Climate Change Technical Addendum: Resource Management and Development Plan Spineflower Conservation Plan

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Acronyms

AB	Assembly Bill
BARBD	Building America Research Benchmark Definition
BAU	Business As Usual
CAFE	Corporate Average Fuel Economy
CARB	California Air Resources Board
CEC	California Energy Commission
CEUS	California Commercial End Use Survey
CNRA	California Natural Resources Agency
CO_2	Carbon Dioxide
CO_2e	Carbon Dioxide Equivalent
DOE	Department of Energy
DOT	Department of Transportation
EIA	Energy Information Administration
EIS/EIR	Environmental Impact Statement/Environmental Impact Report
EISA	Energy Independence and Security Act
FCV	Fuel Cell Vehicles
FFV	Flexible Fuel Vehicles
GGE	Greenhouse Gas Equivalent
GHG	Greenhouse Gas
LCFC	Low Carbon Fuel Standard
mpg	Miles Per Gallon
MWh	Megawatt Hour
NHTSA	National Highway Traffic Safety Administration
PHEV	Plug-In Hybrid Electric Vehicles
RMDP	Resource Management and Development Plan
RPS	Renewable Portfolio Standard
SB	Senate Bill
SCAQMD	South Coast Air Quality Management District
SCE	Southern California Edison
SCP	Spineflower Conservation Plan
USEPA	US Environmental Protection Agency

Executive Summary

This technical addendum updates the *Climate Change Technical Report: Resource Management and Development Plan and Spineflower Conservation Plan* (Technical Report; February 2009) prepared by ENVIRON International Corporation and circulated for public review in conjunction with the Draft Environmental Impact Statement/Environmental Impact Report (EIS/EIR) for the proposed Project (i.e., the Resource Management and Development Plan (RMDP) and Spineflower Conservation Plan (SCP)). Specifically, the addendum updates the emission estimates for the residential, non-residential, mobile, municipal, recreational, and golf course emission categories, the build-out of which would be indirectly enabled by approval of the proposed Project and certification of the EIS/EIR. (The addendum does not update emission estimates for vegetation, construction, or area source categories.) This addendum also compares Project emissions with Assembly Bill (AB) 32, and concludes that the proposed Project is consistent with AB 32's greenhouse gas (GHG) emission reduction mandates.

The proposed Project would result in the emission of about 254,000 tonnes of carbon dioxide equivalents (CO_2e) on an annual basis. These emissions, however, are 32% below the level that would be expected if the proposed Project were constructed consistent with the assumptions in the California Air Resources Board (CARB) Scoping Plan (Scoping Plan; as adopted in December 2008) for 2020 if 'no actions are taken' (CARB 2020 NAT). Based on the Scoping Plan, a reduction of 29% below CARB 2020 NAT is required to meet the mandates of AB 32; therefore, this Project would not impede AB 32 as its reduction is greater than 29%. The Project applicant's design commitments, which are recommended for formal adoption as mitigation measures, along with improved vehicle fuel efficiency and cleaner electricity, enable the Project to exceed AB 32's 29% reduction, as shown in Tables ES-1 and ES-2 below.

Table ES-1 – D2 Emissions and CARB 2020 NAT Comparison (Annual Emissions)

Source	Unit	GHG Emissions		Improvement over CARB 2020 NAT
		Project	CARB 2020 NAT	(%)
Residential	tonnes CO_2e / year	59,449	86,607	31%
Non-Residential		53,874	72,341	26%
Mobile		112,138	150,365	25%
Municipal		21,384	35,348	40%
Golf Course		165	182	9%
Recreational (Pools)		4,052	27,213	85%
Area		2,944	2,944	0%
Total (annual emissions)		**254,007**	**375,000**	**32.3%**

Table ES-2 – D2 Emissions and CARB 2020 NAT Comparison (One-time and Annual Emissions)

Source	Unit	GHG Emissions		Improvement over CARB 2020 NAT[2]
		Project	**CARB 2020 NAT**	**(%)**
Vegetation	tonnes CO_2e	44,988	44,988	N/A
Construction		556,868	556,868	N/A
Total (one-time emissions)		**601,856**	**601,856**	**N/A**
Residential	tonnes CO2e / year	59,449	86,607	31%
Non-Residential		53,874	72,341	26%
Mobile		112,138	150,365	25%
Municipal		21,384	35,348	40%
Golf Course		165	182	9%
Recreational (Pools)		4,052	27,213	85%
Area		2,944	2,944	0%
Total (annual emissions)		**254,007**	**375,000**	**32.3%**
Annualized Total[1]	**tonnes CO2e / year**	**269,053**	**390,046**	**31.0%**

Notes:

1. One-time emissions (vegetation and construction) are "annualized" in this Total row. This is calculated by dividing by an annualization factor (40), effectively converting the one-time emission into an annual emission rate. One-time emissions are not annualized in their respective rows above.

2. Percentages only apply to annual CO_2e emissions; annual and one-time CO_2e emissions cannot be directly compared.

1 Introduction

As noted above, this addendum updates the Technical Report previously prepared to analyze the impact of the proposed Project relative to global climate change and circulated for public review. As no applicable federal, state, regional or local agency has adopted GHG significance thresholds, this addendum compares Project emissions with the emission reduction requirements described in CARB's Scoping Plan.

The addendum updates previous emission estimates in order to incorporate regulations that will reduce the GHG emissions associated with electricity production and vehicle operation. In addition, the updated emission estimates incorporate newer, more applicable data sets associated with residential and commercial building energy use.

In order to evaluate the emission reductions that would be required within California to meet AB 32 mandates, CARB prepared the Scoping Plan. The Scoping Plan estimated GHG emissions for year 2020, considering population growth, if 'no actions were taken' to reduce GHG emissions (CARB 2020 NAT).[1] (Year 2020 is relevant because AB 32 requires that emissions be reduced to 1990 levels by year 2020.) The Scoping Plan confirmed that emissions must be reduced by about 29% from the CARB 2020 NAT in order for the State of California to meet the GHG emission reduction mandates of AB 32.

The CARB 2020 NAT emissions estimate relies on specific assumptions, including assumptions relating to electricity generation, vehicle fuel efficiency, and building energy efficiency. In particular, CARB's emissions estimate for 2020, assuming 'no actions were taken,' is premised on the assumption that all new electricity generation will be supplied by natural gas plants, building energy efficiency codes will be held at the 2005 standards of Title 24, and vehicle fuel efficiency will not affected by any regulatory action.

In addition to refining the emission estimates, as described above, this addendum provides an estimate of Project emissions were it constructed in a manner consistent with the assumptions in the CARB 2020 NAT scenario. The addendum also provides estimates of the proposed Project's 2020 GHG emissions inventory, accounting for the proposed Project's sustainability features and currently enacted regulations that will result in reductions in GHG emissions in the future.

[1] The term "CARB 2020 NAT" is used only in this report; the acronym does not exist in the February 2009 Technical Report. Other reports may refer to CARB 2020 NAT as the "business as usual scenario" or "BAU scenario." This report uses the new terminology (i.e., CARB 2020 NAT) to avoid confusion with the term BAU as it is used in other GHG regulatory context; e.g. the Kyoto Accords.

2 Regulatory Setting

2.1 Incorporation of Fuel Efficiency and Electricity Standards

The emission calculations for the proposed Project have been modified to incorporate currently enacted vehicle efficiency and renewable electricity requirements. Specifically, as described further below, regulations mandate that Southern California Edison (SCE) power supply incorporate at least 20% renewable electricity and passenger cars become more fuel efficient.

Senate Bills (SBs) 1078 (Sher) and 107 (Simitian) established the Renewable Portfolio Standard (RPS). The RPS requires certain retail electricity sellers to increase their renewable energy percentage each year by at least 1% until it reaches 20% no later than December 31, 2010. The calculations in this addendum assume the production of electricity from renewable sources emits no CO_2e[2], as is further detailed in Tables 2-1 and 2-2.

California Executive Order S-14-08 (November 11, 2008) mandates retail suppliers of electric services to increase procurement from eligible renewable energy resources to 33% by 2020. Note that if the proposed 33% renewable energy target for 2020 were achieved, the carbon dioxide (CO_2) emission factor used in this report would decrease even further to 488 lbs CO_2/MWh. California Executive Order S-21-09 (September 15, 2009) mandates that "the ARB, under its AB 32 authority, shall adopt a regulation consistent with the 33 percent renewable energy target established in Executive Order S-14-08 by July 31, 2010."[3] This 33% renewable energy goal was conservatively not accounted for in this analysis because it has not yet been promulgated.

This addendum also modified the calculations to account for the AB 1493 (Pavley) vehicle GHG emission standards. The Pavley standards require 30% GHG emission reductions from vehicles

[2] There is some debate on the carbon neutrality of using biomass and biogas for electricity production. While some may argue that the carbon released as CO_2 from biomass or biogas combustion originated from the atmosphere and thus does not contribute any net additional carbon to the atmosphere, others argue that the combustion still releases CO_2 into the atmosphere and thus cannot be ignored. In addition, some argue that lifecycle analyses of fuel sources should be included in the emissions estimation. As life cycle emissions are not included for fossil fuels and were not included in the Scoping Plan, they are not included here. Accordingly, for sake of the analysis presented here, we assume that electricity production from renewable sources is carbon neutral.

[3] http://gov.ca.gov/executive-order/13269/

by 2016.[4] The Pavley fuel efficiency standards decrease the proposed Project's mobile source GHG emissions by ~20%.[5]

2.2 April 2007 Supreme Court Ruling

In *Massachusetts et al. vs. Environmental Protection Agency et al.* (April 2, 2007), the US Supreme Court ruled that the Clean Air Act authorizes the US Environmental Protection Agency (USEPA) to regulate CO_2 emissions from new motor vehicles. The Court did not mandate that the USEPA enact regulations to reduce GHG emissions, but found that the only instances where the USEPA could avoid taking action were if it found that GHGs do not contribute to climate change or if it offered a "reasonable explanation" for not determining that GHGs contribute to climate change.

On April 24, 2009, the USEPA issued a proposed endangerment finding, stating that high atmospheric levels of greenhouse gases "are the unambiguous result of human emissions, and are very likely the cause of the observed increase in average temperatures and other climatic changes." The USEPA further found that "atmospheric concentrations of greenhouse gases endanger public health and welfare within the meaning of Section 202 of the Clean Air Act." The finding itself does not impose any requirements on industry or other entities. The public comment period for this proposed endangerment finding ended June 23, 2009, and the finding is now under final review.[6]

2.3 Corporate Average Fuel Efficiency Standards

In response to the *Massachusetts et al. vs. Environmental Protection Agency et al.* ruling, the Bush Administration issued an executive order on May 14, 2007, directing the USEPA and Departments of Transportation (DOT) and Energy (DOE) to establish regulations that reduce GHG emissions from motor vehicles, non-road vehicles, and non-road engines by 2008. On December 19, 2007, the Energy Independence and Security Act of 2007 (EISA) (discussed below) was signed into law, which requires an increased Corporate Average Fuel Economy (CAFE) standard of 35 miles per gallon for the combined fleet of cars and light trucks by model year 2020. EISA requires establishment of interim standards (from 2011 to 2020) that will be the "maximum feasible average fuel economy" for each fleet. On October 10, 2008, the National Highway Traffic Safety Administration (NHTSA) released a final environmental impact

[4] The standards start in model year 2009, and ramp up to a 30 percent reduction in greenhouse gas emissions for vehicles sold in model year 2016 and beyond. Source: Comparison of Greenhouse Gas Reductions for the United States and Canada Under U.S. CAFE Standards and California Air Resources Board Greenhouse Gas Regulations, California Air Resources Board an Enhanced Technical Assessment February 25, 2008. http://www.arb.ca.gov/cc/ccms/reports/pavleycafe_reportfeb25_08.pdf

[5] Comparison of Greenhouse Gas Reductions for the United States and Canada Under U.S. CAFE Standards and California Air Resources Board Greenhouse Gas Regulations, California Air Resources Board an Enhanced Technical Assessment February 25, 2008. http://www.arb.ca.gov/cc/ccms/reports/pavleycafe_reportfeb25_08.pdf

[6] Available at http://www.epa.gov/climatechange/endangerment.html

statement analyzing proposed interim standards for model years 2011 to 2015 passenger cars and light trucks. NHTSA issued a final rule for model year 2011 on March 23, 2009.[7]

On May 19, 2009, President Obama announced a national policy for fuel efficiency and emissions standards in the US auto industry. The proposed rulemaking is a collaboration between the DOT and USEPA with the support of the United Auto Workers. The proposed federal standards apply to passenger cars, light-duty trucks, and medium duty passenger vehicles built in model years 2012 through 2016. If finalized, the proposed rule would surpass the 2007 CAFE standards and require an average fuel economy standard of 35.5 miles per gallon (mpg) in 2016. On May 22, 2009, the DOT and USEPA issued a notice of upcoming joint rulemaking on this issue.[8,9]

On June 30, 2009 the USEPA granted the waiver for California for its greenhouse gas emission standards for motor vehicles; this is described in more detail below.

2.4 Reporting Requirements

Congress passed "The Consolidated Appropriations Act of 2008" (HR 2764) in December 2007, which includes provisions requiring the establishment of mandatory GHG reporting requirements. The measure directs USEPA to publish draft rules by September 2008, and final rules by June 2009 mandating reporting "for all sectors of the economy." On September 22, 2009, EPA Administrator Jackson signed a final rule mandating annual reporting of GHG emissions by suppliers of fossil fuels or industrial greenhouse gases, manufacturers of vehicles and engines, and facilities that emit 25,000 metric tons or more per year of GHG emissions.

2.5 Low Carbon Fuel Standard (LCFS)

California Executive Order S-01-07 (January 18, 2007) requires a 10% or greater reduction in the average fuel carbon intensity for transportation fuels in California regulated by CARB. CARB identified the LCFS as a Discrete Early Action item under AB 32, and the final resolution (09-31) was issued on April 23, 2009.[10]

2.6 Assembly Bill 1493 (Mobile Source Reductions)

AB 1493 requires CARB to adopt regulations by January 1, 2005, to reduce GHG emissions from noncommercial passenger vehicles and light-duty trucks of model year 2009 and thereafter. The bill requires the CCAR to develop and adopt protocols for the reporting and certification of greenhouse gas emissions reductions from mobile sources for use by CARB in granting emission reduction credits. The bill authorizes CARB to grant emission reduction credits for reductions of greenhouse gas emissions prior to the date of enforcement of regulations, using model year 2000 as the baseline for reduction.

[7] See http://www.nhtsa.dot.gov/portal/site/nhtsa/menuitem.43ac99aefa80569eea57529cdba046a0/

[8] See http://yosemite.epa.gov/opa/admpress.nsf/6fa790d452bcd7f58525750100565efa/451902cb77d4add5852575bb006d3f9b!OpenDocument

[9] See http://www.nhtsa.dot.gov/portal/site/nhtsa/menuitem.43ac99aefa80569eea57529cdba046a0/

[10] See http://www.arb.ca.gov/fuels/lcfs/lcfs.htm

In 2004, CARB applied to the USEPA for a waiver under the federal Clean Air Act to authorize implementation of these regulations. The waiver request was formally denied by the USEPA in December 2007 after California filed suit to prompt federal action. In January 2008, the California State Attorney General filed a new lawsuit against the USEPA for denying California's request for a waiver to regulate and limit GHG emissions from these automobiles. In January 2009, President Barack Obama issued a directive to the USEPA to reconsider California's request for a waiver. On June 30, 2009, the USEPA granted the waiver for California for its greenhouse gas emission standards for motor vehicles. As part of this waiver, the USEPA specified the following provision: CARB may not hold a manufacturer liable or responsible for any noncompliance caused by emission debits generated by a manufacturer for the 2009 model year.

2.7 CARB Preliminary Draft Proposal: Recommended Approaches for Setting Interim Significance Thresholds for Greenhouse Gases Under the California Environmental Quality Act (Draft CARB Thresholds)

In October 2008, CARB released a draft proposal for identifying CEQA thresholds of significance for industrial, commercial and residential developments. The Draft CARB Thresholds propose a framework for developing thresholds of significance that rely upon the incorporation of a variety of performance measures to reduce GHG emissions associated with a project, as well as a numerical threshold of significance above which a project must include detailed GHG analysis in an EIR and incorporate all feasible mitigation measures. Although CARB proposed a 7,000 tons per year threshold for industrial projects, a numerical threshold for commercial and residential projects was not proposed, but is under development. In addition, the Draft CARB Thresholds incorporate SB 375 by providing that commercial and residential projects that comply with a previously approved plan, which, essentially, satisfies SB 375 and for which a certified final CEQA document has been prepared, is presumed to have a less than significant impact related to climate change. As of this time, CARB has suspended its work on CEQA thresholds.

2.8 Local Air Quality Management District Policies

On December 5, 2008, the South Coast Air Quality Management District (SCAQMD) Governing Board adopted its staff proposal for an interim CEQA GHG significance threshold for projects where the SCAQMD is the lead agency (i.e., industrial (stationary source) projects). To achieve a policy objective of capturing 90% of GHG emissions from new residential/commercial development projects and implement a "fair share" approach to reducing emission increases from each sector, SCAQMD staff has proposed combining performance standards and screening thresholds. The performance standards suggested have primarily focused on energy efficiency measures beyond Title 24 Part 6, California's building energy efficiency standards, and an undetermined screening level of tonnes CO_2e per year based on direct operational emissions. Above this screening level, project design features designed to reduce GHGs must be implemented to reduce the impact to below a level of significance. SCAQMD staff are performing additional analyses to further define the performance standards and quantitative screening level.

2.9 California-specific Adaptation Strategies

The California Natural Resources Agency (CNRA)[11] discusses California's climate adaptation strategy. General themes from the report regarding adaptation strategies are summarized below although the report also includes many specific examples of how California may adapt to a changing climate.

Because climate change is already affecting California and current emissions will continue to drive climate change in the coming decades, regardless of any mitigation measured that may be adopted, the necessity of adaptation to the impacts of climate change is recognized by the state of California. The *2009 California Climate Adaption Strategy Discussion Draft* begins what will be on-going process of adaptation, as directed by Gov. Schwarzenegger's Executive Order S-13-08. The goals of the strategy are to analyze risks and vulnerabilities and identify strategies to reduce the risks. Once the strategies are identified and prioritized, government resources would be identified. Finally, the strategy includes identifying research needs and educating the public.

Climate change risks are evaluated using two distinct approaches: (1) projecting the amount of climate change that may occur using computer-based global climate models and (2) assessing the natural or human system's ability to cope with and adapt to change by examining past experience with climate variability and extrapolating this to understand how the systems may respond to the additional impact of climate change. The major anticipated climate changes expected in the State of California include increases in temperature, decreases in precipitation, particularly as snowfall, and increases in sea level, as discussed above. These gradual changes will also lead to an increasing number of extreme events, such as heat waves, wildfires, droughts, and floods. This would impact public health, ocean and coast resources, water supply, agriculture, biodiversity and the transportation and energy infrastructure.

Key preliminary adaptation recommendations included in the *Strategy* are as follows:

- Appointment of a Climate Adaption Advisory Panel;
- Improved water management in anticipation of reduced water supplies, including a 20% reduction in per capita water use by 2020;
- Consideration of project alternatives that avoid significant new development in areas that cannot be adequately protected from flooding due to climate change;
- Preparation of agency-specific adaptation plans, guidance or criteria by September 2010;
- Consideration of climate change impacts for all significant state projects;
- Assessment of climate change impacts on emergency preparedness;
- Identification of key habitats and development of plans to minimize adverse effects from climate change;
- Development of guidance by the California Department of Public Health by September 2010 for use by local health departments to assess adaptation strategies;

[11] 2009 California Climate Adaptation Strategy. Discussion Draft. California Natural Resources Agency Board.

- Amendment of Plans to assess climate change impacts and develop local risk reduction strategies by communities with General Plans and Local Coastal Plans; and
- Inclusion of climate change impact information into fire program planning by state fire fighting agencies.

3 Greenhouse Gas Inventory

3.1 Vegetation

This addendum does not modify the February 2009 Technical Report vegetation section.

3.2 Construction

This addendum does not modify the February 2009 Technical Report construction section.

3.3 Residential

This addendum uses updated project design features and updated data sources to estimate the emissions associated with natural gas and electricity usage in residences. The calculations presented here assume, in light of the Project applicant's commitment, that the residences will be built such that the electricity and gas usage covered by Title 24 sources is reduced 15% beyond that required by 2008 Title 24.[12] This requires greater energy efficiency than that assumed in the February 2009 Technical Report, where the commitment was to energy efficiency 15% beyond that required by 2005 Title 24.

The methods used to estimate the energy used by sources not covered by Title 24 also have been updated to use the Building America Research Benchmark Definition (BARBD) model; the February 2009 Technical Report relied upon Energy Information Administration (EIA) data. The BARBD model was used here because it was developed to provide a means for tracking progress toward residential energy savings. Table 3-A-1 shows the built energy specifications, and Tables 3-A-2 through 3-A-5 show the BARBD and GHG calculations.

This addendum also includes updates to the residential electricity emission factor and incorporates the 2010 RPS requirement (Table 2-1 and 2-2).

When compared to the emission estimates presented in the February 2009 Technical Report, the use of the new BARBD methodology increases the emission estimates, as compared to the previously used EIA data, for electricity (~5%) and natural gas usage (~20%). The incorporation of the new RPS electricity emission factor decreases the electricity GHG emission factor (~13%). The Project applicant's updated commitment to a reduction 15% beyond that required by 2008 Title 24 reduces the electricity and natural gas usage (~10%). These updates decrease the previous analysis's overall GHG emissions (~10%) from residential buildings.

[12] While the Project applicant has committed to exceed whatever version of the Title 24 standards are in effect at the time the building permit applications are filed, emissions are estimated assuming applicability of the 2008 standards. As approval of the proposed Project and certification of the EIS/EIR would enable the multi-year, long-term build-out of various residential and non-residential uses, the estimates are conservative – at the time actual build-out occurs, more stringent versions of Title 24 may be in play.

When compared to the CARB 2020 NAT, the Project applicant's commitment to a 15% reduction beyond that required by 2008 Title 24 reduces residential emissions approximately[13] 15% beyond the CARB 2020 NAT 2005 Title 24 assumption. Incorporation of the RPS reduces emissions approximately 8%. And, the Project applicant's commitment to install solar electricity generation equivalents on single-family homes reduces GHG emissions from residential buildings by approximately 8%. Table 3-A-6 summarizes all residential GHG emissions.

3.4 Non-Residential

This addendum uses updated project design features and updated data sources to estimate the emissions associated with natural gas and electricity usage in non-residential buildings. The calculations presented here assume, in light of the Project applicant's commitment, that the non-residential buildings will be built such that the electricity and gas usage covered by Title 24 sources is reduced 15% beyond that required by 2008 Title 24.[14] This requires greater energy efficiency than that assumed in the February 2009 Technical Report where the commitment was to energy efficiency 15% beyond that required by 2005 Title 24.

