	14,354,158
2014	1,441,593,050	13,799,890
2013	1,437,010,475	13,353,561

Source: CARB 2014

## 2.2 Regulatory Framework

### **California Energy Efficiency Standards for Residential & Nonresidential Buildings (Title 24)**

Title 24, California’s energy efficiency standards for residential and nonresidential buildings, were established by the California Energy Commission (CEC) in 1978 in response to a legislative mandate to create uniform building codes to reduce California’s energy consumption and provide energy efficiency standards for residential and nonresidential buildings. California’s energy efficiency standards are updated on an approximate three-year cycle. In 2016, the CEC updated Nonresidential Title 24 standards with more stringent requirements. The 2016 standards, which went into effect on January 1, 2017, have substantially reduced the growth in electricity and natural gas use.

### **California Green Building Standards**

The California Green Building Standards Code (California Code of Regulations, Title 24, Part 11), commonly referred to as the CALGreen Code, is a statewide mandatory construction code that was developed and adopted by the California Building Standards Commission and the California Department of Housing and Community Development. The CALGreen standards require new residential and commercial buildings to comply with mandatory measures under the topics of planning and design, energy efficiency, water efficiency and conservation, material conservation and resource efficiency, and environmental quality. CALGreen also has voluntary tiers and measures that local governments may adopt which encourage or require additional measures in the five green building topics. The most recent update to the CALGreen Code was adopted in 2016 and went into effect January 1, 2017.

### **Senate Bill 1368**

On September 29, 2006, Governor Arnold Schwarzenegger signed into law Senate Bill 1368 (Perata, Chapter 598, Statutes of 2006). The law limits long-term investments in baseload generation by the state’s utilities to those power plants that meet an emissions performance standard jointly established by the CEC and the California Public Utilities Commission (CPUC).

The CEC has designed regulations that:

- Establish a standard for baseload generation owned by, or under long-term contract to publicly owned utilities, of 1,100 pounds carbon dioxide per megawatt-hour. This would encourage the development of power plants that meet California's growing energy needs while minimizing their emissions of greenhouse gas emissions;
- Require posting of notices of public deliberations by publicly owned utilities on long-term investments on the CEC website. This would facilitate public awareness of utility efforts to meet customer needs for energy over the long-term while meeting the state's standards for environmental impact; and
- Establish a public process for determining the compliance of proposed investments with the emissions performance standard (EPS) (Perata, Chapter 598, Statutes of 2006).

### **Renewable Energy Sources (Renewables Portfolio Standard)**

Established in 2002 under Senate Bill (SB) 1078, and accelerated by SB 107 (2006) and SB 2 (2011), California's Renewables Portfolio Standard obligates investor-owned utilities, energy service providers, and community choice aggregators to procure 33 percent of their electricity from renewable energy sources by 2020. Eligible renewable resources are defined in the 2013 Renewables Portfolio Standard (RPS) to include biodiesel; biomass; hydroelectric and small hydro (30 megawatts or less); Los Angeles Aqueduct hydro power plants; digester gas; fuel cells; geothermal, landfill gas; municipal solid waste; ocean thermal, ocean wave, and tidal current technologies; renewable derived biogas; multi-fuel facilities using renewable fuels; solar photovoltaic; solar thermal electric; wind; and other renewables that may be defined later. Governor Jerry Brown signed SB 350 on October 7, 2015, which expands the RPS by establishing a goal of 60 percent of the total electricity sold to retail customers in California per year by December 31, 2030. In addition, SB 350 includes the goal to double the energy efficiency savings in electricity and natural gas final end uses (such as heating, cooling, lighting, or class of energy uses upon which an energy efficiency program is focused) of retail customers through energy conservation and efficiency. The bill also requires the CPUC, in consultation with the CEC, to establish efficiency targets for electrical and gas corporations consistent with this goal. SB 350 also provides for the transformation of the California Independent System Operator into a regional organization to promote the development of regional electricity transmission markets in the western states and to improve the access of consumers served by the California Independent System Operator to those markets, pursuant to a specified process.

## **2.3 Energy Consumption Impact Assessment**

### **Thresholds of Significance**

The impact analysis focuses on the four sources of energy that are relevant to the Proposed Project: electricity, natural gas, the equipment fuel necessary for Project construction, and the automotive fuel necessary for Project operations. Addressing energy impacts requires an agency to make a determination as to what constitutes a significant impact. There are no established thresholds of significance, statewide or locally, for what constitutes a wasteful, inefficient, and unnecessary consumption of energy for a

proposed manufacturing land use. For the purposes of this analysis, the amount of electricity, natural gas, construction fuel, and fuel use from operations are quantified and compared to that consumed by non-residential land uses (commercial and industrial) in Orange County.

**Methodology**

The analysis of electricity/natural gas usage is based on California Emissions Estimator Model (CalEEMod) modeling conducted by ECORP Consulting (2019), which quantifies energy use for Project operations. The amount of operational automotive fuel use was estimated using the California Air Resources Board’s EMFAC2014 computer program, which provides projections for typical daily fuel usage in Orange County. The amount of total construction-related fuel use was estimated using ratios provided in the Climate Registry’s General Reporting Protocol for the Voluntary Reporting Program, Version 2.1.

**Energy Consumption**

Energy consumption associated with the Proposed Project is summarized in **Table 2-4**.