The methods used to estimate the energy used by sources in non-residential buildings not covered by Title 24 also have been updated to use California Commercial End Use Survey (CEUS) data; the February 2009 Technical Report relied upon EIA data and the eQUEST model. The CEUS data was used because it is based on a survey conducted in 2002 of existing California buildings; this data also includes sources covered by Title 24 and sources not covered by Title 24, and provides data by California Climate Zones, as shown in Tables 3-B-1 through 3-B-6.

This addendum also includes updates to the non-residential electricity emission factor and incorporates the 2010 RPS requirement (Tables 2-1 and 2-2).

When compared to the emission estimates presented in the February 2009 Technical Report, the new CEUS data results in increased energy use by approximately 10%, when compared to that predicted by the EIA data. The incorporation of the new RPS electricity emission factor decreases the electricity GHG emission factor (~13%), which decreases GHG emissions by approximately 10%. The Project applicant's updated commitment to a reduction 15% beyond that required by 2008 Title 24 reduces the electricity and natural gas usage by approximately 10% over the original commitment of 15% beyond 2005 Title 24. These updates decrease the estimated emissions beyond that in the previous analysis by approximately 10%.

[13] Title 24 only covers approximately one half of the energy-usage within residential buildings The improvement from 2005 to 2008 Title 24 standards, coupled with the Project applicant's 15% commitment to reduce energy use over that required by Title 24, reduces the Title 24 covered emissions by approximately 30% for an overall reduction of approximately 15%. The tables provide more detail.

[14] See *supra*, footnote 5.

When compared to the CARB 2020 NAT, the Project applicant's commitment to a 15% reduction beyond that required by 2008 Title 24 reduces non-residential emissions approximately[15] 15% beyond the CARB 2020 NAT 2005 Title 24 assumption. Incorporation of the RPS reduces emissions approximately 8%. And, the Project applicant's commitment to install solar electricity generation equivalents on approximately 8% of the non-residential rooftops reduces emissions approximately 8%. Table 3-B-7 summarizes all non-residential emissions.

3.5 Mobile

This addendum updates the mobile source emission factor and includes the new regulatory requirements for increasing vehicle energy efficiency (Pavley). The new Pavley mobile source emission factor decreases the mobile source GHG emission factor (~20%). These updates decrease the previous analysis's overall GHG emissions (~20%) (Table 3-C-1).

3.6 Area Sources

This addendum does not modify the February 2009 Technical Report area sources section.

3.7 Municipal/Water

This addendum updates the municipal electricity emission factor and includes the 2010 RPS requirement (Tables 2-1 and 2-2). Tables 3-E-1 through 3-E-3 summarize all municipal emissions.

3.8 Recreational (Pools)

This addendum uses updated data sources to estimate the emissions associated with natural gas and electricity usage in recreation centers (pools). Specifically, the methodology used to estimate the energy consumption of the pools at the recreation centers has been updated to use data from five Oakland pools (Table 3-F-1); the February 2009 Technical Report used data from just one pool. This addendum further updates the natural gas heating requirement for the pools by (i) adjusting for more efficient heaters and (ii) differences in climate between the pools in the Oakland study and the pools in the Project area (Table 3-F-2).

The updated Oakland study data does not affect project natural gas usage because all heating is assumed to come from solar heating. However, incorporation of the new RPS electricity emission factor decreases the electricity GHG emission factor (~13%). These updates decrease the previous analysis's overall GHG emissions by approximately 6%. Tables 3-F-3 summarize all pool emissions.

3.9 Golf Course

This addendum uses updated project design features and updated data sources to estimate the emissions associated with natural gas and electricity usage at the golf course. The calculations

[15] Title 24 only covers approximately one half of the energy-usage within non-residential buildings The improvement from 2005 to 2008 Title 24 standards, coupled with the Project applicant's 15% commitment to reduce energy use over that required by Title 24, reduces the Title 24 covered emissions by approximately 30% for an overall reduction of approximately 15%. The tables provide more detail.

presented here assume, in light of the Project applicant's commitment, that the golf course-related buildings will be built such that the electricity and gas usage covered by Title 24 sources is reduced 15% beyond that required by 2008 Title 24. This results in greater energy efficiency than that assumed in the February 2009 Technical Report.

The methodology used to estimate the energy used by sources in golf course-related buildings not covered by Title 24 have been updated to use CEUS data. The CEUS data was used because it is based on a survey conducted in 2002 of existing California buildings, includes sources covered by Title 24 and sources not covered by Title 24, and provides data by California Climate Zones, as shown in Tables 3-B-1 through 3-B-6.

This addendum also includes updates to the non-residential electricity emission factor and incorporates the 2010 RPS requirement (Tables 2-1 and 2-2).

Table 3-G-1 summarizes all golf course emissions.

3.10 Summary of Emissions

Table 3-H-1 summarizes all operational emissions.

3.11 Life Cycle

This addendum does not modify the February 2009 Technical Report life cycle analysis. (With that said, the Technical Report life cycle section does not reflect this addendum's residential and non-residential calculation updates.) The CARB 2020 NAT scenario does not include life cycle emissions.

3.12 Utilities

Appendix A recompiles the electricity and natural gas usage detailed in other sections of this addendum.

4 CARB 2020 NAT

This section outlines the methodology and results from the CARB 2020 NAT analysis.

4.1 CARB 2020 NAT Methodology

As discussed in the introduction of this addendum, Project emissions are compared with the emission reduction requirements described in the CARB Scoping Plan.

In order to evaluate the emission reductions that would be required within California to meet the mandates of AB 32, CARB prepared the Scoping Plan. The Scoping Plan contained an estimate of the GHG emissions that would result in 2020, considering population growth, if 'no actions were taken' to reduce GHG emissions (CARB 2020 NAT).[16] Based on the Scoping Plan, emissions must be reduced by about 29% from the CARB 2020 NAT for the State to meet the GHG emission reduction mandates of AB 32.[17]

The CARB 2020 NAT emissions estimate relies on specific assumptions, including assumptions related to electricity generation, vehicle fuel efficiency, and building energy efficiency. In particular, CARB's emissions estimate for 2020, assuming 'no actions were taken," is premised on the assumption that all new electricity generation will be supplied by natural gas plants, building energy efficiency codes will be held at the 2005 standards of Title 24, and vehicle fuel efficiency will not affected by any regulatory action.

4.2 Residential CARB 2020 NAT Results

The residential CARB 2020 NAT scenario presented in this addendum uses the SCE 2004 electricity emission factor, assumes no improvement over Title 24, and assumes no solar power generation equivalent installations on single-family homes.

Project design features and the cleaner electricity required by the RPS reduce residential emissions 31% below CARB 2020 NAT (Table 3-A-3 through Table 3-A-6).

4.3 Non-Residential CARB 2020 NAT Results

The non-residential CARB 2020 NAT scenario presented in this addendum uses the SCE 2004 electricity emission factor, assumes no improvement over Title 24, and assumes no solar power generation equivalent installations on non-residential buildings.

[16] See *supra*, footnote 1.

[17] "ARB staff estimated 2020 business-as-usual GHG emissions, which represent the emissions that would be expected to occur in the absence of any GHG reductions actions. ARB staff estimates the statewide 2020 business-as-usual greenhouse gas emissions will be 596 MMTCO2E. Emission reductions from the recommended measures in the Scoping Plan total 169 $MMTCO_2E$, allowing California to attain the 2020 emissions limit of 427 MMTCO2E." http://www.arb.ca.gov/cc/inventory/data/forecast.htm. The reduction using these values (596, and 427) is 28.35%. In this report we use the value of 28.5% (which rounds to 29%), which correctly reflects the required reduction when the more detailed values from the Scoping Plan are used.

Project design features and the cleaner electricity required by the RPS reduce non-residential emissions 26% below CARB 2020 NAT (Tables 4-B-1 through Table 4-B-2).

4.4 Mobile CARB 2020 NAT Results

The CARB 2020 NAT scenario assumes that all future development remains at a density that is consistent with existing development in the Santa Clarita Valley. Because vehicle trip rates are, in part, a function of housing density, this results in an approximately 6% increase in vehicle trips for the CARB 2020 NAT scenario (Table 4-C-1) over that projected for the proposed Project.

The comparatively more dense development, build-out of which would be enabled by approval of the proposed Project and certification of the EIS/EIR, and the Pavley vehicle efficiency requirements reduce mobile source emissions 25% below CARB 2020 NAT (Tables 4-C-2).

4.5 Area Source CARB 2020 NAT Results

The area source CARB 2020 NAT scenario presented in this addendum is identical to the project scenario.

4.6 Municipal CARB 2020 NAT Results

The municipal CARB 2020 NAT scenario presented in this addendum uses the SCE 2004 electricity emission factor and assumes no recycled water. Tables 4-E-1 and 4-E-2 present the calculations, methodologies, and final results.

Water recycling, local sourcing of water, and the cleaner electricity required by the RPS reduce municipal emissions 40% below CARB 2020 NAT.

4.7 Recreational (Pools) CARB 2020 NAT Results

The recreational (pools) CARB 2020 NAT scenario presented in this addendum uses the SCE 2004 electricity emission factor and assumes no solar heating.

Solar heating and the cleaner electricity required by the RPS reduce recreational (pool) emissions 85% below CARB 2020 NAT (Tables 4-F-1).

4.8 Golf Course CARB 2020 NAT Results

The golf course CARB 2020 NAT scenario presented in this addendum uses the SCE 2004 electricity emission factor. Table 4-G-1 presents all calculations, methodologies, and final results.

Project design features and the cleaner electricity required by the RPS reduce golf course emissions 9% below CARB 2020 NAT (Tables 4-F-1).

4.9 Summary of CARB 2020 NAT Results

The sections above discuss the calculations and assumptions made in calculating the CARB 2020 NAT scenario. The CARB 2020 NAT analysis only includes annual emissions, and not the one-time vegetation and construction emissions. Table 3-H-1 lists the proposed project emissions from each source and compares to them to the CARB 2020 NAT emissions from each source.

Table 3-H-1 shows that, overall, the project is 32% better than the CARB 2020 NAT scenario and exceeds AB 32's 29% reduction for all design alternatives.

Even if the project emissions for vegetation and construction are included[18] in the overall project CARB 2020 NAT scenario, Newhall is still over 30% better than the CARB 2020 NAT scenario as shown in Table 3-H-2.

[18] Annualized by 40 years. Note that this is highly conservative as Newhall is taking measures to reduce emissions from these sources. Also, because vegetation is not included in the CARB Scoping Plan, vegetation should likely not be included here.

5 Executive Order S-3-05 (Statewide GHG Targets)

Executive Order S-03-05 mandates that California emit 80% less GHGs in 2050 than it emitted in 1990. As of 2004, California was emitting 12% more GHG emissions than in 1990. For California to emit 80% less than it emitted in 1990, emissions would be only 18% of the 2004 emissions. Accounting for population growth from 35,840,000 people in 2004 to approximately 55,000,000 people in 2050, the emissions per capita would have to be only 12% of what they were in 2004. This means 88% reductions in per capita GHG emissions from today's emissions intensities must be realized in order to achieve California's 2050 GHG goals. Energy efficiency and reduced vehicle miles traveled will play important roles in achieving this aggressive goal; however, the decarbonization of fuel will also be necessary.

The extent to which GHG emissions from traffic generated by the build-out that would be enabled by approval of the proposed Project and certification of the EIS/EIR will change in the future depends on the quantity (e.g., number of vehicles, average daily mileage) and quality (i.e., carbon content) of fuel that will be available and required to meet both regulatory standards and residents' needs. Renewable power requirements, low carbon fuel standards, and vehicle emissions standards will all decrease GHG emissions per unit of energy delivered or per vehicle mile traveled.

The California Energy Commission (CEC) published the "State Alternative Fuels Plan,"[19] in which it noted the existence of "challenging but plausible ways to meet 2050 [transportation] goals." The main finding from this analysis is that reducing today's average per capita driving miles by about 5 percent (or back to 1990 levels), in addition to the decarbonization strategies listed below, would achieve S-03-05 goals of 80% below 1990 levels. The approach described below is directly[20] from the CEC report.

An 80 percent reduction in GHG emissions associated with personal transportation can be achieved even though population grows to 55 million, an increase of 50 percent. The following set of measures could be combined to produce this result:

1. Lowering the energy needed for personal transportation by tripling the energy efficiency of on-road vehicles in 2050 with:
    a. Conventional gas, diesel, and flexible fuel vehicles (FFVs) averaging more than 40 miles per gallon (mpg).
    b. Hybrid gas, diesel, and FFVs averaging almost 60 mpg.
    c. All electric and plug-in hybrid electric vehicles (PHEVs) averaging well over 100 mpg (on a greenhouse gas equivalents [GGE] basis) on the electricity cycle.

[19] State Alternative Fuels Plan. December 2007 CEC-600-2007-011-CMF. Available online at: http://www.energy.ca.gov/2007publications/CEC-600-2007-011/CEC-600-2007-011-CMF.PDF

[20] Id. at pp. 67-68.

d. Fuel cell vehicles (FCVs) averaging over 80 mpg (on a GGE basis).

2. Moderating growth in per capita driving, reducing today's average per capita driving miles by about 5 percent or back to 1990 levels.
3. Changing the energy sources for transportation fuels from the current 96 percent petroleum-based to approximately:
   a. 30 percent from gasoline and diesel from traditional petroleum sources or lower GHG emission fossil fuels such as natural gas.
   b. 30 percent from transportation biofuels.
   c. 40 percent from a mix of electricity and hydrogen.
4. Producing transportation biofuels, electricity, and hydrogen from renewable or very low carbon-emitting technologies that result in, on average, at least 80 percent lower life cycle GHG emissions than conventional fuels.
5. Encouraging more efficient land uses and greater use of mass transit, public transportation, and other means of moving goods and people.

The measures described above are the types of measures that will yield required reductions to transportation-related emissions. Although these types of measures are expected to occur, the emission estimates and CARB 2020 NAT analysis do not claim any credit for these measures.

Additionally, in reference to overall California emissions, the CEC states, "Accomplishing the goal will require the state economy to transition to become almost carbon-free."[21]

[21] From Section 3.4 "Conclusion: Research and the 2050 challenge" of the "DRAFT Climate Action Team Biennial Report", March 2009. http://www.energy.ca.gov/2009publications/CAT-1000-2009-003/CAT-1000-2009-003-D.PDF

6 Conclusions

The proposed Project will emit about 254,000 tonnes of CO_2e on an annual basis. This amount is 32% below the level that would be expected if the Project were constructed consistent with the assumptions in the CARB 2020 NAT scenario. As a reduction of 29% below CARB 2020 NAT is required to meet the goals of AB 32, this Project will not impede achievement of AB 32's emission reduction mandates as its reduction is greater than that required.

Table 2-1
GHG Emissions from Renewable Power Standards
Newhall Land
Newhall Ranch, CA

Renewable Energy Source[1]	Energy Delivered[1] [million kWh]	Percentage of Renewable Energy Delivered [%]
Wind	2,359	21%
Small hydro	449	4%
Biogas	0	0%
Solar	0	6%
Biomass	786	7%
Geothermal	6,965	62%
Total[2]	11,234	100%
% of Total Energy From Renewables[1]	13%	
% of Total Energy From Non-Renewables	87%	
Total Energy Delivery[2]	83,958,770	MWh
from renewables	11,234,288	MWh
from non-renewables	72,724,482	MWh
CO_2 Emissions per Total Energy Delivered	630.89	lbs CO_2/MWh delivered
Total CO_2 Emissions[3]	24,026,108	metric tonnes CO_2
CO_2 Emissions per Total Non-Renewable Energy[4]	728.34	lbs CO_2/MWh delivered
Estimated Emission Factors for Total Energy Delivered[5]		
2010 RPS (20%)	582.7	lbs CO_2/MWh delivered
2020 RPS (33%)	488.0	lbs CO_2/MWh delivered

Notes:

1. The renewable energy portfolio for Southern California Edison, the power utility that is most likely to provide power to the development. The renewable energy distribution is based on 2007 data available from the SCE PUP report.
2. Total energy value reported for 2007 by Southern California Edison in California Climate Action Registry PUP report.
3. The amount of CO2 emissions is provided in Southern California Edison's Power/Utility Protocol (PUP) Report for 2007.
4. The emissions metric presented here is calculated based on the total CO_2 emissions divided by the energy delivered from non-renewable sources.
5. The emission factors for total energy delivered are estimated by multiplying the percentage of energy delivered from non-renewable energy by the CO2 emissions per total non-renewable energy metric calculated above. Two emission factors are presented here for the current 20% RPS goal for 2010 and the presumed 33% RPS for 2020. The estimate provided here and the 2006 PUP report issued by Southern California Edison assume that renewable energy sources do not result in any CO2 emissions. This is not necessarily true for biogas- and biomass-sourced energy but some consider these sources to be "carbon neutral."

Abbreviations:

CO_2 = carbon dioxide
kWh = kilowatt-hour
lbs = pounds
MWh = Megawatt-hour
PUP = Power/Utility Protocol
RPS = Renewables Portfolio Standard
SCE = Southern California Edison

Table 2-2
Emission Factors by Energy Source
Newhall Land
Newhall Ranch, CA

Energy Source	Scenario	Unit	Conversion Factor [lb CO_2/Unit]	Conversion Factor [tonne CO_2/Unit]
Electricity	2004 emission factor[1]	kWh	0.679	3.08E-04
	2007 emission factor[1]		0.631	2.86E-04
	2010 RPS (20%)[3]		0.583	2.64E-04
Natural Gas[2]	-	kBTU	0.117	5.31E-05

Notes:
1. Emission factor for electricity provided by Southern California Edison for the year 2004 and 2007, obtained from the California Climate Action Registry Database.
2. Emission factor for natural gas obtained from California Climate Action Registry Reporting Protocol, Table C7.

3. Estimated emission factor for total energy delivered after implementation of the Renewables Portfolio Standard. Emission factor has been adjusted to reflect 20% of power provided by renewables by multiplying the SCE 2007 emission factor by (1-RPS renewable %) / (1-SCE 2007 renewable %). RPS renewable % is 20% and the SCE 2007 renewable % is 13%.

Abbreviations:
CO_2e - carbon dioxide equivalent
kBTU - 1000 British thermal units
kWh - kilowatt-hour
lb - pound
RPS - Renewables Portfolio Standard

Sources:

California Climate Action Registry General Reporting Protocol, Version 3.1 (January 2009). Available at: http://www.climateregistry.org/resources/docs/protocols/grp/GRP_3.1_January2009.pdf

California Climate Action Registry Database: Southern California Edison Company 2007 PUP Report. 2008. Available at: https://www.climateregistry.org/CARROT/public/Reports.aspx

Table 3-A-1
Specifications for Homes Modeled using Micropas
Newhall Land
Newhall Ranch, CA

Specification	Units	Micropas[1]		
		Apartment	Attached	Single Family
Climate Zone		California Climate Zone 9		
Number of Dwelling Units per Building	DU	16	8	1
Dwelling Unit Size[2]	SF	1,260	1,764	3,322

Notes:

1. Micropas 7.3 is a building energy efficiency modeling package approved by the California Energy Commission as a 2005 Title 24 residential Alternative Compliance Method (ACM). The Micropas software calculates the site energy use per square foot per year and the Time Dependent Valuation (TDV) of the energy use per square foot per year to determine Title 24 compliance. Micropas version 7.3 is available for purchase at http://www.micropas.com/

2. The Micropas specifications are for the actual home modeled in Micropas whose square footage is closest to the average square footage per dwelling unit as specified by Newhall. The following dwelling unit sizes are those specified by Newhall:
   a. The large-end apartments will be 1,250 square feet.
   b. The large-end attached homes will be 1,750 feet.
   c. The large-end single family home will be 3,300 square feet.

Abbreviations:
DU - Dwelling Unit
SF - Square Feet

Table 3-A-2
Energy Use per Residential Dwelling Unit: Appliances and Plug-ins
Newhall Land
Newhall Ranch, CA

		Dwelling Size		Electricity Delivered (kWh / DU / year)[3]									Natural Gas Delivered (MMBTU / DU / yr)[3]		
Type	**Type**	**Square Footage / DU[1]**	**Bedrooms / DU[2]**	**Refrigerator**	**Clothes Washer**	**Clothes Dryer (Electric)[4]**	**Dishwasher**	**Cooking Range (Electric)[5]**	**Total Major Appliances**	**Plug-in Lighting**	**MELs**	**Total**	**Cooking Range (Gas)[6]**	**Clothes Dryer (Gas)[7]**	**Total**
Standard Appliances	Apartment	1,250	2.0	669	88	380	172	252	1,560	291	446	2,296	1.9	2.2	4.1
	Attached	1,750	3.0	669	105	456	206	303	1,738	371	525	2,634	2.3	2.6	4.9
	Single Family	3,300	4.0	669	123	531	240	353	1,916	619	679	3,214	2.6	3.1	5.7

Notes:
1. Square footage per dwelling unit as specified by Newhall.
2. ENVIRON conservatively assumed a high number of bedrooms per dwelling unit, as a higher number of bedrooms results in higher energy usage.
3. Energy use per residential dwelling unit is based on information in BARBD Table 12.
4. Dryers may be either electric or natural-gas fueled. This value represents 1/2 the electricity required for electric dryers.
5. Cooking ranges may be either electric or natural-gas fueled. This value represents 1/2 the electricity required for electric stoves.
6. This value represents 1/2 the natural gas required for natural gas stoves.
7. This value represents 1/2 the natural gas required for natural gas dryers.

Abbreviations:
BARBD - Building America Research Benchmark Definition
DU - Dwelling Unit
kWh - kilowatt-hour
MMBTU - million british thermal units
MEL - Miscellaneous electric load

Source:
R. Hendron. Building America Research Benchmark Definition. Technical Report NREL/TP-550-42662. January 2008.

Table 3-A-3
Energy Use per Residential Dwelling Unit
Newhall Land
Newhall Ranch, CA

	Dwelling Sizes		Electricity Delivered						Natural Gas Delivered			
			Micropas[2]	Micropas[2]	BARBD[3]	BARBD[3]	BARBD[3]		Micropas[2]	Micropas[2]	BARBD[3]	
Title 24 Compliance	Type	Square Footage / DU[1]	Heating	Cooling	Hard Wired Lighting	Major Appliances[4,5]	Lighting and Plug-ins[6]	Total	Heating	Domestic Hot Water	Gas Dryers and Oven Ranges[4,5]	Total
			(kWh / DU / year)						(MMBTU natural gas / DU / year)			
Minimally 2005 Title 24 Compliant	Apartment	1,250	0	671	1,514	1,560	737	4,481	4	20	4	28
	Attached	1,750	0	656	1,834	1,738	896	5,124	5	23	5	32
	Single Family	3,300	0	1,867	2,826	1,916	1,298	7,907	21	25	6	52
Minimally 2008 Title 24 Compliant[7]	Apartment	1,250	0	539	1,216	1,560	737	4,051	4	18	4	26
	Attached	1,750	0	527	1,473	1,738	896	4,634	4	21	5	30
	Single Family	3,300	0	1,443	2,184	1,916	1,298	6,841	19	23	6	47
15% better than 2008 Title 24[8]	Apartment	1,250	0	458	1,033	1,560	737	3,788	3	16	4	23
	Attached	1,750	0	448	1,252	1,738	896	4,334	4	18	5	26
	Single Family	3,300	0	1,227	1,857	1,916	1,298	6,297	16	19	6	41

Notes:

1. Square footage per dwelling unit as specified by Newhall.
2. The Minimally 2005 Title 24 Compliant scenario shows energy use from a 2005 Title 24 compliant house. Data obtained from Micropas 7.3 software.
3. Estimated using guidance provided by the US Department of Energy (Table 12 of "Building America Research Benchmark Definition, Updated December 20, 2007").
4. Cooking may be performed on an electric range or a natural gas stove. The values shown in these columns are 50% of the energy/heat used for each stove type.
5. Dryers and ovens may be electric or gas. The values presented in this table represent 50% of the electricity and/or natural gas use for each equipment type.
6. "Lighting and Plug-ins" refers to electricity use associated with plug-in lighting, plug-in appliances, and miscellaneous electric loads. This energy use is calculated using guidance from BARBD. Energy use for each dwelling type is based on the number of bedrooms, total finished floor area, and a California-specific plug load multiplier. Refer to the previous table for load-specific energy estimates.
7. Based on California Energy Commission report on estimated first-year electricity and gas savings due to 2008 standards for single-family and multi-family homes, relative to 2005 standards. Reductions are taken with the assumption that the Micropas estimate reflects heating/cooling/hot water electricity use for homes that are minimally compliant with 2005 Title 24 standards.
8. Newhall has committed to a 15% improvement in energy use in the building envelope over 2008 Title 24 standards.

Abbreviations:

BARBD - Building America Research Benchmark Definition
DU - Dwelling Unit
kWh - kilowatt-hour
MMBTU - million British thermal units

Source:

R. Hendron. Building America Research Benchmark Definition. Technical Report NREL/TP-550-42662. January 2008.
California Energy Commission. 2007. Impact Analysis: 2008 Update to the California Energy Efficiency Standards for Residential and Nonresidential Buildings. Available at: http://www.energy.ca.gov/title24/2008standards/rulemaking/documents/2007-11-07_IMPACT_ANALYSIS.PDF

Table 3-A-4
CO_2 Emissions per Dwelling Unit
Newhall Land
Newhall Ranch, CA

Title 24[1] Compliance	Type	Square Footage / DU[2]	Title-24 Systems[1]		Title-24 Systems and Major Appliances		Title-24 Systems and All MELs		Title-24 Systems	Title-24 Systems and Major Appliances	Title-24 Systems and All MELs
			CO_2 Electricity[3]	CO_2 Natural Gas[4]	CO_2 Electricity[3]	CO_2 Natural Gas[4]	CO_2 Electricity[3]	CO_2 Natural Gas[4]	CO_2 Total	CO_2 Total	CO_2 Total
			(lbs / DU / year)						(tonnes / DU / year)		
Minimally 2005 Title 24 Compliant[5]	Apartment	1,250	1,483	2,786	2,542	3,263	3,042	3,263	1.9	2.6	2.9
	Attached	1,750	1,690	3,184	2,870	3,757	3,479	3,757	2.2	3.0	3.3
	Single Family	3,300	3,186	5,415	4,487	6,083	5,368	6,083	3.9	4.8	5.2
Minimally 2008 Title 24 Compliant[6]	Apartment	1,250	1,022	2,591	1,931	3,068	2,360	3,068	1.6	2.3	2.5
	Attached	1,750	1,165	2,961	2,178	3,534	2,700	3,534	1.9	2.6	2.8
	Single Family	3,300	2,114	4,874	3,230	5,542	3,986	5,542	3.2	4.0	4.3
15% better than 2008 Title 24[6,7]	Apartment	1,250	869	2,202	1,778	2,680	2,207	2,680	1.4	2.0	2.2
	Attached	1,750	990	2,517	2,003	3,090	2,525	3,090	1.6	2.3	2.5
	Single Family	3,300	1,797	4,143	2,913	4,810	3,669	4,810	2.7	3.5	3.8

Notes:

1. Title 24 - California Code of Regulations (CCR), Title 24, also known as the California Building Standards Code.
2. Square footage per dwelling unit as specified by Newhall.
3. Converted from kWh to lb CO2 using emission factor from the California Climate Action Registry Database: Southern California Edison Company PUP Report.
4. Converted from MMBTU to lb CO2 using emission factor from California Climate Action Registry General Reporting Protocol (CCAR GRP).
5. Emission factor for electricity provided by Southern California Edison for year 2004, obtained from the California Climate Action Registry Database. Emission factor for natural gas obtained from California Climate Action Registry Reporting Protocol, Table C7.
6. Emission factor for electricity provided by Southern California Edison, obtained from the California Climate Action Registry Database. This has been adjusted to account for the 20% Renewable Portfolio Standard required for utilities to meet by 2010. Emission factor for natural gas obtained from California Climate Action Registry Reporting Protocol, Table C7.
7. Newhall has committed to a 15% improvement in energy use in the building envelope over 2008 Title 24 standards.

Abbreviations:

CO2 - carbon dioxide
DU - Dwelling Unit
kWh - kilowatt-hour
lb - pound
SF - Square Feet

Sources:

California Climate Action Registry General Reporting Protocol, Version 3.1 (January 2009). Available at: http://www.climateregistry.org/resources/docs/protocols/grp/GRP_3.1_January2009.pdf
California Climate Action Registry Database: Southern California Edison Company 2007 PUP Report. 2008. Available at: Available at: https://www.climateregistry.org/CARROT/public/Reports.aspx

Table 3-A-5-NRSP-D2
CO_2 Emissions from Electricity and Natural Gas Usage in Residential Dwelling Units With and Without Product Design Features - Newhall Ranch Specific Plan D2
Newhall Land
Newhall Ranch, CA

Title 24[1] Compliance	Housing Type	# Dwelling Units[2]	Title-24 Systems			Title-24 Systems and Major Appliances			Title-24 Systems and All MELs (Total Emissions)			Total Emissions With Renewable Source[3]		
			CO_2 Emission Factor	Total CO_2 Emissions		CO_2 Emission Factor	Total CO_2 Emissions		CO_2 Emission Factor	Total CO_2 Emissions		CO_2 Emission Factor	Total CO_2 Emissions	
			(tonne CO_2 / DU / year)	(tonne CO_2 / year)		(tonne CO_2 / DU / year)	(tonne CO_2 / year)		(tonne CO_2 / DU / year)	(tonne CO_2 / year)		(tonne CO_2 / DU / year)	(tonne CO_2 / year)	
Minimally 2005 Title 24 Compliant	Apartment	3,133	1.9	6,067		2.6	8,250		2.9	8,961		2.9	8,961	
	Attached	11,069	2.2	24,473	**56,613**	3.0	33,272	**73,563**	3.3	36,327	**79,999**	3.3	36,328	**73,094**
	Single Family	6,683	3.9	26,073		4.8	32,041		5.2	34,711		4.2	27,805	
Minimally 2008 Title 24 Compliant	Apartment	3,133	1.6	5,135		2.3	7,105		2.5	7,715		2.5	7,715	
	Attached	11,069	1.9	20,716	**47,032**	2.6	28,676	**62,371**	2.8	31,298	**67,895**	2.8	31,299	**61,968**
	Single Family	6,683	3.2	21,181		4.0	26,590		4.3	28,882		3.4	22,955	
15% better than 2008 Title 24	Apartment	3,133	1.4	4,365		2.0	6,334		2.2	6,944		2.2	6,945	
	Attached	11,069	1.6	17,609	**39,978**	2.3	25,568	**55,316**	2.5	28,191	**60,840**	2.5	28,191	**54,913**
	Single Family	6,683	2.7	18,004		3.5	23,413		3.8	25,705		3.0	19,778	

Notes:
1. Title 24 - California Code of Regulations (CCR), Title 24, also known as the California Building Standards Code.
2. From Newhall Ranch Specific Plan.
3. Newhall has committed to using renewable electricity equivalent to putting photovoltaic systems on all Single Family detached residences. For this calculation, Single Family dwelling units are assumed to be provided with a 2.0 kW solar system from Sunpower company. The yearly electricity savings are estimated to be 3356 kWh for a 2 kW solar system with a 30 degree roof slope and a south roof direction as provided for the City of Santa Clarita, CA.

Abbreviations:
CO_2 - carbon dioxide
DU - Dwelling Units
MEL - Miscellaneous electric loads

Source:
Sunpower Solar Calculator, Sunpower Company. Available at: http://www.sunpowercorp.com/For-Homes/How-To-Buy/Solar-Calculator.aspx

California Climate Action Registry General Reporting Protocol, Version 3.1 (January 2009). Available at: http://www.climateregistry.org/resources/docs/protocols/grp/GRP_3.1_January2009.pdf

California Climate Action Registry Database: Southern California Edison Company 2007 PUP Report. 2008. Available at: Available at: https://www.climateregistry.org/CARROT/public/Reports.aspx

Table 3-A-5-NRSP-D3
CO_2 Emissions from Electricity and Natural Gas Usage in Residential Dwelling Units With and Without Product Design Features - Newhall Ranch Specific Plan D3
Newhall Land
Newhall Ranch, CA

Title 24[1] Compliance	Housing Type	# Dwelling Units[2]	Title-24 Systems			Title-24 Systems and Major Appliances			Title-24 Systems and All MELs (Total Emissions)			Total Emissions With Renewable Source[3]		
			CO_2 Emission Factor	Total CO_2 Emissions		CO_2 Emission Factor	Total CO_2 Emissions		CO_2 Emission Factor	Total CO_2 Emissions		CO_2 Emission Factor	Total CO_2 Emissions	
			(tonne CO_2 / DU / year)	(tonne CO_2 / year)		(tonne CO_2 / DU / year)	(tonne CO_2 / year)		(tonne CO_2 / DU / year)	(tonne CO_2 / year)		(tonne CO_2 / DU / year)	(tonne CO_2 / year)	
Minimally 2005 Title 24 Compliant	Apartment	3,065	1.9	5,935		2.6	8,071		2.9	8,766		2.9	8,767	
	Attached	10,829	2.2	23,943	**55,389**	3.0	32,551	**71,972**	3.3	35,539	**78,269**	3.3	35,540	**71,513**
	Single Family	6,539	3.9	25,511		4.8	31,351		5.2	33,963		4.2	27,206	
Minimally 2008 Title 24 Compliant	Apartment	3,065	1.6	5,023		2.3	6,950		2.5	7,547		2.5	7,547	
	Attached	10,829	1.9	20,267	**46,015**	2.6	28,054	**61,022**	2.8	30,619	**66,427**	2.8	30,620	**60,628**
	Single Family	6,539	3.2	20,725		4.0	26,017		4.3	28,260		3.4	22,460	
15% better than 2008 Title 24	Apartment	3,065	1.4	4,270		2.0	6,197		2.2	6,794		2.2	6,794	
	Attached	10,829	1.6	17,227	**39,113**	2.3	25,014	**54,120**	2.5	27,579	**59,524**	2.5	27,580	**53,725**
	Single Family	6,539	2.7	17,616		3.5	22,909		3.8	25,151		3.0	19,352	

Notes:
1. Title 24 - California Code of Regulations (CCR), Title 24, also known as the California Building Standards Code.
2. From Newhall Ranch Specific Plan.
3. Newhall has committed to using renewable electricity equivalent to putting photovoltaic systems on all Single Family detached residences. For this calculation, Single Family dwelling units are assumed to be provided with a 2.0 kW solar system from Sunpower company. The yearly electricity savings are estimated to be 3356 kWh for a 2 kW solar system with a 30 degree roof slope and a south roof direction as provided for the City of Santa Clarita, CA.

Abbreviations:
CO_2 - carbon dioxide
DU - Dwelling Units
MEL - Miscellaneous electric loads

Source:
Sunpower Solar Calculator, Sunpower Company. Available at: http://www.sunpowercorp.com/For-Homes/How-To-Buy/Solar-Calculator.aspx

California Climate Action Registry General Reporting Protocol, Version 3.1 (January 2009). Available at: http://www.climateregistry.org/resources/docs/protocols/grp/GRP_3.1_January2009.pdf

California Climate Action Registry Database: Southern California Edison Company 2007 PUP Report. 2008. Available at: Available at: https://www.climateregistry.org/CARROT/public/Reports.aspx

Table 3-A-5-NRSP-D4
CO_2 Emissions from Electricity and Natural Gas Usage in Residential Dwelling Units With and Without Product Design Features - Newhall Ranch Specific Plan D4
Newhall Land
Newhall Ranch, CA

Title 24[1] Compliance	Housing Type	# Dwelling Units[2]	Title-24 Systems			Title-24 Systems and Major Appliances			Title-24 Systems and All MELs (Total Emissions)			Total Emissions With Renewable Source[3]		
			CO_2 Emission Factor	Total CO_2 Emissions		CO_2 Emission Factor	Total CO_2 Emissions		CO_2 Emission Factor	Total CO_2 Emissions		CO_2 Emission Factor	Total CO_2 Emissions	
			(tonne CO_2 / DU / year)	(tonne CO_2 / year)		(tonne CO_2 / DU / year)	(tonne CO_2 / year)		(tonne CO_2 / DU / year)	(tonne CO_2 / year)		(tonne CO_2 / DU / year)	(tonne CO_2 / year)	
Minimally 2005 Title 24 Compliant	Apartment	3,108	1.9	6,019		2.6	8,184		2.9	8,889		2.9	8,890	
	Attached	10,982	2.2	24,281	**56,170**	3.0	33,010	**72,986**	3.3	36,042	**79,372**	3.3	36,042	**72,521**
	Single Family	6,631	3.9	25,870		4.8	31,792		5.2	34,441		4.2	27,589	
Minimally 2008 Title 24 Compliant	Apartment	3,108	1.6	5,094		2.3	7,048		2.5	7,653		2.5	7,653	
	Attached	10,982	1.9	20,554	**46,664**	2.6	28,450	**61,882**	2.8	31,052	**67,363**	2.8	31,053	**61,482**
	Single Family	6,631	3.2	21,016		4.0	26,384		4.3	28,658		3.4	22,776	
15% better than 2008 Title 24	Apartment	3,108	1.4	4,330		2.0	6,284		2.2	6,889		2.2	6,889	
	Attached	10,982	1.6	17,471	**39,664**	2.3	25,367	**54,882**	2.5	27,969	**60,363**	2.5	27,969	**54,482**
	Single Family	6,631	2.7	17,864		3.5	23,231		3.8	25,505		3.0	19,624	

Notes:
1. Title 24 - California Code of Regulations (CCR), Title 24, also known as the California Building Standards Code.
2. From Newhall Ranch Specific Plan.
3. Newhall has committed to using renewable electricity equivalent to putting photovoltaic systems on all Single Family detached residences. For this calculation, Single Family dwelling units are assumed to be provided with a 2.0 kW solar system from Sunpower company. The yearly electricity savings are estimated to be 3356 kWh for a 2 kW solar system with a 30 degree roof slope and a south roof direction as provided for the City of Santa Clarita, CA.

Abbreviations:
CO_2 - carbon dioxide
DU - Dwelling Units
MEL - Miscellaneous electric loads

Source:
Sunpower Solar Calculator, Sunpower Company. Available at: http://www.sunpowercorp.com/For-Homes/How-To-Buy/Solar-Calculator.aspx

California Climate Action Registry General Reporting Protocol, Version 3.1 (January 2009). Available at: http://www.climateregistry.org/resources/docs/protocols/grp/GRP_3.1_January2009.pdf

California Climate Action Registry Database: Southern California Edison Company 2007 PUP Report. 2008. Available at: Available at: https://www.climateregistry.org/CARROT/public/Reports.aspx

Table 3-A-5-NRSP-D5
CO_2 Emissions from Electricity and Natural Gas Usage in Residential Dwelling Units With and Without Product Design Features - Newhall Ranch Specific Plan D5
Newhall Land
Newhall Ranch, CA

Title 24[1] Compliance	Housing Type	# Dwelling Units[2]	Title-24 Systems			Title-24 Systems and Major Appliances			Title-24 Systems and All MELs (Total Emissions)			Total Emissions With Renewable Source[3]		
			CO_2 Emission Factor	Total CO_2 Emissions		CO_2 Emission Factor	Total CO_2 Emissions		CO_2 Emission Factor	Total CO_2 Emissions		CO_2 Emission Factor	Total CO_2 Emissions	
			(tonne CO_2 / DU / year)	(tonne CO_2 / year)		(tonne CO_2 / DU / year)	(tonne CO_2 / year)		(tonne CO_2 / DU / year)	(tonne CO_2 / year)		(tonne CO_2 / DU / year)	(tonne CO_2 / year)	
Minimally 2005 Title 24 Compliant	Apartment	3,029	1.9	5,866		2.6	7,976		2.9	8,663		2.9	8,664	
	Attached	10,704	2.2	23,666	**54,747**	3.0	32,175	**71,137**	3.3	35,129	**77,361**	3.3	35,130	**70,683**
	Single Family	6,463	3.9	25,215		4.8	30,986		5.2	33,569		4.2	26,890	
Minimally 2008 Title 24 Compliant	Apartment	3,029	1.6	4,964		2.3	6,869		2.5	7,459		2.5	7,459	
	Attached	10,704	1.9	20,033	**45,482**	2.6	27,730	**60,314**	2.8	30,266	**65,656**	2.8	30,266	**59,924**
	Single Family	6,463	3.2	20,484		4.0	25,715		4.3	27,932		3.4	22,199	
15% better than 2008 Title 24	Apartment	3,029	1.4	4,220		2.0	6,124		2.2	6,714		2.2	6,714	
	Attached	10,704	1.6	17,028	**38,659**	2.3	24,725	**53,492**	2.5	27,261	**58,834**	2.5	27,261	**53,102**
	Single Family	6,463	2.7	17,411		3.5	22,642		3.8	24,859		3.0	19,127	

Notes:
1. Title 24 - California Code of Regulations (CCR), Title 24, also known as the California Building Standards Code.
2. From Newhall Ranch Specific Plan.
3. Newhall has committed to using renewable electricity equivalent to putting photovoltaic systems on all Single Family detached residences. For this calculation, Single Family dwelling units are assumed to be provided with a 2.0 kW solar system from Sunpower company. The yearly electricity savings are estimated to be 3356 kWh for a 2 kW solar system with a 30 degree roof slope and a south roof direction as provided for the City of Santa Clarita, CA.

Abbreviations:
CO_2 - carbon dioxide
DU - Dwelling Units
MEL - Miscellaneous electric loads

Source:
Sunpower Solar Calculator, Sunpower Company. Available at: http://www.sunpowercorp.com/For-Homes/How-To-Buy/Solar-Calculator.aspx

California Climate Action Registry General Reporting Protocol, Version 3.1 (January 2009). Available at: http://www.climateregistry.org/resources/docs/protocols/grp/GRP_3.1_January2009.pdf

California Climate Action Registry Database: Southern California Edison Company 2007 PUP Report. 2008. Available at: Available at: https://www.climateregistry.org/CARROT/public/Reports.aspx

Table 3-A-5-NRSP-D6
CO_2 Emissions from Electricity and Natural Gas Usage in Residential Dwelling Units With and Without Product Design Features - Newhall Ranch Specific Plan D6
Newhall Land
Newhall Ranch, CA

Title 24[1] Compliance	Housing Type	# Dwelling Units[2]	Title-24 Systems			Title-24 Systems and Major Appliances			Title-24 Systems and All MELs (Total Emissions)			Total Emissions With Renewable Source[3]		
			CO_2 Emission Factor (tonne CO_2 / DU / year)	Total CO_2 Emissions (tonne CO_2 / year)		CO_2 Emission Factor (tonne CO_2 / DU / year)	Total CO_2 Emissions (tonne CO_2 / year)		CO_2 Emission Factor (tonne CO_2 / DU / year)	Total CO_2 Emissions (tonne CO_2 / year)		CO_2 Emission Factor (tonne CO_2 / DU / year)	Total CO_2 Emissions (tonne CO_2 / year)	
Minimally 2005 Title 24 Compliant	Apartment	2,968	1.9	5,748		2.6	7,816		2.9	8,489		2.9	8,489	
	Attached	10,487	2.2	23,186	**53,638**	3.0	31,523	**69,696**	3.3	34,417	**75,794**	3.3	34,418	**69,252**
	Single Family	6,332	3.9	24,704		4.8	30,358		5.2	32,888		4.2	26,345	
Minimally 2008 Title 24 Compliant	Apartment	2,968	1.6	4,864		2.3	6,731		2.5	7,308		2.5	7,308	
	Attached	10,487	1.9	19,627	**44,560**	2.6	27,168	**59,092**	2.8	29,652	**64,326**	2.8	29,653	**58,711**
	Single Family	6,332	3.2	20,069		4.0	25,194		4.3	27,365		3.4	21,749	
15% better than 2008 Title 24	Apartment	2,968	1.4	4,135		2.0	6,001		2.2	6,579		2.2	6,579	
	Attached	10,487	1.6	16,683	**37,876**	2.3	24,224	**52,408**	2.5	26,708	**57,642**	2.5	26,709	**52,027**
	Single Family	6,332	2.7	17,058		3.5	22,184		3.8	24,355		3.0	18,739	

Notes:
1. Title 24 - California Code of Regulations (CCR), Title 24, also known as the California Building Standards Code.
2. From Newhall Ranch Specific Plan.
3. Newhall has committed to using renewable electricity equivalent to putting photovoltaic systems on all Single Family detached residences. For this calculation, Single Family dwelling units are assumed to be provided with a 2.0 kW solar system from Sunpower company. The yearly electricity savings are estimated to be 3356 kWh for a 2 kW solar system with a 30 degree roof slope and a south roof direction as provided for the City of Santa Clarita, CA.