<b>Table 2-4. Audi Fletcher Jones Automotive Center Energy Consumption</b>		
<b>Energy Type</b>	<b>Annual Energy Consumption</b>	<b>Percentage Increase Countywide</b>
Electricity Consumption <sup>1</sup>	481,497 kilowatt-hours	0.004%
Natural Gas Consumption <sup>1</sup>	10,724 therms	0.005%
Automotive Fuel Consumption		
• Project Construction <sup>2</sup>	123,054 gallons	0.780%
• Project Operations <sup>3</sup>	151,877 gallons	0.011%

Source: <sup>1</sup>ECORP Consulting 2019; <sup>2</sup>Climate Registry 2016; <sup>3</sup>EMFAC2014 (CARB 2014)

Notes: The Project increases in electricity and natural gas consumption are compared with all of the non-residential buildings in Orange County in 2017, the latest data available. The Project increases in automotive fuel consumption are compared with the countywide fuel consumption in 2018, the most recent full year of data.

As shown in **Table 2-4**, the increase in electricity usage as a result of the Project would constitute an approximate 0.004 percent increase in the typical annual electricity consumption attributable to non-residential uses in Orange County. Project increases in natural gas usage across Orange County would also be negligible. The Project would adhere to all federal, state, and local requirements for energy efficiency, including the Title 24 standards. The Project would be required to comply with Title 24 building energy efficiency standards, which establish minimum efficiency standards related to various building features, including appliances, water and space heating and cooling equipment, building insulation and roofing, and lighting. Implementation of the Title 24 standards significantly reduces energy usage.

As further indicated in **Table 2-4**, the Project’s gasoline fuel consumption during the one-time construction period is estimated to be 123,054 gallons of fuel, which would increase the annual construction-related gasoline fuel use in the county, by 0.78 percent. As such, Project construction would have a nominal effect on local and regional energy supplies. No unusual Project characteristics would necessitate the use of construction equipment that would be less energy-efficient than at comparable

construction sites in the region or the state. Construction contractors would purchase their own gasoline and diesel fuel from local suppliers and would conserve the use of their supplies to minimize costs to their profits. Additionally, construction equipment fleet turnover and increasingly stringent state and federal regulations on engine efficiency combined with state regulations limiting engine idling times and require recycling of construction debris, would further reduce the amount of transportation fuel demand during Project construction. For these reasons, it is expected that construction fuel consumption associated with the Project would not be any more inefficient, wasteful, or unnecessary than other similar development projects of this nature.

As indicated in **Table 2-4**, Project operation is estimated to consume approximately 151,877 gallons of automotive fuel per year, which would increase the annual countywide automotive fuel consumption by 0.01 percent. The amount of operational fuel use was estimated using the California Air Resources Board's EMFAC2014 computer program, which provides projections for typical daily fuel usage in Orange County. This analysis conservatively assumes that all of the automobile trips projected to arrive at the Project during operations would be new to Orange County. The Project would not result in any unusual characteristics that would result in excessive long-term operational automotive fuel consumption. Fuel consumption associated with vehicle trips generated by the Project would not be considered inefficient, wasteful, or unnecessary in comparison to other similar developments in the region.

For these reasons, this impact would be less than significant.

### 3.0 REFERENCES

[CARB] California Air Resources Board. 2014. EMFAC2014 Emissions Model.

Climate Registry. 2016. *General Reporting Protocol for the Voluntary Reporting Program, Version 2.1*.

[ECDMS] California Energy Consumption Data Management System. 2018. Website: Electricity and Natural Gas Consumption by County. <http://www.ecdms.energy.ca.gov/>.

ECORP Consulting, Inc. 2019. *Audi Fletcher Jones Automotive Center Air Quality and Greenhouse Gas Assessment*.

**Project Automotive Fuel Consumption**

**Proposed Project  
Total Construction-Related &  
Operational Gasoline Usage**

<b>Action</b>	<b>Carbon Dioxide Equivalents (CO<sub>2</sub>e) in Metric Tons</b>	<b>Conversion of Metric Tons to Kilograms</b>	<b>Construction Equipment Emission Factor<sup>1</sup></b>	<b>Total Gallons of Fuel Consumed</b>
<b>Project Construction</b>	<b>1249</b>	<b>1249000</b>	<b>10.15</b>	<b>123,054</b>
	Per CalEEMod Output Files. See Ambient Air Quality & Noise Consulting 2018	Per Climate Registry Equation 13e	Per Climate Registry Equation 13e	

**Total Gallons Consumed During Project Construction: 123,054**

**Notes:**

<sup>1</sup>Fuel used by all construction equipment, including vehicle hauling trucks, assumed to be diesel.

**Sources:**

Climate Registry. 2016. *General Reporting Protocol for the Voluntary Reporting Program version 2.1*. January 2016.  
<http://www.theclimateregistry.org/wp-content/uploads/2014/11/General-Reporting-Protocol-Version-2.1.pdf>

ECORP Consulting. 2019. Audi Fletcher Jones Automotive Center Air Quality & Greenhouse Gas Assessment.

**Total Gallons During Project Operations**

Area	Sub-Area	Cal. Year	Season	Veh_tech	EMFAC AC2007 Category	Fuel_GAS	Fuel_DSL	Daily Total	ANNUAL TOTAL
Sub-Areas	Orange County	2020	Annual	All Vehicles	All Vehicles	413.1	3	416.1	151876.5

**Sources:**

Californai Air Resource Board. 2014. EMFAC2014 Mobile Emissions Model.