Abbreviations:
CO_2 - carbon dioxide
DU - Dwelling Units
MEL - Miscellaneous electric loads

Source:
Sunpower Solar Calculator, Sunpower Company. Available at: http://www.sunpowercorp.com/For-Homes/How-To-Buy/Solar-Calculator.aspx

California Climate Action Registry General Reporting Protocol, Version 3.1 (January 2009). Available at: http://www.climateregistry.org/resources/docs/protocols/grp/GRP_3.1_January2009.pdf

California Climate Action Registry Database: Southern California Edison Company 2007 PUP Report. 2008. Available at: Available at: https://www.climateregistry.org/CARROT/public/Reports.aspx

Table 3-A-5-NRSP-D7
CO_2 Emissions from Electricity and Natural Gas Usage in Residential Dwelling Units With and Without Product Design Features - Newhall Ranch Specific Plan D7
Newhall Land
Newhall Ranch, CA

Title 24[1] Compliance	Housing Type	# Dwelling Units[2]	Title-24 Systems			Title-24 Systems and Major Appliances			Title-24 Systems and All MELs (Total Emissions)			Total Emissions With Renewable Source[3]		
			CO_2 Emission Factor	Total CO_2 Emissions		CO_2 Emission Factor	Total CO_2 Emissions		CO_2 Emission Factor	Total CO_2 Emissions		CO_2 Emission Factor	Total CO_2 Emissions	
			(tonne CO_2 / DU / year)	(tonne CO_2 / year)		(tonne CO_2 / DU / year)	(tonne CO_2 / year)		(tonne CO_2 / DU / year)	(tonne CO_2 / year)		(tonne CO_2 / DU / year)	(tonne CO_2 / year)	
Minimally 2005 Title 24 Compliant	Apartment	2,471	1.9	4,785		2.6	6,507		2.9	7,067		2.9	7,068	
	Attached	8,730	2.2	19,302	**44,651**	3.0	26,241	**58,019**	3.3	28,651	**63,096**	3.3	28,651	**57,649**
	Single Family	5,271	3.9	20,564		4.8	25,271		5.2	27,377		4.2	21,931	
Minimally 2008 Title 24 Compliant	Apartment	2,471	1.6	4,050		2.3	5,603		2.5	6,085		2.5	6,085	
	Attached	8,730	1.9	16,339	**37,095**	2.6	22,616	**49,192**	2.8	24,684	**53,549**	2.8	24,685	**48,874**
	Single Family	5,271	3.2	16,706		4.0	20,972		4.3	22,780		3.4	18,105	
15% better than 2008 Title 24	Apartment	2,471	1.4	3,442		2.0	4,996		2.2	5,477		2.2	5,477	
	Attached	8,730	1.6	13,888	**31,530**	2.3	20,165	**43,628**	2.5	22,234	**47,985**	2.5	22,234	**43,310**
	Single Family	5,271	2.7	14,200		3.5	18,466		3.8	20,274		3.0	15,599	

Notes:
1. Title 24 - California Code of Regulations (CCR), Title 24, also known as the California Building Standards Code.
2. From Newhall Ranch Specific Plan.
3. Newhall has committed to using renewable electricity equivalent to putting photovoltaic systems on all Single Family detached residences. For this calculation, Single Family dwelling units are assumed to be provided with a 2.0 kW solar system from Sunpower company. The yearly electricity savings are estimated to be 3356 kWh for a 2 kW solar system with a 30 degree roof slope and a south roof direction as provided for the City of Santa Clarita, CA.

Abbreviations:
CO_2 - carbon dioxide
DU - Dwelling Units
MEL - Miscellaneous electric loads

Source:
Sunpower Solar Calculator, Sunpower Company. Available at: http://www.sunpowercorp.com/For-Homes/How-To-Buy/Solar-Calculator.aspx

California Climate Action Registry General Reporting Protocol, Version 3.1 (January 2009). Available at: http://www.climateregistry.org/resources/docs/protocols/grp/GRP_3.1_January2009.pdf

California Climate Action Registry Database: Southern California Edison Company 2007 PUP Report. 2008. Available at: Available at: https://www.climateregistry.org/CARROT/public/Reports.aspx

Table 3-A-5-Entrada-D2
CO_2 Emissions from Electricity and Natural Gas Usage in Residential Dwelling Units With and Without Product Design Features - Entrada D2
Newhall Land
Newhall Ranch, CA

Title 24[1] Compliance	Housing Type	# Dwelling Units[2]	Title-24 Systems			Title-24 Systems and Major Appliances			Title-24 Systems and All MELs (Total Emissions)			Total Emissions With Renewable Source[3]		
			CO_2 Emission Factor	Total CO_2 Emissions		CO_2 Emission Factor	Total CO_2 Emissions		CO_2 Emission Factor	Total CO_2 Emissions		CO_2 Emission Factor	Total CO_2 Emissions	
			(tonne CO_2 / DU / year)	(tonne CO_2 / year)		(tonne CO_2 / DU / year)	(tonne CO_2 / year)		(tonne CO_2 / DU / year)	(tonne CO_2 / year)		(tonne CO_2 / DU / year)	(tonne CO_2 / year)	
Minimally 2005 Title 24 Compliant	Apartment	259	1.9	502		2.6	682		2.9	741		2.9	741	
	Attached	914	2.2	2,021	**4,676**	3.0	2,747	**6,076**	3.3	3,000	**6,607**	3.3	3,000	**6,037**
	Single Family	552	3.9	2,154		4.8	2,647		5.2	2,867		4.2	2,297	
Minimally 2008 Title 24 Compliant	Apartment	259	1.6	424		2.3	587		2.5	638		2.5	638	
	Attached	914	1.9	1,711	**3,885**	2.6	2,368	**5,151**	2.8	2,584	**5,608**	2.8	2,584	**5,118**
	Single Family	552	3.2	1,750		4.0	2,196		4.3	2,386		3.4	1,896	
15% better than 2008 Title 24	Apartment	259	1.4	361		2.0	524		2.2	574		2.2	574	
	Attached	914	1.6	1,454	**3,302**	2.3	2,111	**4,569**	2.5	2,328	**5,025**	2.5	2,328	**4,536**
	Single Family	552	2.7	1,487		3.5	1,934		3.8	2,123		3.0	1,634	

Notes:
1. Title 24 - California Code of Regulations (CCR), Title 24, also known as the California Building Standards Code.
2. From Newhall Ranch Specific Plan.
3. Newhall has committed to using renewable electricity equivalent to putting photovoltaic systems on all Single Family detached residences. For this calculation, Single Family dwelling units are assumed to be provided with a 2.0 kW solar system from Sunpower company. The yearly electricity savings are estimated to be 3356 kWh for a 2 kW solar system with a 30 degree roof slope and a south roof direction as provided for the City of Santa Clarita, CA.

Abbreviations:
CO_2 - carbon dioxide
DU - Dwelling Units
MEL - Miscellaneous electric loads

Source:
Sunpower Solar Calculator, Sunpower Company. Available at: http://www.sunpowercorp.com/For-Homes/How-To-Buy/Solar-Calculator.aspx

California Climate Action Registry General Reporting Protocol, Version 3.1 (January 2009). Available at: http://www.climateregistry.org/resources/docs/protocols/grp/GRP_3.1_January2009.pdf

California Climate Action Registry Database: Southern California Edison Company 2007 PUP Report. 2008. Available at: Available at: https://www.climateregistry.org/CARROT/public/Reports.aspx

Table 3-A-5-Entrada-D3
CO_2 Emissions from Electricity and Natural Gas Usage in Residential Dwelling Units With and Without Product Design Features - Entrada D3
Newhall Land
Newhall Ranch, CA

Title 24[1] Compliance	Housing Type	# Dwelling Units[2]	Title-24 Systems			Title-24 Systems and Major Appliances			Title-24 Systems and All MELs (Total Emissions)			Total Emissions With Renewable Source[3]		
			CO_2 Emission Factor	Total CO_2 Emissions		CO_2 Emission Factor	Total CO_2 Emissions		CO_2 Emission Factor	Total CO_2 Emissions		CO_2 Emission Factor	Total CO_2 Emissions	
			(tonne CO_2 / DU / year)	(tonne CO_2 / year)		(tonne CO_2 / DU / year)	(tonne CO_2 / year)		(tonne CO_2 / DU / year)	(tonne CO_2 / year)		(tonne CO_2 / DU / year)	(tonne CO_2 / year)	
Minimally 2005 Title 24 Compliant	Apartment	169	1.9	327		2.6	445		2.9	483		2.9	483	
	Attached	596	2.2	1,318	**3,050**	3.0	1,791	**3,963**	3.3	1,956	**4,309**	3.3	1,956	**3,937**
	Single Family	360	3.9	1,404		4.8	1,726		5.2	1,870		4.2	1,498	
Minimally 2008 Title 24 Compliant	Apartment	169	1.6	277		2.3	383		2.5	416		2.5	416	
	Attached	596	1.9	1,115	**2,533**	2.6	1,544	**3,360**	2.8	1,685	**3,657**	2.8	1,685	**3,338**
	Single Family	360	3.2	1,141		4.0	1,432		4.3	1,556		3.4	1,237	
15% better than 2008 Title 24	Apartment	169	1.4	235		2.0	342		2.2	375		2.2	375	
	Attached	596	1.6	948	**2,153**	2.3	1,377	**2,980**	2.5	1,518	**3,277**	2.5	1,518	**2,958**
	Single Family	360	2.7	970		3.5	1,261		3.8	1,385		3.0	1,065	

Notes:
1. Title 24 - California Code of Regulations (CCR), Title 24, also known as the California Building Standards Code.
2. From Newhall Ranch Specific Plan.
3. Newhall has committed to using renewable electricity equivalent to putting photovoltaic systems on all Single Family detached residences. For this calculation, Single Family dwelling units are assumed to be provided with a 2.0 kW solar system from Sunpower company. The yearly electricity savings are estimated to be 3356 kWh for a 2 kW solar system with a 30 degree roof slope and a south roof direction as provided for the City of Santa Clarita, CA.

Abbreviations:
CO_2 - carbon dioxide
DU - Dwelling Units
MEL - Miscellaneous electric loads

Source:
Sunpower Solar Calculator, Sunpower Company. Available at: http://www.sunpowercorp.com/For-Homes/How-To-Buy/Solar-Calculator.aspx

California Climate Action Registry General Reporting Protocol, Version 3.1 (January 2009). Available at: http://www.climateregistry.org/resources/docs/protocols/grp/GRP_3.1_January2009.pdf

California Climate Action Registry Database: Southern California Edison Company 2007 PUP Report. 2008. Available at: Available at: https://www.climateregistry.org/CARROT/public/Reports.aspx

Table 3-A-5-Entrada-D4
CO_2 Emissions from Electricity and Natural Gas Usage in Residential Dwelling Units With and Without Product Design Features - Entrada D4
Newhall Land
Newhall Ranch, CA

Title 24[1] Compliance	Housing Type	# Dwelling Units[2]	Title-24 Systems			Title-24 Systems and Major Appliances			Title-24 Systems and All MELs (Total Emissions)			Total Emissions With Renewable Source[3]		
			CO_2 Emission Factor	Total CO_2 Emissions		CO_2 Emission Factor	Total CO_2 Emissions		CO_2 Emission Factor	Total CO_2 Emissions		CO_2 Emission Factor	Total CO_2 Emissions	
			(tonne CO_2 / DU / year)	(tonne CO_2 / year)		(tonne CO_2 / DU / year)	(tonne CO_2 / year)		(tonne CO_2 / DU / year)	(tonne CO_2 / year)		(tonne CO_2 / DU / year)	(tonne CO_2 / year)	
Minimally 2005 Title 24 Compliant	Apartment	169	1.9	327		2.6	445		2.9	483		2.9	483	
	Attached	596	2.2	1,318	**3,050**	3.0	1,791	**3,963**	3.3	1,956	**4,309**	3.3	1,956	**3,937**
	Single Family	360	3.9	1,404		4.8	1,726		5.2	1,870		4.2	1,498	
Minimally 2008 Title 24 Compliant	Apartment	169	1.6	277		2.3	383		2.5	416		2.5	416	
	Attached	596	1.9	1,115	**2,533**	2.6	1,544	**3,360**	2.8	1,685	**3,657**	2.8	1,685	**3,338**
	Single Family	360	3.2	1,141		4.0	1,432		4.3	1,556		3.4	1,237	
15% better than 2008 Title 24	Apartment	169	1.4	235		2.0	342		2.2	375		2.2	375	
	Attached	596	1.6	948	**2,153**	2.3	1,377	**2,980**	2.5	1,518	**3,277**	2.5	1,518	**2,958**
	Single Family	360	2.7	970		3.5	1,261		3.8	1,385		3.0	1,065	

Notes:
1. Title 24 - California Code of Regulations (CCR), Title 24, also known as the California Building Standards Code.
2. From Newhall Ranch Specific Plan.
3. Newhall has committed to using renewable electricity equivalent to putting photovoltaic systems on all Single Family detached residences. For this calculation, Single Family dwelling units are assumed to be provided with a 2.0 kW solar system from Sunpower company. The yearly electricity savings are estimated to be 3356 kWh for a 2 kW solar system with a 30 degree roof slope and a south roof direction as provided for the City of Santa Clarita, CA.

Abbreviations:
CO_2 - carbon dioxide
DU - Dwelling Units
MEL - Miscellaneous electric loads

Source:
Sunpower Solar Calculator, Sunpower Company. Available at: http://www.sunpowercorp.com/For-Homes/How-To-Buy/Solar-Calculator.aspx

California Climate Action Registry General Reporting Protocol, Version 3.1 (January 2009). Available at: http://www.climateregistry.org/resources/docs/protocols/grp/GRP_3.1_January2009.pdf

California Climate Action Registry Database: Southern California Edison Company 2007 PUP Report. 2008. Available at: Available at: https://www.climateregistry.org/CARROT/public/Reports.aspx

Table 3-A-5-Entrada-D5
CO_2 Emissions from Electricity and Natural Gas Usage in Residential Dwelling Units With and Without Product Design Features - Entrada D5
Newhall Land
Newhall Ranch, CA

Title 24[1] Compliance	Housing Type	# Dwelling Units[2]	Title-24 Systems			Title-24 Systems and Major Appliances			Title-24 Systems and All MELs (Total Emissions)			Total Emissions With Renewable Source[3]		
			CO_2 Emission Factor	Total CO_2 Emissions		CO_2 Emission Factor	Total CO_2 Emissions		CO_2 Emission Factor	Total CO_2 Emissions		CO_2 Emission Factor	Total CO_2 Emissions	
			(tonne CO_2 / DU / year)	(tonne CO_2 / year)		(tonne CO_2 / DU / year)	(tonne CO_2 / year)		(tonne CO_2 / DU / year)	(tonne CO_2 / year)		(tonne CO_2 / DU / year)	(tonne CO_2 / year)	
Minimally 2005 Title 24 Compliant	Apartment	144	1.9	279		2.6	379		2.9	412		2.9	412	
	Attached	508	2.2	1,123	**2,600**	3.0	1,527	**3,378**	3.3	1,667	**3,674**	3.3	1,667	**3,356**
	Single Family	307	3.9	1,198		4.8	1,472		5.2	1,595		4.2	1,277	
Minimally 2008 Title 24 Compliant	Apartment	144	1.6	236		2.3	327		2.5	355		2.5	355	
	Attached	508	1.9	951	**2,160**	2.6	1,316	**2,864**	2.8	1,436	**3,118**	2.8	1,436	**2,845**
	Single Family	307	3.2	973		4.0	1,221		4.3	1,327		3.4	1,054	
15% better than 2008 Title 24	Apartment	144	1.4	201		2.0	291		2.2	319		2.2	319	
	Attached	508	1.6	808	**1,836**	2.3	1,173	**2,540**	2.5	1,294	**2,794**	2.5	1,294	**2,522**
	Single Family	307	2.7	827		3.5	1,076		3.8	1,181		3.0	909	

Notes:
1. Title 24 - California Code of Regulations (CCR), Title 24, also known as the California Building Standards Code.
2. From Newhall Ranch Specific Plan.
3. Newhall has committed to using renewable electricity equivalent to putting photovoltaic systems on all Single Family detached residences. For this calculation, Single Family dwelling units are assumed to be provided with a 2.0 kW solar system from Sunpower company. The yearly electricity savings are estimated to be 3356 kWh for a 2 kW solar system with a 30 degree roof slope and a south roof direction as provided for the City of Santa Clarita, CA.

Abbreviations:
CO_2 - carbon dioxide
DU - Dwelling Units
MEL - Miscellaneous electric loads

Source:
Sunpower Solar Calculator, Sunpower Company. Available at: http://www.sunpowercorp.com/For-Homes/How-To-Buy/Solar-Calculator.aspx

California Climate Action Registry General Reporting Protocol, Version 3.1 (January 2009). Available at: http://www.climateregistry.org/resources/docs/protocols/grp/GRP_3.1_January2009.pdf

California Climate Action Registry Database: Southern California Edison Company 2007 PUP Report. 2008. Available at: Available at: https://www.climateregistry.org/CARROT/public/Reports.aspx

Table 3-A-5-Entrada-D6
CO_2 Emissions from Electricity and Natural Gas Usage in Residential Dwelling Units With and Without Product Design Features - Entrada D6
Newhall Land
Newhall Ranch, CA

Title 24[1] Compliance	Housing Type	# Dwelling Units[2]	Title-24 Systems			Title-24 Systems and Major Appliances			Title-24 Systems and All MELs (Total Emissions)			Total Emissions With Renewable Source[3]		
			CO_2 Emission Factor	Total CO_2 Emissions		CO_2 Emission Factor	Total CO_2 Emissions		CO_2 Emission Factor	Total CO_2 Emissions		CO_2 Emission Factor	Total CO_2 Emissions	
			(tonne CO_2 / DU / year)	(tonne CO_2 / year)		(tonne CO_2 / DU / year)	(tonne CO_2 / year)		(tonne CO_2 / DU / year)	(tonne CO_2 / year)		(tonne CO_2 / DU / year)	(tonne CO_2 / year)	
Minimally 2005 Title 24 Compliant	Apartment	0	1.9	0	**1,170**	2.6	0	**1,521**	2.9	0	**1,655**	2.9	0	**1,514**
	Attached	289	2.2	639		3.0	869		3.3	948		3.3	948	
	Single Family	136	3.9	531		4.8	652		5.2	706		4.2	566	
Minimally 2008 Title 24 Compliant	Apartment	0	1.6	0	**972**	2.3	0	**1,290**	2.5	0	**1,405**	2.5	0	**1,284**
	Attached	289	1.9	541		2.6	749		2.8	817		2.8	817	
	Single Family	136	3.2	431		4.0	541		4.3	588		3.4	467	
15% better than 2008 Title 24	Apartment	0	1.4	0	**826**	2.0	0	**1,144**	2.2	0	**1,259**	2.2	0	**1,139**
	Attached	289	1.6	460		2.3	668		2.5	736		2.5	736	
	Single Family	136	2.7	366		3.5	476		3.8	523		3.0	402	

Notes:
1. Title 24 - California Code of Regulations (CCR), Title 24, also known as the California Building Standards Code.
2. From Newhall Ranch Specific Plan.
3. Newhall has committed to using renewable electricity equivalent to putting photovoltaic systems on all Single Family detached residences. For this calculation, Single Family dwelling units are assumed to be provided with a 2.0 kW solar system from Sunpower company. The yearly electricity savings are estimated to be 3356 kWh for a 2 kW solar system with a 30 degree roof slope and a south roof direction as provided for the City of Santa Clarita, CA.

Abbreviations:
CO_2 - carbon dioxide
DU - Dwelling Units
MEL - Miscellaneous electric loads

Source:
Sunpower Solar Calculator, Sunpower Company. Available at: http://www.sunpowercorp.com/For-Homes/How-To-Buy/Solar-Calculator.aspx

California Climate Action Registry General Reporting Protocol, Version 3.1 (January 2009). Available at: http://www.climateregistry.org/resources/docs/protocols/grp/GRP_3.1_January2009.pdf

California Climate Action Registry Database: Southern California Edison Company 2007 PUP Report. 2008. Available at: Available at: https://www.climateregistry.org/CARROT/public/Reports.aspx

Table 3-A-5-Entrada-D7
CO_2 Emissions from Electricity and Natural Gas Usage in Residential Dwelling Units With and Without Product Design Features - Entrada D7
Newhall Land
Newhall Ranch, CA

Title 24[1] Compliance	Housing Type	# Dwelling Units[2]	Title-24 Systems			Title-24 Systems and Major Appliances			Title-24 Systems and All MELs (Total Emissions)			Total Emissions With Renewable Source[3]		
			CO_2 Emission Factor	Total CO_2 Emissions		CO_2 Emission Factor	Total CO_2 Emissions		CO_2 Emission Factor	Total CO_2 Emissions		CO_2 Emission Factor	Total CO_2 Emissions	
			(tonne CO_2 / DU / year)	(tonne CO_2 / year)		(tonne CO_2 / DU / year)	(tonne CO_2 / year)		(tonne CO_2 / DU / year)	(tonne CO_2 / year)		(tonne CO_2 / DU / year)	(tonne CO_2 / year)	
Minimally 2005 Title 24 Compliant	Apartment	128	1.9	248		2.6	337		2.9	366		2.9	366	
	Attached	452	2.2	999	**2,312**	3.0	1,359	**3,005**	3.3	1,483	**3,267**	3.3	1,483	**2,985**
	Single Family	273	3.9	1,065		4.8	1,309		5.2	1,418		4.2	1,136	
Minimally 2008 Title 24 Compliant	Apartment	128	1.6	210		2.3	290		2.5	315		2.5	315	
	Attached	452	1.9	846	**1,921**	2.6	1,171	**2,547**	2.8	1,278	**2,773**	2.8	1,278	**2,531**
	Single Family	273	3.2	865		4.0	1,086		4.3	1,180		3.4	938	
15% better than 2008 Title 24	Apartment	128	1.4	178		2.0	259		2.2	284		2.2	284	
	Attached	452	1.6	719	**1,633**	2.3	1,044	**2,259**	2.5	1,151	**2,485**	2.5	1,151	**2,243**
	Single Family	273	2.7	735		3.5	956		3.8	1,050		3.0	808	

Notes:
1. Title 24 - California Code of Regulations (CCR), Title 24, also known as the California Building Standards Code.
2. From Newhall Ranch Specific Plan.
3. Newhall has committed to using renewable electricity equivalent to putting photovoltaic systems on all Single Family detached residences. For this calculation, Single Family dwelling units are assumed to be provided with a 2.0 kW solar system from Sunpower company. The yearly electricity savings are estimated to be 3356 kWh for a 2 kW solar system with a 30 degree roof slope and a south roof direction as provided for the City of Santa Clarita, CA.

Abbreviations:
CO_2 - carbon dioxide
DU - Dwelling Units
MEL - Miscellaneous electric loads

Source:
Sunpower Solar Calculator, Sunpower Company. Available at: http://www.sunpowercorp.com/For-Homes/How-To-Buy/Solar-Calculator.aspx

California Climate Action Registry General Reporting Protocol, Version 3.1 (January 2009). Available at: http://www.climateregistry.org/resources/docs/protocols/grp/GRP_3.1_January2009.pdf

California Climate Action Registry Database: Southern California Edison Company 2007 PUP Report. 2008. Available at: Available at: https://www.climateregistry.org/CARROT/public/Reports.aspx

Table 3-A-6
Summary of Residential CO_2 Emissions
Newhall Land
Newhall Ranch, CA

Development	Efficiency Scenario	NRSP CO_2 Emissions	Entrada CO_2 Emissions	Total Residential CO_2 Emissions	Total % Improvement over 2005 Title 24
		(Tonnes CO_2 / year)			
Design Alternative 2	Minimally 2005 Title 24 Compliant[1]	79,999	6,607	**86,607**	
	Minimally 2008 Title 24 Compliant[1]	67,895	5,608	**73,503**	**15%**
	15% better than Minimally 2008 Title 24 Compliant, no renewables[2]	60,840	5,025	**65,865**	**24%**
	15% better than Minimally 2008 Title 24 Compliant, with renewables[3]	54,913	4,536	**59,449**	**31%**
Design Alternative 3	Minimally 2005 Title 24 Compliant[1]	78,269	4,309	**82,578**	
	Minimally 2008 Title 24 Compliant[1]	66,427	3,657	**70,084**	**15%**
	15% better than Minimally 2008 Title 24 Compliant, no renewables[2]	59,524	3,277	**62,801**	**24%**
	15% better than Minimally 2008 Title 24 Compliant, with renewables[3]	53,725	2,958	**56,683**	**31%**
Design Alternative 4	Minimally 2005 Title 24 Compliant[1]	79,372	4,309	**83,681**	
	Minimally 2008 Title 24 Compliant[1]	67,363	3,657	**71,020**	**15%**
	15% better than Minimally 2008 Title 24 Compliant, no renewables[2]	60,363	3,277	**63,640**	**24%**
	15% better than Minimally 2008 Title 24 Compliant, with renewables[3]	54,482	2,958	**57,440**	**31%**
Design Alternative 5	Minimally 2005 Title 24 Compliant[1]	77,361	3,674	**81,035**	
	Minimally 2008 Title 24 Compliant[1]	65,656	3,118	**68,774**	**15%**
	15% better than Minimally 2008 Title 24 Compliant, no renewables[2]	58,834	2,794	**61,628**	**24%**
	15% better than Minimally 2008 Title 24 Compliant, with renewables[3]	53,102	2,522	**55,624**	**31%**
Design Alternative 6	Minimally 2005 Title 24 Compliant[1]	75,794	1,655	**77,449**	
	Minimally 2008 Title 24 Compliant[1]	64,326	1,405	**65,731**	**15%**
	15% better than Minimally 2008 Title 24 Compliant, no renewables[2]	57,642	1,259	**58,901**	**24%**
	15% better than Minimally 2008 Title 24 Compliant, with renewables[3]	52,027	1,139	**53,165**	**31%**
Design Alternative 7	Minimally 2005 Title 24 Compliant[1]	63,096	3,267	**66,363**	
	Minimally 2008 Title 24 Compliant[1]	53,549	2,773	**56,322**	**15%**
	15% better than Minimally 2008 Title 24 Compliant, no renewables[2]	47,985	2,485	**50,470**	**24%**
	15% better than Minimally 2008 Title 24 Compliant, with renewables[3]	43,310	2,243	**45,553**	**31%**

Notes:

1. Emissions assuming buildings are Title 24-compliant, without the 15% improvements. Title 24 = California Code of Regulations (CCR), Title 24, also known as the California Building Standards Code.

2. Newhall has committed to being 15% more efficient than Title 24 standards for non-residential buildings. This 15% improvement applies to the built environment only, as Title 24 does not regulate non-built electricity such as plug-in appliances. These emissions represent the 15% improvements.

3. Newhall has committed to using renewable electricity equivalent to putting photovoltaic systems on all Single Family detached residences. For this calculation, it is assumed that a 2.0 Kw photovoltaic unit from Sunpower company will be mounted on every 1,600 square feet of roof space (this would cover approximately 8% of the rooftop building space). Here, we assume that the rooftop space available is approximately half of the total square footage. The yearly electricity savings are estimated to be 3,356 Kwh for a 2 Kw solar system with a 30 degree roof slope and a south roof direction as provided for the City of Santa Clarita, CA in: http://sunpower1.cleanpowerestimator.com/default.aspx.
Number of systems = (commercial square footage) / (1,600 sqft per system) / 2 (sqft roof space per sqft building space)

Abbreviations:

CO_2 = Carbon Dioxide

Table 3-B-1
Non-Residential Electricity End Use
Newhall Ranch, California

		CEUS Building Type									
End Use[1]	**Title 24 System[2]**	**Restaurant**	**Retail**	**Small Office**	**Grocery**	**Large Office**	**Lodging**	**Miscellaneous**	**School**	**Refrigerated Warehouse**	**Unrefrigerated Warehouse**
Air Compressor	No	0%	0%	1%	0%	1%	0%	4%	0%	0%	2%
Cooking	No	29%	1%	1%	5%	1%	8%	2%	2%	0%	0%
Cooling	Yes	14%	17%	21%	8%	20%	25%	14%	16%	2%	9%
Exterior Lighting	No	9%	9%	11%	3%	5%	6%	11%	9%	2%	5%
Heating	Yes	0%	0%	0%	0%	2%	6%	1%	2%	0%	1%
Interior Lighting	No	12%	39%	25%	19%	23%	24%	21%	36%	18%	48%
Miscellaneous	No	3%	6%	8%	2%	2%	7%	12%	4%	3%	10%
Motors	No	1%	1%	6%	1%	4%	4%	14%	1%	1%	4%
Office Equipment	No	2%	2%	12%	1%	17%	3%	2%	4%	1%	5%
Process	No	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Refrigeration	No	22%	8%	4%	54%	3%	9%	10%	9%	72%	7%
Ventilation	Yes	8%	15%	10%	6%	22%	9%	8%	13%	1%	8%
Water Heating	Yes	0%	1%	1%	0%	0%	0%	1%	2%	0%	1%

Notes:
1. All end use percentages for each CEUS Building Type are taken directly from CEUS database.

2. Only end uses regulated by Title 24 are included in the Title 24 building envelope energy budget. Hard-wired lighting (exterior lighting and some interior lighting) are part of Title 24, but are not considered part of the building envelope energy budget.

Abbreviations:
CEUS - California Commerical End-Use Survey

Source:
California Energy Commission. 2006. California Commercial End-Use Survey. Prepared by Itron Inc. Available at: Available at: http://www.energy.ca.gov/ceus/

Table 3-B-2
Non-Residential Gas End Use
Newhall Ranch, California

		CEUS Building Type									
End Use[1]	**Title 24 System[2]**	**Restaurant**	**Retail**	**Small Office**	**Grocery**	**Large Office**	**Lodging**	**Miscellaneous**	**School**	**Refrigerated Warehouse**	**Unrefrigerated Warehouse**
Gas Cooking	No	80%	18%	5%	52%	2%	14%	4%	8%	4%	2%
Gas Cooling	Yes	0%	0%	0%	0%	3%	0%	12%	0%	0%	0%
Gas Heating	Yes	4%	43%	62%	20%	87%	21%	25%	49%	50%	78%
Gas Water Heating	Yes	16%	31%	33%	28%	8%	64%	41%	42%	42%	18%
Gas Miscellaneous	No	0%	4%	0%	0%	0%	2%	2%	1%	1%	2%
Gas Process	No	0%	5%	0%	0%	0%	0%	16%	0%	3%	0%

Notes:
1. All end use percentages for each CEUS Building Type are taken directly from CEUS database.
2. Only end uses regulated by Title 24 are included in the Title 24 building envelope energy budget.

Abbreviations:
CEUS - California Commerical End-Use Survey

Source:
California Energy Commission. 2006. California Commercial End-Use Survey. Prepared by Itron Inc. Available at: Available at: http://www.energy.ca.gov/ceus/

Table 3-B-3
Title 24 Improvements by End Use
Newhall Ranch, California

End Use	Reduction from 2001 to 2005[2]	Reduction from 2005 to 2008[2]
Air Compressors	0.0%	0.0%
Cooking	0.0%	0.0%
Cooling	6.7%	8.3%
Exterior Lighting[1]	9.8%	11.7%
Gas Cooking	0.0%	0.0%
Gas Cooling	10.4%	9.3%
Gas Heating	3.1%	15.9%
Gas Hot Water	0.0%	0.0%
Gas Miscellaneous	0.0%	0.0%
Gas Process	0.0%	0.0%
Heating	4.9%	37.2%
Interior Lighting[1]	4.9%	5.9%
Miscellaneous	0.0%	0.0%
Motors	0.0%	0.0%
Office Equipment	0.0%	0.0%
Process	0.0%	0.0%
Refrigeration	0.0%	0.0%
Ventilation	5.0%	1.5%
Water Heating	0.0%	0.0%

Notes:

1. Exterior lighting was assumed to be covered by Title 24 lighting and therefore has the reduction taken. Interior lighting was assumed to be 50% Title 24 and 50% non-Title 24 uses. Therefore only half of the reduction for lighting was applied.

2. The percentage reductions for each end use category are taken directly from the CEC's "Impact Analysis for 2005 Energy Efficiency Standards" (2002 to 2005) as well as from the "Impact Analysis 2008 Update to the California Energy Efficiency Standards for Residential and Nonresidential Buildings" (2005 to 2008). This represents the percentage to adjust each end use to reflect improvements in Title 24 building codes since 2002. ENVIRON used the 2002 CEUS data to represent energy use for buildings that are minimally compliant with the 2001 Title 24 standards. CEUS did not collect information on the ages of the buildings surveyed. Because older buildings tend to be less energy efficient, and the majority of the buildings in the survey were likely constructed before 2001, the 2002 CEUS data likely overestimates energy use for a 2001 Title 24-compliant building.

Abbreviations:

CEC - California Energy Commission
CEUS - California Commercial End-Use Survey

Sources:

California Energy Commission. 2006. California Commercial End-Use Survey. Prepared by Itron Inc. Available at: http://www.energy.ca.gov/ceus/
California Energy Commission. 2003. Impact Analysis: 2005 Update to the California Energy Efficiency Standards for Residential and Nonresidential Buildings. Available at:
California Energy Commission. 2007. Impact Analysis: 2008 Update to the California Energy Efficiency Standards for Residential and Nonresidential Buildings. Available at:

Table 3-B-4-NRSP-D2
Land Use Categories (Non-Residential D2)
Newhall Ranch Specific Plan
Newhall Ranch, California

General Building Type[1]	Building Area (Newhall) (SF)	%[2]	Refined Building Type[3]	%[4]	Modeled CEUS Building Category[5]	Building Area (SF)
Grocery	180,000	100%	-	100%	Grocery	180,000
Misc Retail / Commercial / Office	4,170,000	25%	Office	50%	Large Office	521,250
				50%	Small Office	521,250
		20%	Restaurant	100%	Restaurant	834,000
		55%	Retail	100%	Retail	2,293,500
Hotel	100,000	100%	-	100%	Lodging	100,000
Business Park / Industrial	1,100,000	30%	Offices	50%	Large Office	165,000
				50%	Small Office	165000
		20%	Storage	50%	Refrigerated Warehouse	110000
				50%	Unrefrigerated Warehouse	110000
		50%	Research and Development	100%	Large Office	550000
Public Safety	95,000	100%	-	100%	Miscellaneous	95,000
Institutional (schools, library, etc.)	500,000	100%	-	100%	School	500,000

Notes:
1. Five main building types provided by Newhall.
2. The percentage of each Refined Building Type present in the General Building Type.
3. The subcategories of General Building Type provided by Newhall.
4. The percentage of each Modeled Building Category present in the Refined Building Type.
5. The CEUS building type used in modeling that represents each Refined Building Type.

Abbreviations:
CEUS - California Commercial End-Use Survey
SF - Square Feet

Sources:
Land use breakdown provided by Newhall, presented as it maps to CEUS building types.

Table 3-B-4-NRSP-D3
Land Use Categories (Non-Residential D3)
Newhall Ranch Specific Plan
Newhall Ranch, California

General Building Type[1]	Building Area (Newhall) (SF)	%[2]	Refined Building Type[3]	%[4]	Modeled CEUS Building Category[5]	Building Area (SF)
Grocery	180,000	100%	-	100%	Grocery	180,000
Misc Retail / Commercial / Office	4,100,000	25%	Office	50%	Large Office	512,500
				50%	Small Office	512,500
		20%	Restaurant	100%	Restaurant	820,000
		55%	Retail	100%	Retail	2,255,000
Hotel	100,000	100%	-	100%	Lodging	100,000
Business Park / Industrial	1,100,000	30%	offices	50%	Large Office	165,000
				50%	Small Office	165000
		20%	Storage	50%	Refrigerated Wharehouse	110000
				50%	Unrefrigerated Wharehouse	110000
		50%	Research and Development	100%	Large Office	550000
Public Safety	95,000	100%	-	100%	Miscellaneous	95,000
Institutional (schools, library, etc.)	500,000	100%	-	100%	School	500,000

Notes:
1. Five main building types provided by Newhall.
2. The percentage of each Refined Building Type present in the General Building Type.
3. The subcategories of General Building Type provided by Newhall.
4. The percentage of each Modeled Building Category present in the Refined Building Type.
5. The CEUS building type used in modeling that represents each Refined Building Type.

Abbreviations:
CEUS - California Commercial End-Use Survey
SF - Square Feet

Sources:
Land use breakdown provided by Newhall, presented as it maps to CEUS building types.

Table 3-B-4-NRSP-D4
Land Use Categories (Non-Residential D4)
Newhall Ranch Specific Plan
Newhall Ranch, California

General Building Type[1]	Building Area (Newhall) (SF)	%[2]	Refined Building Type[3]	%[4]	Modeled CEUS Building Category[5]	Building Area (SF)
Grocery	180,000	100%	-	100%	Grocery	180,000
Misc Retail / Commercial / Office	4,120,000	25%	Office	50%	Large Office	515,000
				50%	Small Office	515,000
		20%	Restaurant	100%	Restaurant	824,000
		55%	Retail	100%	Retail	2,266,000
Hotel	100,000	100%	-	100%	Lodging	100,000
Business Park / Industrial	1,100,000	30%	offices	50%	Large Office	165,000
				50%	Small Office	165000
		20%	Storage	50%	Refrigerated Wharehouse	110000
				50%	Unrefrigerated Wharehouse	110000
		50%	Research and Development	100%	Large Office	550000
Public Safety	95,000	100%	-	100%	Miscellaneous	95,000
Institutional (schools, library, etc.)	500,000	100%	-	100%	School	500,000

Notes:
1. Five main building types provided by Newhall.
2. The percentage of each Refined Building Type present in the General Building Type.
3. The subcategories of General Building Type provided by Newhall.
4. The percentage of each Modeled Building Category present in the Refined Building Type.
5. The building type used in modeling that represents each Refined Building Type.

Abbreviations:
CEUS - California Commercial End-Use Survey
SF - Square Feet

Sources:
Land use breakdown provided by Newhall, presented as it maps to CEUS building types.

Table 3-B-4-NRSP-D5
Land Use Categories (Non-Residential D5)
Newhall Ranch Specific Plan
Newhall Ranch, California

General Building Type[1]	Building Area (Newhall) (SF)	%[2]	Refined Building Type[3]	%[4]	Modeled CEUS Building Category[5]	Building Area (SF)
Grocery	180,000	100%	-	100%	Grocery	180,000
Misc Retail / Commercial / Office	4,030,000	25%	Office	50%	Large Office	503,750
				50%	Small Office	503,750
		20%	Restaurant	100%	Restaurant	806,000
		55%	Retail	100%	Retail	2,216,500
Hotel	100,000	100%	-	100%	Lodging	100,000
Business Park / Industrial	1,100,000	30%	offices	50%	Large Office	165,000
				50%	Small Office	165000
		20%	Storage	50%	Refrigerated Wharehouse	110000
				50%	Unrefrigerated Wharehouse	110000
		50%	Research and Development	100%	Large Office	550000
Public Safety	95,000	100%	-	100%	Miscellaneous	95,000
Institutional (schools, library, etc.)	500,000	100%	-	100%	School	500,000

Notes:
1. Five main building types provided by Newhall.
2. The percentage of each Refined Building Type present in the General Building Type.
3. The subcategories of General Building Type provided by Newhall.
4. The percentage of each Modeled Building Category present in the Refined Building Type.
5. The building type used in modeling that represents each Refined Building Type.

Abbreviations:
CEUS - California Commercial End-Use Survey
SF - Square Feet

Sources:
Land use breakdown provided by Newhall, presented as it maps to CEUS building types.

Table 3-B-4-NRSP-D6
Land Use Categories (Non-Residential D6)
Newhall Ranch Specific Plan
Newhall Ranch, California

General Building Type[1]	Building Area (Newhall) (SF)	%[2]	Refined Building Type[3]	%[4]	Modeled CEUS Building Category[5]	Building Area (SF)
Grocery	180,000	100%	-	100%	Grocery	180,000
Misc Retail / Commercial / Office	3,950,000	25%	Office	50%	Large Office	493,750
				50%	Small Office	493,750
		20%	Restaurant	100%	Restaurant	790,000
		55%	Retail	100%	Retail	2,172,500
Hotel	100,000	100%	-	100%	Lodging	100,000
Business Park / Industrial	1,100,000	30%	offices	50%	Large Office	165,000
				50%	Small Office	165000
		20%	Storage	50%	Refrigerated Wharehouse	110000
				50%	Unrefrigerated Wharehouse	110000
		50%	Research and Development	100%	Large Office	550000
Public Safety	95,000	100%	-	100%	Miscellaneous	95,000
Institutional (schools, library, etc.)	500,000	100%	-	100%	School	500,000

Notes:
1. Five main building types provided by Newhall.
2. The percentage of each Refined Building Type present in the General Building Type.
3. The subcategories of General Building Type provided by Newhall.
4. The percentage of each Modeled Building Category present in the Refined Building Type.
5. The building type used in modeling that represents each Refined Building Type.

Abbreviations:
CEUS - California Commercial End-Use Survey
SF - Square Feet

Sources:
Land use breakdown provided by Newhall, presented as it maps to CEUS building types.

Table 3-B-4-NRSP-D7
Land Use Categories (Non-Residential D7)
Newhall Ranch Specific Plan
Newhall Ranch, California

General Building Type[1]	Building Area (Newhall) (SF)	%[2]	Refined Building Type[3]	%[4]	Modeled CEUS Building Category[5]	Building Area (SF)
Grocery	180,000	100%	-	100%	Grocery	180,000
Misc Retail / Commercial / Office	2,380,000	25%	Office	50%	Large Office	297,500
				50%	Small Office	297,500
		20%	Restaurant	100%	Restaurant	476,000
		55%	Retail	100%	Retail	1,309,000
Hotel	100,000	100%	-	100%	Lodging	100,000
Business Park / Industrial	1,100,000	30%	offices	50%	Large Office	165,000
				50%	Small Office	165000
		20%	Storage	50%	Refrigerated Wharehouse	110000
				50%	Unrefrigerated Wharehouse	110000
		50%	Research and Development	100%	Large Office	550000
Public Safety	95,000	100%	-	100%	Miscellaneous	95,000
Institutional (schools, library, etc.)	500,000	100%	-	100%	School	500,000

Notes:
1. Five main building types provided by Newhall.
2. The percentage of each Refined Building Type present in the General Building Type.
3. The subcategories of General Building Type provided by Newhall.
4. The percentage of each Modeled Building Category present in the Refined Building Type.
5. The building type used in modeling that represents each Refined Building Type.

Abbreviations:
CEUS - California Commercial End-Use Survey
SF - Square Feet

Sources:
Land use breakdown provided by Newhall, presented as it maps to CEUS building types.

Table 3-B-4-Entrada-D2,D3,D4,D5,D6
Land Use Categories (Non-Residential D2-D6)
Entrada
Newhall Ranch, California

General Building Type[1]	Building Area (Entrada) (SF)	%[2]	Refined Building Type[3]	%[4]	Modeled CEUS Building Category[5]	Building Area (SF)
Grocery	45,000	100%	-	100%	Grocery	45,000
Misc Retail / Commercial / Office	250,000	25%	Office	50%	Large Office	31,250
				50%	Small Office	31,250
		20%	Restaurant	100%	Restaurant	50,000
		55%	Retail	100%	Retail	137,500
Hotel	200,000	100%	-	100%	Lodging	200,000
Public Safety	15,000	100%	-	100%	Miscellaneous	15,000
Institutional (schools, library, etc.)	60,000	100%	-	100%	School	60,000

Notes:
1. Five main building types provided by Newhall.
2. The percentage of each Refined Building Type present in the General Building Type.
3. The subcategories of General Building Type provided by Newhall.
4. The percentage of each Modeled Building Category present in the Refined Building Type.
5. The building type used in modeling that represents each Refined Building Type.

Abbreviations:
CEUS - California Commercial End-Use Survey
SF - Square Feet

Sources:
Land use breakdown provided by Newhall, presented as it maps to CEUS types.

Table 3-B-4-Entrada-D7
Land Use Categories (Non-Residential D7)
Entrada
Newhall Ranch, California

General Building Type[1]	Building Area (Entrada) (SF)	%[2]	Refined Building Type[3]	%[4]	Modeled CEUS Building Category[5]	Building Area (SF)
Misc Retail / Commercial / Office	50,000	25%	Office	50%	Large Office	6,250
				50%	Small Office	6,250
		20%	Restaurant	100%	Restaurant	10,000
		55%	Retail	100%	Retail	27,500

Notes:
1. Five main building types provided by Newhall.
2. The percentage of each Refined Building Type present in the General Building Type.
3. The subcategories of General Building Type provided by Newhall.
4. The percentage of each Modeled Building Category present in the Refined Building Type.
5. The building type used in modeling that represents each Refined Building Type.

Abbreviations:
CEUS - California Commercial End-Use Survey
SF - Square Feet

Sources:
Land use breakdown provided by Newhall, presented as it maps to CEUS building types.

Table 3-B-4-VCC-D2,D3
Land Use Categories (Non-Residential D2-D3)
Valencia Commerce Center
Newhall Ranch, California

General Building Type[1]	Building Area (VCC) (SF)	%[2]	Refined Building Type[3]	%[4]	Modeled CEUS Building Category[5]	Building Area (SF)
Business Park / Industrial	3,500,000	30%	offices	50%	Large Office	525,000
				50%	Small Office	525000
		20%	Storage	50%	Refrigerated Wharehouse	350000
				50%	Unrefrigerated Wharehouse	350000
		50%	Research and Development	100%	Large Office	1750000

Notes:
1. Five main building types provided by Newhall.
2. The percentage of each Refined Building Type present in the General Building Type.
3. The subcategories of General Building Type provided by Newhall.
4. The percentage of each Modeled Building Category present in the Refined Building Type.
5. The building type used in modeling that represents each Refined Building Type.

Abbreviations:
CEUS - California Commercial End-Use Survey
SF - Square Feet

Sources:
Land use breakdown provided by Newhall, presented as it maps to CEUS building types.

Table 3-B-5-NRSP-D2
Energy Use (Non-Residential D2)
Newhall Ranch Specific Plan
Newhall Ranch, California

Building Type	CEUS Building Type	Energy Type	Units	T24 Energy Use Base[1,2]	T24 Energy Use 2008[2,3]	15% Better than 2008 T24 Energy Use [2,4]	Non-Title 24 Energy Use[1,5]	Project Energy Use[6]
				[Unit/SF/yr]				
Business Park / Industrial	Large Office	Electricity	kWh	12.59	11.12	9.45	4.80	14.25
		Gas	kBTU	12.17	10.11	8.59	0.19	8.78
Business Park / Industrial	Refrigerated Wharehouse	Electricity	kWh	4.13	3.65	3.11	13.61	16.72
		Gas	kBTU	1.10	0.99	0.84	0.10	0.94
Business Park / Industrial	Small Office	Electricity	kWh	9.48	8.26	7.02	4.40	11.42
		Gas	kBTU	12.68	11.15	9.48	0.67	10.15
Business Park / Industrial	Unrefrigerated Wharehouse	Electricity	kWh	3.43	3.03	2.58	1.35	3.92
		Gas	kBTU	1.04	0.88	0.75	0.04	0.79
Grocery	Grocery	Electricity	kWh	15.08	13.29	11.30	25.89	37.19
		Gas	kBTU	11.22	10.36	8.81	12.24	21.05
Hotel	Lodging	Electricity	kWh	6.58	5.62	4.78	2.90	7.67
		Gas	kBTU	21.96	20.96	17.82	4.06	21.88
Institutional (schools, library, etc.)	School	Electricity	kWh	5.84	5.12	4.35	1.60	5.95
		Gas	kBTU	10.90	9.82	8.34	1.08	9.43
Misc Retail / Commercial / Office	Large Office	Electricity	kWh	12.59	11.12	9.45	4.80	14.25
		Gas	kBTU	12.17	10.11	8.59	0.19	8.78
Misc Retail / Commercial / Office	Restaurant	Electricity	kWh	21.56	18.76	15.95	28.16	44.11
		Gas	kBTU	46.85	45.24	38.45	187.78	226.24
Misc Retail / Commercial / Office	Retail	Electricity	kWh	13.52	11.95	10.16	3.23	13.39
		Gas	kBTU	1.36	1.21	1.03	0.49	1.52
Misc Retail / Commercial / Office	Small Office	Electricity	kWh	9.48	8.26	7.02	4.40	11.42
		Gas	kBTU	12.68	11.15	9.48	0.67	10.15
Public Safety	Miscellaneous	Electricity	kWh	7.26	6.31	5.37	5.76	11.12
		Gas	kBTU	15.77	14.37	12.21	4.45	16.67

Notes:

1. Baseline usage rates were taken from the 2006 California Commercial End-Use Survey (CEUS), performed by Itron under contract to the California Energy Commission (CEC). Energy use rates are based on 2002 consumption data. ENVIRON used data for Southern California Edison (SCE), Zone 9, which is the sector in which the Entrada would be located.
2. Includes Title 24-regulated building envelope uses of electricity (heating, cooling, ventilation, water heating) and gas (heating, water heating) and all lighting.
3. ENVIRON multiplied the T24 Energy Use Base for each T24 end use category by the reduction factors for 2001 to 2005 and 2005 to 2008 and summed all applicable end use categories.
4. Entrada has committed exceed the 2008 Title 24 building code by 15% for all building envelope uses. This includes heating, cooling, ventilation, and water heating. It does not include lighting.
5. Includes all other uses of electricity (cooking, refrigeration office equipment, miscellaneous, process, motors, air compressors) and gas (cooling, cooking, miscellaneous, process) not included in the Title 24-regulated building envelope or lighting.
6. Project Energy Use sums the previous two columns (15% Better than 2008 T24 Energy Use and Non-Title 24 Energy Use).

Abbreviations:

CEC - California Energy Commission
CEUS - California Commerical End-Use Survey
kBTU - kilo (1000) British thermal units
kWh - kilowatt hour
SCE - Southern California Edison
SF - square feet
T24 - Title 24
yr - year

Sources:

California Energy Commission. 2006. California Commercial End-Use Survey. Prepared by Itron Inc. Available at: Available at: http://www.energy.ca.gov/ceus/

California Energy Commission. 2003. Impact Analysis: 2005 Update to the California Energy Efficiency Standards for Residential and Nonresidential Buildings. Available at: http://www.energy.ca.gov/title24/2005standards/archive/rulemaking/documents/2003-07-11_400-03-014.PDF

California Energy Commission. 2007. Impact Analysis: 2008 Update to the California Energy Efficiency Standards for Residential and Nonresidential Buildings. Available at: http://www.energy.ca.gov/title24/2008standards/rulemaking/documents/2007-11-07_IMPACT_ANALYSIS.PDF

Table 3-B-5-NRSP-D3
Energy Use (Non-Residential D3)
Newhall Ranch Specific Plan
Newhall Ranch, California

Building Type	CEUS Building Type	Energy Type	Units	T24 Energy Use Base[1,2]	T24 Energy Use 2008[2,3]	15% Better than 2008 T24 Energy Use [2,4]	Non-Title 24 Energy Use[1,5]	Project Energy Use[6]
				[Unit/SF/yr]				
Business Park / Industrial	Large Office	Electricity	kWh	12.59	11.12	9.45	4.80	14.25
		Gas	kBTU	12.17	10.11	8.59	0.19	8.78
Business Park / Industrial	Refrigerated Wharehouse	Electricity	kWh	4.13	3.65	3.11	13.61	16.72
		Gas	kBTU	1.10	0.99	0.84	0.10	0.94
Business Park / Industrial	Small Office	Electricity	kWh	9.48	8.26	7.02	4.40	11.42
		Gas	kBTU	12.68	11.15	9.48	0.67	10.15
Business Park / Industrial	Unrefrigerated Wharehouse	Electricity	kWh	3.43	3.03	2.58	1.35	3.92
		Gas	kBTU	1.04	0.88	0.75	0.04	0.79
Grocery	Grocery	Electricity	kWh	15.08	13.29	11.30	25.89	37.19
		Gas	kBTU	11.22	10.36	8.81	12.24	21.05
Hotel	Lodging	Electricity	kWh	6.58	5.62	4.78	2.90	7.67
		Gas	kBTU	21.96	20.96	17.82	4.06	21.88
Institutional (schools, library, etc.)	School	Electricity	kWh	5.84	5.12	4.35	1.60	5.95
		Gas	kBTU	10.90	9.82	8.34	1.08	9.43
Misc Retail / Commercial / Office	Large Office	Electricity	kWh	12.59	11.12	9.45	4.80	14.25
		Gas	kBTU	12.17	10.11	8.59	0.19	8.78
Misc Retail / Commercial / Office	Restaurant	Electricity	kWh	21.56	18.76	15.95	28.16	44.11
		Gas	kBTU	46.85	45.24	38.45	187.78	226.24
Misc Retail / Commercial / Office	Retail	Electricity	kWh	13.52	11.95	10.16	3.23	13.39
		Gas	kBTU	1.36	1.21	1.03	0.49	1.52
Misc Retail / Commercial / Office	Small Office	Electricity	kWh	9.48	8.26	7.02	4.40	11.42
		Gas	kBTU	12.68	11.15	9.48	0.67	10.15
Public Safety	Miscellaneous	Electricity	kWh	7.26	6.31	5.37	5.76	11.12
		Gas	kBTU	15.77	14.37	12.21	4.45	16.67

Notes:

1. Baseline usage rates were taken from the 2006 California Commercial End-Use Survey (CEUS), performed by Itron under contract to the California Energy Commission (CEC). Energy use rates are based on 2002 consumption data. ENVIRON used data for Southern California Edison (SCE), Zone 9, which is the sector in which the Entrada would be located.
2. Includes Title 24-regulated building envelope uses of electricity (heating, cooling, ventilation, water heating) and gas (heating, water heating) and all lighting.
3. ENVIRON multiplied the T24 Energy Use Base for each T24 end use category by the reduction factors for 2001 to 2005 and 2005 to 2008 and summed all applicable end use categories.
4. Entrada has committed exceed the 2008 Title 24 building code by 15% for all building envelope uses. This includes heating, cooling, ventilation, and water heating. It does not include lighting.
5. Includes all other uses of electricity (cooking, refrigeration office equipment, miscellaneous, process, motors, air compressors) and gas (cooling, cooking, miscellaneous, process) not included in the Title 24-regulated building envelope or lighting.
6. Project Energy Use sums the previous two columns (15% Better than 2008 T24 Energy Use and Non-Title 24 Energy Use).

Abbreviations:

CEC - California Energy Commission
CEUS - California Commerical End-Use Survey
kBTU - kilo (1000) British thermal units
kWh - kilowatt hour
SCE - Southern California Edison
SF - square feet
T24 - Title 24
yr - year

Sources:

California Energy Commission. 2006. California Commercial End-Use Survey. Prepared by Itron Inc. Available at: Available at: http://www.energy.ca.gov/ceus/
California Energy Commission. 2003. Impact Analysis: 2005 Update to the California Energy Efficiency Standards for Residential and Nonresidential Buildings. Available at: http://www.energy.ca.gov/title24/2005standards/archive/rulemaking/documents/2003-07-11_400-03-014.PDF
California Energy Commission. 2007. Impact Analysis: 2008 Update to the California Energy Efficiency Standards for Residential and Nonresidential Buildings. Available at: http://www.energy.ca.gov/title24/2008standards/rulemaking/documents/2007-11-07_IMPACT_ANALYSIS.PDF

Table 3-B-5-NRSP-D4
Energy Use (Non-Residential D4)
Newhall Ranch Specific Plan
Newhall Ranch, California

Building Type	CEUS Building Type	Energy Type	Units	T24 Energy Use Base[1,2]	T24 Energy Use 2008[2,3]	15% Better than 2008 T24 Energy Use [2,4]	Non-Title 24 Energy Use[1,5]	Project Energy Use[6]
				[Unit/SF/yr]				
Business Park / Industrial	Large Office	Electricity	kWh	12.59	11.12	9.45	4.80	14.25
		Gas	kBTU	12.17	10.11	8.59	0.19	8.78
Business Park / Industrial	Refrigerated Wharehouse	Electricity	kWh	4.13	3.65	3.11	13.61	16.72
		Gas	kBTU	1.10	0.99	0.84	0.10	0.94
Business Park / Industrial	Small Office	Electricity	kWh	9.48	8.26	7.02	4.40	11.42
		Gas	kBTU	12.68	11.15	9.48	0.67	10.15
Business Park / Industrial	Unrefrigerated Wharehouse	Electricity	kWh	3.43	3.03	2.58	1.35	3.92
		Gas	kBTU	1.04	0.88	0.75	0.04	0.79
Grocery	Grocery	Electricity	kWh	15.08	13.29	11.30	25.89	37.19
		Gas	kBTU	11.22	10.36	8.81	12.24	21.05
Hotel	Lodging	Electricity	kWh	6.58	5.62	4.78	2.90	7.67
		Gas	kBTU	21.96	20.96	17.82	4.06	21.88
Institutional (schools, library, etc.)	School	Electricity	kWh	5.84	5.12	4.35	1.60	5.95
		Gas	kBTU	10.90	9.82	8.34	1.08	9.43
Misc Retail / Commercial / Office	Large Office	Electricity	kWh	12.59	11.12	9.45	4.80	14.25
		Gas	kBTU	12.17	10.11	8.59	0.19	8.78
Misc Retail / Commercial / Office	Restaurant	Electricity	kWh	21.56	18.76	15.95	28.16	44.11
		Gas	kBTU	46.85	45.24	38.45	187.78	226.24
Misc Retail / Commercial / Office	Retail	Electricity	kWh	13.52	11.95	10.16	3.23	13.39
		Gas	kBTU	1.36	1.21	1.03	0.49	1.52
Misc Retail / Commercial / Office	Small Office	Electricity	kWh	9.48	8.26	7.02	4.40	11.42
		Gas	kBTU	12.68	11.15	9.48	0.67	10.15
Public Safety	Miscellaneous	Electricity	kWh	7.26	6.31	5.37	5.76	11.12
		Gas	kBTU	15.77	14.37	12.21	4.45	16.67

Notes:

1. Baseline usage rates were taken from the 2006 California Commercial End-Use Survey (CEUS), performed by Itron under contract to the California Energy Commission (CEC). Energy use rates are based on 2002 consumption data. ENVIRON used data for Southern California Edison (SCE), Zone 9, which is the sector in which the Entrada would be located.
2. Includes Title 24-regulated building envelope uses of electricity (heating, cooling, ventilation, water heating) and gas (heating, water heating) and all lighting.
3. ENVIRON multiplied the T24 Energy Use Base for each T24 end use category by the reduction factors for 2001 to 2005 and 2005 to 2008 and summed all applicable end use categories.
4. Entrada has committed exceed the 2008 Title 24 building code by 15% for all building envelope uses. This includes heating, cooling, ventilation, and water heating. It does not include lighting.
5. Includes all other uses of electricity (cooking, refrigeration office equipment, miscellaneous, process, motors, air compressors) and gas (cooling, cooking, miscellaneous, process) not included in the Title 24-regulated building envelope or lighting.
6. Project Energy Use sums the previous two columns (15% Better than 2008 T24 Energy Use and Non-Title 24 Energy Use).

Abbreviations:

CEC - California Energy Commission
CEUS - California Commerical End-Use Survey
kBTU - kilo (1000) British thermal units
kWh - kilowatt hour
SCE - Southern California Edison
SF - square feet
T24 - Title 24
yr - year

Sources:

California Energy Commission. 2006. California Commercial End-Use Survey. Prepared by Itron Inc. Available at: Available at: http://www.energy.ca.gov/ceus/
California Energy Commission. 2003. Impact Analysis: 2005 Update to the California Energy Efficiency Standards for Residential and Nonresidential Buildings. Available at: http://www.energy.ca.gov/title24/2005standards/archive/rulemaking/documents/2003-07-11_400-03-014.PDF
California Energy Commission. 2007. Impact Analysis: 2008 Update to the California Energy Efficiency Standards for Residential and Nonresidential Buildings. Available at: http://www.energy.ca.gov/title24/2008standards/rulemaking/documents/2007-11-07_IMPACT_ANALYSIS.PDF

Table 3-B-5-NRSP-D5
Energy Use (Non-Residential D5)
Newhall Ranch Specific Plan
Newhall Ranch, California

Building Type	CEUS Building Type	Energy Type	Units	T24 Energy Use Base[1,2]	T24 Energy Use 2008[2,3]	15% Better than 2008 T24 Energy Use [2,4]	Non-Title 24 Energy Use[1,5]	Project Energy Use[6]
				[Unit/SF/yr]				
Business Park / Industrial	Large Office	Electricity	kWh	12.59	11.12	9.45	4.80	14.25
		Gas	kBTU	12.17	10.11	8.59	0.19	8.78
Business Park / Industrial	Refrigerated Wharehouse	Electricity	kWh	4.13	3.65	3.11	13.61	16.72
		Gas	kBTU	1.10	0.99	0.84	0.10	0.94
Business Park / Industrial	Small Office	Electricity	kWh	9.48	8.26	7.02	4.40	11.42
		Gas	kBTU	12.68	11.15	9.48	0.67	10.15
Business Park / Industrial	Unrefrigerated Wharehouse	Electricity	kWh	3.43	3.03	2.58	1.35	3.92
		Gas	kBTU	1.04	0.88	0.75	0.04	0.79
Grocery	Grocery	Electricity	kWh	15.08	13.29	11.30	25.89	37.19
		Gas	kBTU	11.22	10.36	8.81	12.24	21.05
Hotel	Lodging	Electricity	kWh	6.58	5.62	4.78	2.90	7.67
		Gas	kBTU	21.96	20.96	17.82	4.06	21.88
Institutional (schools, library, etc.)	School	Electricity	kWh	5.84	5.12	4.35	1.60	5.95
		Gas	kBTU	10.90	9.82	8.34	1.08	9.43
Misc Retail / Commercial / Office	Large Office	Electricity	kWh	12.59	11.12	9.45	4.80	14.25
		Gas	kBTU	12.17	10.11	8.59	0.19	8.78
Misc Retail / Commercial / Office	Restaurant	Electricity	kWh	21.56	18.76	15.95	28.16	44.11
		Gas	kBTU	46.85	45.24	38.45	187.78	226.24
Misc Retail / Commercial / Office	Retail	Electricity	kWh	13.52	11.95	10.16	3.23	13.39
		Gas	kBTU	1.36	1.21	1.03	0.49	1.52
Misc Retail / Commercial / Office	Small Office	Electricity	kWh	9.48	8.26	7.02	4.40	11.42
		Gas	kBTU	12.68	11.15	9.48	0.67	10.15
Public Safety	Miscellaneous	Electricity	kWh	7.26	6.31	5.37	5.76	11.12
		Gas	kBTU	15.77	14.37	12.21	4.45	16.67

Notes:

1. Baseline usage rates were taken from the 2006 California Commercial End-Use Survey (CEUS), performed by Itron under contract to the California Energy Commission (CEC). Energy use rates are based on 2002 consumption data. ENVIRON used data for Southern California Edison (SCE), Zone 9, which is the sector in which the Entrada would be located.
2. Includes Title 24-regulated building envelope uses of electricity (heating, cooling, ventilation, water heating) and gas (heating, water heating) and all lighting.
3. ENVIRON multiplied the T24 Energy Use Base for each T24 end use category by the reduction factors for 2001 to 2005 and 2005 to 2008 and summed all applicable end use categories.
4. Entrada has committed exceed the 2008 Title 24 building code by 15% for all building envelope uses. This includes heating, cooling, ventilation, and water heating. It does not include lighting.
5. Includes all other uses of electricity (cooking, refrigeration office equipment, miscellaneous, process, motors, air compressors) and gas (cooling, cooking, miscellaneous, process) not included in the Title 24-regulated building envelope or lighting.
6. Project Energy Use sums the previous two columns (15% Better than 2008 T24 Energy Use and Non-Title 24 Energy Use).

Abbreviations:

CEC - California Energy Commission
CEUS - California Commerical End-Use Survey
kBTU - kilo (1000) British thermal units
kWh - kilowatt hour
SCE - Southern California Edison
SF - square feet
T24 - Title 24
yr - year

Sources:

California Energy Commission. 2006. California Commercial End-Use Survey. Prepared by Itron Inc. Available at: Available at: http://www.energy.ca.gov/ceus/
California Energy Commission. 2003. Impact Analysis: 2005 Update to the California Energy Efficiency Standards for Residential and Nonresidential Buildings. Available at: http://www.energy.ca.gov/title24/2005standards/archive/rulemaking/documents/2003-07-11_400-03-014.PDF
California Energy Commission. 2007. Impact Analysis: 2008 Update to the California Energy Efficiency Standards for Residential and Nonresidential Buildings. Available at: http://www.energy.ca.gov/title24/2008standards/rulemaking/documents/2007-11-07_IMPACT_ANALYSIS.PDF

Table 3-B-5-NRSP-D6
Energy Use (Non-Residential D6)
Newhall Ranch Specific Plan
Newhall Ranch, California

Building Type	CEUS Building Type	Energy Type	Units	T24 Energy Use Base[1,2]	T24 Energy Use 2008[2,3]	15% Better than 2008 T24 Energy Use [2,4]	Non-Title 24 Energy Use[1,5]	Project Energy Use[6]
				[Unit/SF/yr]				
Business Park / Industrial	Large Office	Electricity	kWh	12.59	11.12	9.45	4.80	14.25
		Gas	kBTU	12.17	10.11	8.59	0.19	8.78
Business Park / Industrial	Refrigerated Wharehouse	Electricity	kWh	4.13	3.65	3.11	13.61	16.72
		Gas	kBTU	1.10	0.99	0.84	0.10	0.94
Business Park / Industrial	Small Office	Electricity	kWh	9.48	8.26	7.02	4.40	11.42
		Gas	kBTU	12.68	11.15	9.48	0.67	10.15
Business Park / Industrial	Unrefrigerated Wharehouse	Electricity	kWh	3.43	3.03	2.58	1.35	3.92
		Gas	kBTU	1.04	0.88	0.75	0.04	0.79
Grocery	Grocery	Electricity	kWh	15.08	13.29	11.30	25.89	37.19
		Gas	kBTU	11.22	10.36	8.81	12.24	21.05
Hotel	Lodging	Electricity	kWh	6.58	5.62	4.78	2.90	7.67
		Gas	kBTU	21.96	20.96	17.82	4.06	21.88
Institutional (schools, library, etc.)	School	Electricity	kWh	5.84	5.12	4.35	1.60	5.95
		Gas	kBTU	10.90	9.82	8.34	1.08	9.43
Misc Retail / Commercial / Office	Large Office	Electricity	kWh	12.59	11.12	9.45	4.80	14.25
		Gas	kBTU	12.17	10.11	8.59	0.19	8.78
Misc Retail / Commercial / Office	Restaurant	Electricity	kWh	21.56	18.76	15.95	28.16	44.11
		Gas	kBTU	46.85	45.24	38.45	187.78	226.24
Misc Retail / Commercial / Office	Retail	Electricity	kWh	13.52	11.95	10.16	3.23	13.39
		Gas	kBTU	1.36	1.21	1.03	0.49	1.52
Misc Retail / Commercial / Office	Small Office	Electricity	kWh	9.48	8.26	7.02	4.40	11.42
		Gas	kBTU	12.68	11.15	9.48	0.67	10.15
Public Safety	Miscellaneous	Electricity	kWh	7.26	6.31	5.37	5.76	11.12
		Gas	kBTU	15.77	14.37	12.21	4.45	16.67

Notes:

1. Baseline usage rates were taken from the 2006 California Commercial End-Use Survey (CEUS), performed by Itron under contract to the California Energy Commission (CEC). Energy use rates are based on 2002 consumption data. ENVIRON used data for Southern California Edison (SCE), Zone 9, which is the sector in which the Entrada would be located.
2. Includes Title 24-regulated building envelope uses of electricity (heating, cooling, ventilation, water heating) and gas (heating, water heating) and all lighting.
3. ENVIRON multiplied the T24 Energy Use Base for each T24 end use category by the reduction factors for 2001 to 2005 and 2005 to 2008 and summed all applicable end use categories.
4. Entrada has committed exceed the 2008 Title 24 building code by 15% for all building envelope uses. This includes heating, cooling, ventilation, and water heating. It does not include lighting.
5. Includes all other uses of electricity (cooking, refrigeration office equipment, miscellaneous, process, motors, air compressors) and gas (cooling, cooking, miscellaneous, process) not included in the Title 24-regulated building envelope or lighting.
6. Project Energy Use sums the previous two columns (15% Better than 2008 T24 Energy Use and Non-Title 24 Energy Use).

Abbreviations:

CEC - California Energy Commission
CEUS - California Commerical End-Use Survey
kBTU - kilo (1000) British thermal units
kWh - kilowatt hour
SCE - Southern California Edison
SF - square feet
T24 - Title 24
yr - year

Sources:

California Energy Commission. 2006. California Commercial End-Use Survey. Prepared by Itron Inc. Available at: Available at: http://www.energy.ca.gov/ceus/
California Energy Commission. 2003. Impact Analysis: 2005 Update to the California Energy Efficiency Standards for Residential and Nonresidential Buildings. Available at: http://www.energy.ca.gov/title24/2005standards/archive/rulemaking/documents/2003-07-11_400-03-014.PDF
California Energy Commission. 2007. Impact Analysis: 2008 Update to the California Energy Efficiency Standards for Residential and Nonresidential Buildings. Available at: http://www.energy.ca.gov/title24/2008standards/rulemaking/documents/2007-11-07_IMPACT_ANALYSIS.PDF

Table 3-B-5-NRSP-D7
Energy Use (Non-Residential D7)
Newhall Ranch Specific Plan
Newhall Ranch, California

Building Type	CEUS Building Type	Energy Type	Units	T24 Energy Use Base[1,2]	T24 Energy Use 2008[2,3]	15% Better than 2008 T24 Energy Use [2,4]	Non-Title 24 Energy Use[1,5]	Project Energy Use[6]
				[Unit/SF/yr]				
Business Park / Industrial	Large Office	Electricity	kWh	12.59	11.12	9.45	4.80	14.25
		Gas	kBTU	12.17	10.11	8.59	0.19	8.78
Business Park / Industrial	Refrigerated Wharehouse	Electricity	kWh	4.13	3.65	3.11	13.61	16.72
		Gas	kBTU	1.10	0.99	0.84	0.10	0.94
Business Park / Industrial	Small Office	Electricity	kWh	9.48	8.26	7.02	4.40	11.42
		Gas	kBTU	12.68	11.15	9.48	0.67	10.15
Business Park / Industrial	Unrefrigerated Wharehouse	Electricity	kWh	3.43	3.03	2.58	1.35	3.92
		Gas	kBTU	1.04	0.88	0.75	0.04	0.79
Grocery	Grocery	Electricity	kWh	15.08	13.29	11.30	25.89	37.19
		Gas	kBTU	11.22	10.36	8.81	12.24	21.05
Hotel	Lodging	Electricity	kWh	6.58	5.62	4.78	2.90	7.67
		Gas	kBTU	21.96	20.96	17.82	4.06	21.88
Institutional (schools, library, etc.)	School	Electricity	kWh	5.84	5.12	4.35	1.60	5.95
		Gas	kBTU	10.90	9.82	8.34	1.08	9.43
Misc Retail / Commercial / Office	Large Office	Electricity	kWh	12.59	11.12	9.45	4.80	14.25
		Gas	kBTU	12.17	10.11	8.59	0.19	8.78
Misc Retail / Commercial / Office	Restaurant	Electricity	kWh	21.56	18.76	15.95	28.16	44.11
		Gas	kBTU	46.85	45.24	38.45	187.78	226.24
Misc Retail / Commercial / Office	Retail	Electricity	kWh	13.52	11.95	10.16	3.23	13.39
		Gas	kBTU	1.36	1.21	1.03	0.49	1.52
Misc Retail / Commercial / Office	Small Office	Electricity	kWh	9.48	8.26	7.02	4.40	11.42
		Gas	kBTU	12.68	11.15	9.48	0.67	10.15
Public Safety	Miscellaneous	Electricity	kWh	7.26	6.31	5.37	5.76	11.12
		Gas	kBTU	15.77	14.37	12.21	4.45	16.67

Notes:

1. Baseline usage rates were taken from the 2006 California Commercial End-Use Survey (CEUS), performed by Itron under contract to the California Energy Commission (CEC). Energy use rates are based on 2002 consumption data. ENVIRON used data for Southern California Edison (SCE), Zone 9, which is the sector in which the Entrada would be located.
2. Includes Title 24-regulated building envelope uses of electricity (heating, cooling, ventilation, water heating) and gas (heating, water heating) and all lighting.
3. ENVIRON multiplied the T24 Energy Use Base for each T24 end use category by the reduction factors for 2001 to 2005 and 2005 to 2008 and summed all applicable end use categories.
4. Entrada has committed exceed the 2008 Title 24 building code by 15% for all building envelope uses. This includes heating, cooling, ventilation, and water heating. It does not include lighting.
5. Includes all other uses of electricity (cooking, refrigeration office equipment, miscellaneous, process, motors, air compressors) and gas (cooling, cooking, miscellaneous, process) not included in the Title 24-regulated building envelope or lighting.
6. Project Energy Use sums the previous two columns (15% Better than 2008 T24 Energy Use and Non-Title 24 Energy Use).

Abbreviations:

CEC - California Energy Commission
CEUS - California Commerical End-Use Survey
kBTU - kilo (1000) British thermal units
kWh - kilowatt hour
SCE - Southern California Edison
SF - square feet
T24 - Title 24
yr - year

Sources:

California Energy Commission. 2006. California Commercial End-Use Survey. Prepared by Itron Inc. Available at: Available at: http://www.energy.ca.gov/ceus/
California Energy Commission. 2003. Impact Analysis: 2005 Update to the California Energy Efficiency Standards for Residential and Nonresidential Buildings. Available at: http://www.energy.ca.gov/title24/2005standards/archive/rulemaking/documents/2003-07-11_400-03-014.PDF
California Energy Commission. 2007. Impact Analysis: 2008 Update to the California Energy Efficiency Standards for Residential and Nonresidential Buildings. Available at: http://www.energy.ca.gov/title24/2008standards/rulemaking/documents/2007-11-07_IMPACT_ANALYSIS.PDF

Table 3-B-5-Entrada-D2,D3,D4,D5,D6
Energy Use (Non-Residential D2-D6)
Entrada
Newhall Ranch, California

Building Type	CEUS Building Type	Energy Type	Units	T24 Energy Use Base[1,2]	T24 Energy Use 2008[2,3]	15% Better than 2008 T24 Energy Use [2,4]	Non-Title 24 Energy Use[1,5]	Project Energy Use[6]
				[Unit/SF/yr]				
Grocery	Grocery	Electricity	kWh	15.08	13.29	11.30	25.89	37.19
		Gas	kBTU	11.22	10.36	8.81	12.24	21.05
Hotel	Lodging	Electricity	kWh	6.58	5.62	4.78	2.90	7.67
		Gas	kBTU	21.96	20.96	17.82	4.06	21.88
Institutional (schools, library, etc.)	School	Electricity	kWh	5.84	5.12	4.35	1.60	5.95
		Gas	kBTU	10.90	9.82	8.34	1.08	9.43
Misc Retail / Commercial / Office	Large Office	Electricity	kWh	12.59	11.12	9.45	4.80	14.25
		Gas	kBTU	12.17	10.11	8.59	0.19	8.78
Misc Retail / Commercial / Office	Restaurant	Electricity	kWh	21.56	18.76	15.95	28.16	44.11
		Gas	kBTU	46.85	45.24	38.45	187.78	226.24
Misc Retail / Commercial / Office	Retail	Electricity	kWh	13.52	11.95	10.16	3.23	13.39
		Gas	kBTU	1.36	1.21	1.03	0.49	1.52
Misc Retail / Commercial / Office	Small Office	Electricity	kWh	9.48	8.26	7.02	4.40	11.42
		Gas	kBTU	12.68	11.15	9.48	0.67	10.15
Public Safety	Miscellaneous	Electricity	kWh	7.26	6.31	5.37	5.76	11.12
		Gas	kBTU	15.77	14.37	12.21	4.45	16.67

Notes:

1. Baseline usage rates were taken from the 2006 California Commercial End-Use Survey (CEUS), performed by Itron under contract to the California Energy Commission (CEC). Energy use rates are based on 2002 consumption data. ENVIRON used data for Southern California Edison (SCE), Zone 9, which is the sector in which the Entrada would be located.
2. Includes Title 24-regulated building envelope uses of electricity (heating, cooling, ventilation, water heating) and gas (heating, water heating) and all lighting.
3. ENVIRON multiplied the T24 Energy Use Base for each T24 end use category by the reduction factors for 2001 to 2005 and 2005 to 2008 and summed all applicable end use categories.
4. Entrada has committed exceed the 2008 Title 24 building code by 15% for all building envelope uses. This includes heating, cooling, ventilation, and water heating. It does not include lighting.
5. Includes all other uses of electricity (cooking, refrigeration office equipment, miscellaneous, process, motors, air compressors) and gas (cooling, cooking, miscellaneous, process) not included in the Title 24-regulated building envelope or lighting.
6. Project Energy Use sums the previous two columns (15% Better than 2008 T24 Energy Use and Non-Title 24 Energy Use).

Abbreviations:

CEC - California Energy Commission
CEUS - California Commerical End-Use Survey
EF - emission factor
GHG - greenhouse gas
kBTU - kilo (1000) British thermal units
kWh- kilowatt hour
SCE - Southern California Edison
SF - square feet
T24 - Title 24
yr - year

Sources:

California Energy Commission. 2006. California Commercial End-Use Survey. Prepared by Itron Inc. Available at: Available at: http://www.energy.ca.gov/ceus/

California Energy Commission. 2003. Impact Analysis: 2005 Update to the California Energy Efficiency Standards for Residential and Nonresidential Buildings. Available at: http://www.energy.ca.gov/title24/2005standards/archive/rulemaking/documents/2003-07-11_400-03-014.PDF

California Energy Commission. 2007. Impact Analysis: 2008 Update to the California Energy Efficiency Standards for Residential and Nonresidential Buildings. Available at: http://www.energy.ca.gov/title24/2008standards/rulemaking/documents/2007-11-07_IMPACT_ANALYSIS.PDF

Table 3-B-5-Entrada-D7
Entrada
Newhall Ranch, California

Building Type	CEUS Building Type	Energy Type	Units	T24 Energy Use Base[1,2]	T24 Energy Use 2008[2,3]	15% Better than 2008 T24 Energy Use [2,4]	Non-Title 24 Energy Use[1,5]	Project Energy Use[6]
				[Unit/SF/yr]				
Misc Retail / Commercial / Office	Large Office	Electricity	kWh	12.59	11.12	9.45	4.80	14.25
		Gas	kBTU	12.17	10.11	8.59	0.19	8.78
Misc Retail / Commercial / Office	Restaurant	Electricity	kWh	21.56	18.76	15.95	28.16	44.11
		Gas	kBTU	46.85	45.24	38.45	187.78	226.24
Misc Retail / Commercial / Office	Retail	Electricity	kWh	13.52	11.95	10.16	3.23	13.39
		Gas	kBTU	1.36	1.21	1.03	0.49	1.52
Misc Retail / Commercial / Office	Small Office	Electricity	kWh	9.48	8.26	7.02	4.40	11.42
		Gas	kBTU	12.68	11.15	9.48	0.67	10.15

Notes:

1. Baseline usage rates were taken from the 2006 California Commercial End-Use Survey (CEUS), performed by Itron under contract to the California Energy Commission (CEC). Energy use rates are based on 2002 consumption data. ENVIRON used data for Southern California Edison (SCE), Zone 9, which is the sector in which the Entrada would be located.
2. Includes Title 24-regulated building envelope uses of electricity (heating, cooling, ventilation, water heating) and gas (heating, water heating) and all lighting.
3. ENVIRON multiplied the T24 Energy Use Base for each T24 end use category by the reduction factors for 2001 to 2005 and 2005 to 2008 and summed all applicable end use categories.
4. Entrada has committed exceed the 2008 Title 24 building code by 15% for all building envelope uses. This includes heating, cooling, ventilation, and water heating. It does not include lighting.
5. Includes all other uses of electricity (cooking, refrigeration office equipment, miscellaneous, process, motors, air compressors) and gas (cooling, cooking, miscellaneous, process) not included in the Title 24-regulated building envelope or lighting.
6. Project Energy Use sums the previous two columns (15% Better than 2008 T24 Energy Use and Non-Title 24 Energy Use).

Abbreviations:

CEC - California Energy Commission
CEUS - California Commerical End-Use Survey
EF - emission factor
GHG - greenhouse gas
kBTU - kilo (1000) British thermal units
kWh- kilowatt hour
SCE - Southern California Edison
SF - square feet
T24 - Title 24
yr - year

Sources:

California Energy Commission. 2006. California Commercial End-Use Survey. Prepared by Itron Inc. Available at: Available at: http://www.energy.ca.gov/ceus/
California Energy Commission. 2003. Impact Analysis: 2005 Update to the California Energy Efficiency Standards for Residential and Nonresidential Buildings. Available at: http://www.energy.ca.gov/title24/2005standards/archive/rulemaking/documents/2003-07-11_400-03-014.PDF
California Energy Commission. 2007. Impact Analysis: 2008 Update to the California Energy Efficiency Standards for Residential and Nonresidential Buildings. Available at: http://www.energy.ca.gov/title24/2008standards/rulemaking/documents/2007-11-07_IMPACT_ANALYSIS.PDF

Table 3-B-5-VCC-D2,D3
Energy Use (Non-Residential D2-D3)
Valencia Commerce Center
Newhall Ranch, California

Building Type	CEUS Building Type	Energy Type	Units	T24 Energy Use Base[1,2]	T24 Energy Use 2008[2,3]	15% Better than 2008 T24 Energy Use [2,4]	Non-Title 24 Energy Use[1,5]	Project Energy Use[6]
				[Unit/SF/yr]				
Business Park / Industrial	Large Office	Electricity	kWh	12.59	11.12	9.45	4.80	14.25
		Gas	kBTU	12.17	10.11	8.59	0.19	8.78
Business Park / Industrial	Refrigerated Wharehouse	Electricity	kWh	4.13	3.65	3.11	13.61	16.72
		Gas	kBTU	1.10	0.99	0.84	0.10	0.94
Business Park / Industrial	Small Office	Electricity	kWh	9.48	8.26	7.02	4.40	11.42
		Gas	kBTU	12.68	11.15	9.48	0.67	10.15
Business Park / Industrial	Unrefrigerated Wharehouse	Electricity	kWh	3.43	3.03	2.58	1.35	3.92
		Gas	kBTU	1.04	0.88	0.75	0.04	0.79

Notes:

1. Baseline usage rates were taken from the 2006 California Commercial End-Use Survey (CEUS), performed by Itron under contract to the California Energy Commission (CEC). Energy use rates are based on 2002 consumption data. ENVIRON used data for Southern California Edison (SCE), Zone 9, which is the sector in which the Entrada would be located.
2. Includes Title 24-regulated building envelope uses of electricity (heating, cooling, ventilation, water heating) and gas (heating, water heating) and all lighting.
3. ENVIRON multiplied the T24 Energy Use Base for each T24 end use category by the reduction factors for 2001 to 2005 and 2005 to 2008 and summed all applicable end use categories.
4. Entrada has committed exceed the 2008 Title 24 building code by 15% for all building envelope uses. This includes heating, cooling, ventilation, and water heating. It does not include lighting.
5. Includes all other uses of electricity (cooking, refrigeration office equipment, miscellaneous, process, motors, air compressors) and gas (cooling, cooking, miscellaneous, process) not included in the Title 24-regulated building envelope or lighting.
6. Project Energy Use sums the previous two columns (15% Better than 2008 T24 Energy Use and Non-Title 24 Energy Use).

Abbreviations:

CEC - California Energy Commission
CEUS - California Commerical End-Use Survey
kBTU - kilo (1000) British thermal units
kWh - kilowatt hour
SCE - Southern California Edison
SF - square feet
T24 - Title 24
yr - year

Sources:

California Energy Commission. 2006. California Commercial End-Use Survey. Prepared by Itron Inc. Available at: Available at: http://www.energy.ca.gov/ceus/
California Energy Commission. 2003. Impact Analysis: 2005 Update to the California Energy Efficiency Standards for Residential and Nonresidential Buildings. Available at: http://www.energy.ca.gov/title24/2005standards/archive/rulemaking/documents/2003-07-11_400-03-014.PDF
California Energy Commission. 2007. Impact Analysis: 2008 Update to the California Energy Efficiency Standards for Residential and Nonresidential Buildings. Available at: http://www.energy.ca.gov/title24/2008standards/rulemaking/documents/2007-11-07_IMPACT_ANALYSIS.PDF

Table 3-B-6-NRSP-D2
GHG Emissions (Non-Residential D2)
Newhall Ranch Specific Plan
Newhall Ranch, California

Building Type	CEUS Building Type	Size [SF]	Energy Type	Unit	15% Better than 2008 T24 Energy Use [1] [Unit/SF/yr]	CO_2e Emissions [2] [tonnes CO_2e/SF/yr]	Total CO_2e Emissions [3] [tonnes CO_2e/yr]
Business Park / Industrial	Large Office	165000	Electricity	kWh	14.25	3.77E-03	622
			Gas	kBTU	8.78	4.66E-04	77
Business Park / Industrial	Large Office	550000	Electricity	kWh	14.25	3.77E-03	2072
			Gas	kBTU	8.78	4.66E-04	256
Business Park / Industrial	Refrigerated Wharehouse	110000	Electricity	kWh	16.72	4.42E-03	486
			Gas	kBTU	0.94	5.00E-05	5
Business Park / Industrial	Small Office	165000	Electricity	kWh	11.42	3.02E-03	498
			Gas	kBTU	10.15	5.39E-04	89
Business Park / Industrial	Unrefrigerated Wharehouse	110000	Electricity	kWh	3.92	1.04E-03	114
			Gas	kBTU	0.79	4.18E-05	5
Grocery	Grocery	180000	Electricity	kWh	37.19	9.83E-03	1770
			Gas	kBTU	21.05	1.12E-03	201
Hotel	Lodging	100000	Electricity	kWh	7.67	2.03E-03	203
			Gas	kBTU	21.88	1.16E-03	116
Institutional (schools, library, etc.)	School	500000	Electricity	kWh	5.95	1.57E-03	787
			Gas	kBTU	9.43	5.00E-04	250
Misc Retail / Commercial / Office	Large Office	521250	Electricity	kWh	14.25	3.77E-03	1964
			Gas	kBTU	8.78	4.66E-04	243
Misc Retail / Commercial / Office	Restaurant	834000	Electricity	kWh	44.11	1.17E-02	9729
			Gas	kBTU	226.24	1.20E-02	10013
Misc Retail / Commercial / Office	Retail	2293500	Electricity	kWh	13.39	3.54E-03	8121
			Gas	kBTU	1.52	8.08E-05	185
Misc Retail / Commercial / Office	Small Office	521250	Electricity	kWh	11.42	3.02E-03	1574
			Gas	kBTU	10.15	5.39E-04	281
Public Safety	Miscellaneous	95000	Electricity	kWh	11.12	2.94E-03	279
			Gas	kBTU	16.67	8.85E-04	84
						Total Emissions	**40,026**
						Total Savings from Solar Panels [4]	**1,704**
						Final Emissions	**38,322**

Notes:

1. Baseline usage rates were taken from the 2006 California Commercial End-Use Survey (CEUS), performed by Itron under contract to the California Energy Commission (CEC). Energy use rates are based on 2002 consumption data. ENVIRON used data for Southern California Edison (SCE), Zone 9, which is the sector in which the Newhall Ranch would be located.

ENVIRON used the 2002 CEUS data to represent energy use for buildings that are minimally compliant with the 2001 Title 24 standards. Title 24 usage rates have been adjusted to reflect improvements in Title 24 building codes from 2002 to 2005 according to CEC's "Impact Analysis for 2005 Energy Efficiency Standards", as well as from 2005 to 2008 according to the "Impact Analysis 2008 Update to the California Energy Efficiency Standards for Residential and Nonresidential Buildings".
Newhall Ranch has committed to exceed the 2008 Title 24 building code by 15% for all building envelope uses. This includes heating, cooling, ventilation, and water heating and lighting.

2. GHG emission factors are calculated by multiplying the corresponding usage rates or usages by the conversion factors.

3. The total GHG emissions are calculated by multiplying the corresponding usage rates or usages by the conversion factors and the total square footage of the buildings.

4. For this calculation, it is assumed that a 2.0 kW photovoltaic unit from Sunpower company will be mounted on every 1,600 square feet of roof space (this would cover approximately 8% of the rooftop building space). Here, we assume that the rooftop space available is approximately half of the total square footage. The yearly electricity savings are estimated to be 3,356 kWh for a 2 kW solar system with a 30 degree roof slope and a south roof direction as provided for the City of Santa Clarita, CA in http://sunpower1.cleanpowerestimator.com/default.aspx Number of systems = (commercial square footage) / (1,600 SF per system) / 2 (SF roof space per SF building space).

Abbreviations:

CEC - California Energy Commission
CEUS - California Commerical End-Use Survey
CO_2 - carbon dioxide
CO_2e - carbon dioxide equivalent
EF - emission factor
GHG - greenhouse gas
kBTU - kilo (1000) British thermal units
kW - kilowatt
kWh - kilowatt hour
SCE - Southern California Edison
SF - square feet
T24 - Title 24
tonnes - metric tonnes
yr - year

Sources:

California Energy Commission. 2006. California Commercial End-Use Survey. Prepared by Itron Inc. Available at: Available at: http://www.energy.ca.gov/ceus/
California Energy Commission. 2003. Impact Analysis: 2005 Update to the California Energy Efficiency Standards for Residential and Nonresidential Buildings. Available at: http://www.energy.ca.gov/title24/2005standards/archive/rulemaking/documents/2003
California Energy Commission. 2007. Impact Analysis: 2008 Update to the California Energy Efficiency Standards for Residential and Nonresidential Buildings. Available at: http://www.energy.ca.gov/title24/2008standards/rulemaking/documents/2007-11-07_I

Table 3-B-6-NRSP-D3
GHG Emissions (Non-Residential D3)
Newhall Ranch Specific Plan
Newhall Ranch, California

Building Type	CEUS Building Type	Size [SF]	Energy Type	Unit	15% Better than 2008 T24 Energy Use [1] [Unit/SF/yr]	CO_2e Emissions[2] [tonnes CO_2e/SF/yr]	Total CO_2e Emissions[3] [tonnes CO_2e/yr]
Business Park / Industrial	Large Office	165000	Electricity	kWh	14.25	3.77E-03	622
			Gas	kBTU	8.78	4.66E-04	77
Business Park / Industrial	Large Office	550000	Electricity	kWh	14.25	4.66E-04	2072
			Gas	kBTU	8.78	3.77E-03	256
Business Park / Industrial	Refrigerated Wharehouse	110000	Electricity	kWh	16.72	4.42E-03	486
			Gas	kBTU	0.94	5.00E-05	5
Business Park / Industrial	Small Office	165000	Electricity	kWh	11.42	3.02E-03	498
			Gas	kBTU	10.15	5.39E-04	89
Business Park / Industrial	Unrefrigerated Wharehouse	110000	Electricity	kWh	3.92	1.04E-03	114
			Gas	kBTU	0.79	4.18E-05	5
Grocery	Grocery	180000	Electricity	kWh	37.19	9.83E-03	1770
			Gas	kBTU	21.05	1.12E-03	201
Hotel	Lodging	100000	Electricity	kWh	7.67	2.03E-03	203
			Gas	kBTU	21.88	1.16E-03	116
Institutional (schools, library, etc.)	School	500000	Electricity	kWh	5.95	1.57E-03	787
			Gas	kBTU	9.43	5.00E-04	250
Misc Retail / Commercial / Office	Large Office	512500	Electricity	kWh	14.25	3.77E-03	1931
			Gas	kBTU	8.78	4.66E-04	239
Misc Retail / Commercial / Office	Restaurant	820000	Electricity	kWh	44.11	1.17E-02	9566
			Gas	kBTU	226.24	1.20E-02	9845
Misc Retail / Commercial / Office	Retail	2255000	Electricity	kWh	13.39	3.54E-03	7985
			Gas	kBTU	1.52	8.08E-05	182
Misc Retail / Commercial / Office	Small Office	512500	Electricity	kWh	11.42	3.02E-03	1547
			Gas	kBTU	10.15	5.39E-04	276
Public Safety	Miscellaneous	95000	Electricity	kWh	11.12	2.94E-03	279
			Gas	kBTU	16.67	8.85E-04	84
						Total Emissions	**39,487**
						Total Savings from Solar Panels[4]	**1,685**
						Final Emissions	**37,802**

Notes:

1. Baseline usage rates were taken from the 2006 California Commercial End-Use Survey (CEUS), performed by Itron under contract to the California Energy Commission (CEC). Energy use rates are based on 2002 consumption data. ENVIRON used data for Southern California Edison (SCE), Zone 9, which is the sector in which the Newhall Ranch would be located. ENVIRON used the 2002 CEUS data to represent energy use for buildings that are minimally compliant with the 2001 Title 24 standards. Title 24 usage rates have been adjusted to reflect improvements in Title 24 building codes from 2002 to 2005 according to CEC's "Impact Analysis for 2005 Energy Efficiency Standards", as well as from 2005 to 2008 according to the "Impact Analysis 2008 Update to the California Energy Efficiency Standards for Residential and Nonresidential Buildings".

Newhall Ranch has committed to exceed the 2008 Title 24 building code by 15% for all building envelope uses. This includes heating, cooling, ventilation, and water heating and lighting.

2. GHG emission factors are calculated by multiplying the corresponding usage rates or usages by the conversion factors.
3. The total GHG emissions are calculated by multiplying the corresponding usage rates or usages by the conversion factors and the total square footage of the buildings.
4. For this calculation, it is assumed that a 2.0 kW photovoltaic unit from Sunpower company will be mounted on every 1,600 square feet of roof space (this would cover approximately 8% of the rooftop building space). Here, we assume that the rooftop space available is approximately half of the total square footage. The yearly electricity savings are estimated to be 3,356 kWh for a 2 kW solar system with a 30 degree roof slope and a south roof direction as provided for the City of Santa Clarita, CA in http://sunpower1.cleanpowerestimator.com/default.aspx Number of systems = (commercial square footage) / (1,600 SF per system) / 2 (SF roof space per SF building space).

Abbreviations:
CEC - California Energy Commission
CEUS - California Commerical End-Use Survey
CO_2 - carbon dioxide
CO_2e - carbon dioxide equivalent
EF - emission factor
GHG - greenhouse gas
kBTU - kilo (1000) British thermal units
kW - kilowatt
kWh - kilowatt hour
SCE - Southern California Edison
SF - square feet
T24 - Title 24
tonnes - metric tonnes
yr - year

Sources:
California Energy Commission. 2006. California Commercial End-Use Survey. Prepared by Itron Inc. Available at: Available at: http://www.energy.ca.gov/ceus/
California Energy Commission. 2003. Impact Analysis: 2005 Update to the California Energy Efficiency Standards for Residential and Nonresidential Buildings. Available at: http://www.energy.ca.gov/title24/2005standards/archive/rulemaking/documents/2003
California Energy Commission. 2007. Impact Analysis: 2008 Update to the California Energy Efficiency Standards for Residential and Nonresidential Buildings. Available at: http://www.energy.ca.gov/title24/2008standards/rulemaking/documents/2007-11-07_I

Table 3-B-6-NRSP-D4
GHG Emissions (Non-Residential D4)
Newhall Ranch Specific Plan
Newhall Ranch, California

Building Type	CEUS Building Type	Size	Energy Type	Unit	15% Better than 2008 T24 Energy Use [1]	CO_2e Emissions [2]	Total CO_2e Emissions [3]
		[SF]			[Unit/SF/yr]	[tonnes CO_2/SF/yr]	[tonnes CO_2/yr]
Business Park / Industrial	Large Office	165000	Electricity	kWh	14.25	3.77E-03	622
			Gas	kBTU	8.78	4.66E-04	77
Business Park / Industrial	Large Office	550000	Electricity	kWh	14.25	3.77E-03	2072
			Gas	kBTU	8.78	4.66E-04	256
Business Park / Industrial	Refrigerated Wharehouse	110000	Electricity	kWh	16.72	4.42E-03	486
			Gas	kBTU	0.94	5.00E-05	5
Business Park / Industrial	Small Office	165000	Electricity	kWh	11.42	3.02E-03	498
			Gas	kBTU	10.15	5.39E-04	89
Business Park / Industrial	Unrefrigerated Wharehouse	110000	Electricity	kWh	3.92	1.04E-03	114
			Gas	kBTU	0.79	4.18E-05	5
Grocery	Grocery	180000	Electricity	kWh	37.19	9.83E-03	1770
			Gas	kBTU	21.05	1.12E-03	201
Hotel	Lodging	100000	Electricity	kWh	7.67	2.03E-03	203
			Gas	kBTU	21.88	1.16E-03	116
Institutional (schools, library, etc.)	School	500000	Electricity	kWh	5.95	1.57E-03	787
			Gas	kBTU	9.43	5.00E-04	250
Misc Retail / Commercial / Office	Large Office	515000	Electricity	kWh	14.25	3.77E-03	1940
			Gas	kBTU	8.78	4.66E-04	240
Misc Retail / Commercial / Office	Restaurant	824000	Electricity	kWh	44.11	1.17E-02	9613
			Gas	kBTU	226.24	1.20E-02	9893
Misc Retail / Commercial / Office	Retail	2266000	Electricity	kWh	13.39	3.54E-03	8024
			Gas	kBTU	1.52	8.08E-05	183
Misc Retail / Commercial / Office	Small Office	515000	Electricity	kWh	11.42	3.02E-03	1555
			Gas	kBTU	10.15	5.39E-04	277
Public Safety	Miscellaneous	95000	Electricity	kWh	11.12	2.94E-03	279
			Gas	kBTU	16.67	8.85E-04	84
						Total	**39,641**
						Total Savings from Solar Panels [4]	**1,690**
						Final Emissions	**37,951**

Notes:

1. Baseline usage rates were taken from the 2006 California Commercial End-Use Survey (CEUS), performed by Itron under contract to the California Energy Commission (CEC). Energy use rates are based on 2002 consumption data. ENVIRON used data for Southern California Edison (SCE), Zone 9, which is the sector in which the Newhall Ranch would be located. ENVIRON used the 2002 CEUS data to represent energy use for buildings that are minimally compliant with the 2001 Title 24 standards. Title 24 usage rates have been adjusted to reflect improvements in Title 24 building codes from 2002 to 2005 according to CEC's "Impact Analysis for 2005 Energy Efficiency Standards", as well as from 2005 to 2008 according to the "Impact Analysis 2008 Update to the California Energy Efficiency Standards for Residential and Nonresidential Buildings".

Newhall Ranch has committed to exceed the 2008 Title 24 building code by 15% for all building envelope uses. This includes heating, cooling, ventilation, and water heating and lighting.

2. GHG emission factors are calculated by multiplying the corresponding usage rates or usages by the conversion factors.
3. The total GHG emissions are calculated by multiplying the corresponding usage rates or usages by the conversion factors and the total square footage of the buildings.
4. For this calculation, it is assumed that a 2.0 kW photovoltaic unit from Sunpower company will be mounted on every 1,600 square feet of roof space (this would cover approximately 8% of the rooftop building space). Here, we assume that the rooftop space available is approximately half of the total square footage. The yearly electricity savings are estimated to be 3,356 kWh for a 2 kW solar system with a 30 degree roof slope and a south roof direction as provided for the City of Santa Clarita, CA in http://sunpower1.cleanpowerestimator.com/default.aspx Number of systems = (commercial square footage) / (1,600 SF per system) / 2 (SF roof space per SF building space).

Abbreviations:
CEC - California Energy Commission
CEUS - California Commerical End-Use Survey
CO_2 - carbon dioxide
CO_2e - carbon dioxide equivalent
EF - emission factor
GHG - greenhouse gas
kBTU - kilo (1000) British thermal units
kW - kilowatt
kWh - kilowatt hour
SCE - Southern California Edison
SF - square feet
T24 - Title 24
tonnes - metric tonnes
yr - year

Sources:
California Energy Commission. 2006. California Commercial End-Use Survey. Prepared by Itron Inc. Available at: Available at: http://www.energy.ca.gov/ceus/
California Energy Commission. 2003. Impact Analysis: 2005 Update to the California Energy Efficiency Standards for Residential and Nonresidential Buildings. Available at: http://www.energy.ca.gov/title24/2005standards/archive/rulemaking/documents/2003
California Energy Commission. 2007. Impact Analysis: 2008 Update to the California Energy Efficiency Standards for Residential and Nonresidential Buildings. Available at: http://www.energy.ca.gov/title24/2008standards/rulemaking/documents/2007-11-07_I

Table 3-B-6-NRSP-D5
GHG Emissions (Non-Residential D5)
Newhall Ranch Specific Plan
Newhall Ranch, California

Building Type	CEUS Building Type	Size	Energy Type	Unit	15% Better than 2008 T24 Energy Use [1]	CO_2e Emissions [2]	Total CO_2e Emissions [3]
		[SF]			[Unit/SF/yr]	[tonnes CO_2/SF/yr]	[tonnes CO_2/yr]
Business Park / Industrial	Large Office	165000	Electricity	kWh	14.25	3.77E-03	622
			Gas	kBTU	8.78	4.66E-04	77
Business Park / Industrial	Large Office	550000	Electricity	kWh	14.25	3.77E-03	2072
			Gas	kBTU	8.78	4.66E-04	256
Business Park / Industrial	Refrigerated Wharehouse	110000	Electricity	kWh	16.72	4.42E-03	486
			Gas	kBTU	0.94	5.00E-05	5
Business Park / Industrial	Small Office	165000	Electricity	kWh	11.42	3.02E-03	498
			Gas	kBTU	10.15	5.39E-04	89
Business Park / Industrial	Unrefrigerated Wharehouse	110000	Electricity	kWh	3.92	1.04E-03	114
			Gas	kBTU	0.79	4.18E-05	5
Grocery	Grocery	180000	Electricity	kWh	37.19	9.83E-03	1770
			Gas	kBTU	21.05	1.12E-03	201
Hotel	Lodging	100000	Electricity	kWh	7.67	2.03E-03	203
			Gas	kBTU	21.88	1.16E-03	116
Institutional (schools, library, etc.)	School	500000	Electricity	kWh	5.95	1.57E-03	787
			Gas	kBTU	9.43	5.00E-04	250
Misc Retail / Commercial / Office	Large Office	503750	Electricity	kWh	14.25	3.77E-03	1898
			Gas	kBTU	8.78	4.66E-04	235
Misc Retail / Commercial / Office	Restaurant	806000	Electricity	kWh	44.11	1.17E-02	9403
			Gas	kBTU	226.24	1.20E-02	9677
Misc Retail / Commercial / Office	Retail	2216500	Electricity	kWh	13.39	3.54E-03	7848
			Gas	kBTU	1.52	8.08E-05	179
Misc Retail / Commercial / Office	Small Office	503750	Electricity	kWh	11.42	3.02E-03	1521
			Gas	kBTU	10.15	5.39E-04	271
Public Safety	Miscellaneous	95000	Electricity	kWh	11.12	2.94E-03	279
			Gas	kBTU	16.67	8.85E-04	84
						Total	**38,948**
						Total Savings from Solar Panels [4]	**1,665**
						Final Emissions	**37,283**

Notes:

1. Baseline usage rates were taken from the 2006 California Commercial End-Use Survey (CEUS), performed by Itron under contract to the California Energy Commission (CEC). Energy use rates are based on 2002 consumption data. ENVIRON used data for Southern California Edison (SCE), Zone 9, which is the sector in which the Newhall Ranch would be located. ENVIRON used the 2002 CEUS data to represent energy use for buildings that are minimally compliant with the 2001 Title 24 standards. Title 24 usage rates have been adjusted to reflect improvements in Title 24 building codes from 2002 to 2005 according to CEC's "Impact Analysis for 2005 Energy Efficiency Standards", as well as from 2005 to 2008 according to the "Impact Analysis 2008 Update to the California Energy Efficiency Standards for Residential and Nonresidential Buildings".

Newhall Ranch has committed to exceed the 2008 Title 24 building code by 15% for all building envelope uses. This includes heating, cooling, ventilation, and water heating and lighting.

2. GHG emission factors are calculated by multiplying the corresponding usage rates or usages by the conversion factors.

3. The total GHG emissions are calculated by multiplying the corresponding usage rates or usages by the conversion factors and the total square footage of the buildings.

4. For this calculation, it is assumed that a 2.0 kW photovoltaic unit from Sunpower company will be mounted on every 1,600 square feet of roof space (this would cover approximately 8% of the rooftop building space). Here, we assume that the rooftop space available is approximately half of the total square footage. The yearly electricity savings are estimated to be 3,356 kWh for a 2 kW solar system with a 30 degree roof slope and a south roof direction as provided for the City of Santa Clarita, CA in http://sunpower1.cleanpowerestimator.com/default.aspx Number of systems = (commercial square footage) / (1,600 SF per system) / 2 (SF roof space per SF building space).

Abbreviations:

CEC - California Energy Commission
CEUS - California Commerical End-Use Survey
CO_2 - carbon dioxide
CO_2e - carbon dioxide equivalent
EF - emission factor
GHG - greenhouse gas
kBTU - kilo (1000) British thermal units
kW - kilowatt
kWh - kilowatt hour
SCE - Southern California Edison
SF - square feet
T24 - Title 24
tonnes - metric tonnes
yr - year

Sources:

California Energy Commission. 2006. California Commercial End-Use Survey. Prepared by Itron Inc. Available at: Available at: http://www.energy.ca.gov/ceus/
California Energy Commission. 2003. Impact Analysis: 2005 Update to the California Energy Efficiency Standards for Residential and Nonresidential Buildings. Available at: http://www.energy.ca.gov/title24/2005standards/archive/rulemaking/documents/2003
California Energy Commission. 2007. Impact Analysis: 2008 Update to the California Energy Efficiency Standards for Residential and Nonresidential Buildings. Available at: http://www.energy.ca.gov/title24/2008standards/rulemaking/documents/2007-11-07_I

Table 3-B-6-NRSP-D6
GHG Emissions (Non-Residential D6)
Newhall Ranch Specific Plan
Newhall Ranch, California

Building Type	CEUS Building Type	Size [SF]	Energy Type	Unit	15% Better than 2008 T24 Energy Use [1] [Unit/SF/yr]	CO_2e Emissions[2] [tonnes CO_2/SF/yr]	Total CO_2e Emissions[3] [tonnes CO_2/yr]
Business Park / Industrial	Large Office	165000	Electricity	kWh	14.25	3.77E-03	622
			Gas	kBTU	8.78	4.66E-04	77
Business Park / Industrial	Large Office	550000	Electricity	kWh	14.25	3.77E-03	2072
			Gas	kBTU	8.78	4.66E-04	256
Business Park / Industrial	Refrigerated Wharehouse	110000	Electricity	kWh	16.72	4.42E-03	486
			Gas	kBTU	0.94	5.00E-05	5
Business Park / Industrial	Small Office	165000	Electricity	kWh	11.42	3.02E-03	498
			Gas	kBTU	10.15	5.39E-04	89
Business Park / Industrial	Unrefrigerated Wharehouse	110000	Electricity	kWh	3.92	1.04E-03	114
			Gas	kBTU	0.79	4.18E-05	5
Grocery	Grocery	180000	Electricity	kWh	37.19	9.83E-03	1770
			Gas	kBTU	21.05	1.12E-03	201
Hotel	Lodging	100000	Electricity	kWh	7.67	2.03E-03	203
			Gas	kBTU	21.88	1.16E-03	116
Institutional (schools, library, etc.)	School	500000	Electricity	kWh	5.95	1.57E-03	787
			Gas	kBTU	9.43	5.00E-04	250
Misc Retail / Commercial / Office	Large Office	493750	Electricity	kWh	14.25	3.77E-03	1860
			Gas	kBTU	8.78	4.66E-04	230
Misc Retail / Commercial / Office	Restaurant	790000	Electricity	kWh	44.11	1.17E-02	9216
			Gas	kBTU	226.24	1.20E-02	9485
Misc Retail / Commercial / Office	Retail	2172500	Electricity	kWh	13.39	3.54E-03	7693
			Gas	kBTU	1.52	8.08E-05	176
Misc Retail / Commercial / Office	Small Office	493750	Electricity	kWh	11.42	3.02E-03	1491
			Gas	kBTU	10.15	5.39E-04	266
Public Safety	Miscellaneous	95000	Electricity	kWh	11.12	2.94E-03	279
			Gas	kBTU	16.67	8.85E-04	84
						Total	**38,332**
						Total Savings from Solar Panels[4]	**1,643**
						Final Emissions	**36,689**

Notes:

1. Baseline usage rates were taken from the 2006 California Commercial End-Use Survey (CEUS), performed by Itron under contract to the California Energy Commission (CEC). Energy use rates are based on 2002 consumption data. ENVIRON used data for Southern California Edison (SCE), Zone 9, which is the sector in which the Newhall Ranch would be located.

ENVIRON used the 2002 CEUS data to represent energy use for buildings that are minimally compliant with the 2001 Title 24 standards. Title 24 usage rates have been adjusted to reflect improvements in Title 24 building codes from 2002 to 2005 according to CEC's "Impact Analysis for 2005 Energy Efficiency Standards", as well as from 2005 to 2008 according to the "Impact Analysis 2008 Update to the California Energy Efficiency Standards for Residential and Nonresidential Buildings".

Newhall Ranch has committed to exceed the 2008 Title 24 building code by 15% for all building envelope uses. This includes heating, cooling, ventilation, and water heating and lighting.

2. GHG emission factors are calculated by multiplying the corresponding usage rates or usages by the conversion factors.

3. The total GHG emissions are calculated by multiplying the corresponding usage rates or usages by the conversion factors and the total square footage of the buildings.

4. For this calculation, it is assumed that a 2.0 kW photovoltaic unit from Sunpower company will be mounted on every 1,600 square feet of roof space (this would cover approximately 8% of the rooftop building space). Here, we assume that the rooftop space available is approximately half of the total square footage. The yearly electricity savings are estimated to be 3,356 kWh for a 2 kW solar system with a 30 degree roof slope and a south roof direction as provided for the City of Santa Clarita, CA in http://sunpower1.cleanpowerestimator.com/default.aspx Number of systems = (commercial square footage) / (1,600 SF per system) / 2 (SF roof space per SF building space).

Abbreviations:

CEC - California Energy Commission
CEUS - California Commerical End-Use Survey
CO_2 - carbon dioxide
CO_2e - carbon dioxide equivalent
EF - emission factor
GHG - greenhouse gas
kBTU - kilo (1000) British thermal units
kW - kilowatt
kWh - kilowatt hour
SCE - Southern California Edison
SF - square feet
T24 - Title 24
tonnes - metric tonnes
yr - year

Sources:

California Energy Commission. 2006. California Commercial End-Use Survey. Prepared by Itron Inc. Available at: Available at: http://www.energy.ca.gov/ceus/

California Energy Commission. 2003. Impact Analysis: 2005 Update to the California Energy Efficiency Standards for Residential and Nonresidential Buildings. Available at: http://www.energy.ca.gov/title24/2005standards/archive/rulemaking/documents/2003

California Energy Commission. 2007. Impact Analysis: 2008 Update to the California Energy Efficiency Standards for Residential and Nonresidential Buildings. Available at: http://www.energy.ca.gov/title24/2008standards/rulemaking/documents/2007-11-07_I

Table 3-B-6-NRSP-D7
GHG Emissions (Non-Residential D7)
Newhall Ranch Specific Plan
Newhall Ranch, California

Building Type	CEUS Building Type	Size	Energy Type	Unit	15% Better than 2008 T24 Energy Use [1]	CO_2e Emissions [2]	Total CO_2e Emissions [3]
		[SF]			[Unit/SF/yr]	[tonnes CO_2/SF/yr]	[tonnes CO_2/yr]
Business Park / Industrial	Large Office	165000	Electricity	kWh	14.25	3.77E-03	622
			Gas	kBTU	8.78	4.66E-04	77
Business Park / Industrial	Large Office	550000	Electricity	kWh	14.25	3.77E-03	2072
			Gas	kBTU	8.78	4.66E-04	256
Business Park / Industrial	Refrigerated Wharehouse	110000	Electricity	kWh	16.72	4.42E-03	486
			Gas	kBTU	0.94	5.00E-05	5
Business Park / Industrial	Small Office	165000	Electricity	kWh	11.42	3.02E-03	498
			Gas	kBTU	10.15	5.39E-04	89
Business Park / Industrial	Unrefrigerated Wharehouse	110000	Electricity	kWh	3.92	1.04E-03	114
			Gas	kBTU	0.79	4.18E-05	5
Grocery	Grocery	180000	Electricity	kWh	37.19	9.83E-03	1770
			Gas	kBTU	21.05	1.12E-03	201
Hotel	Lodging	100000	Electricity	kWh	7.67	2.03E-03	203
			Gas	kBTU	21.88	1.16E-03	116
Institutional (schools, library, etc.)	School	500000	Electricity	kWh	5.95	1.57E-03	787
			Gas	kBTU	9.43	5.00E-04	250
Misc Retail / Commercial / Office	Large Office	297500	Electricity	kWh	14.25	3.77E-03	1121
			Gas	kBTU	8.78	4.66E-04	139
Misc Retail / Commercial / Office	Restaurant	476000	Electricity	kWh	44.11	1.17E-02	5553
			Gas	kBTU	226.24	1.20E-02	5715
Misc Retail / Commercial / Office	Retail	1309000	Electricity	kWh	13.39	3.54E-03	4635
			Gas	kBTU	1.52	8.08E-05	106
Misc Retail / Commercial / Office	Small Office	297500	Electricity	kWh	11.42	3.02E-03	898
			Gas	kBTU	10.15	5.39E-04	160
Public Safety	Miscellaneous	95000	Electricity	kWh	11.12	2.94E-03	279
			Gas	kBTU	16.67	8.85E-04	84
						Total	**26,242**
						Total Savings from Solar Panels [4]	**1,208**
						Final Emissions	**25,035**

Notes:

1. Baseline usage rates were taken from the 2006 California Commercial End-Use Survey (CEUS), performed by Itron under contract to the California Energy Commission (CEC). Energy use rates are based on 2002 consumption data. ENVIRON used data for Southern California Edison (SCE), Zone 9, which is the sector in which the Newhall Ranch would be located. ENVIRON used the 2002 CEUS data to represent energy use for buildings that are minimally compliant with the 2001 Title 24 standards. Title 24 usage rates have been adjusted to reflect improvements in Title 24 building codes from 2002 to 2005 according to CEC's "Impact Analysis for 2005 Energy Efficiency Standards", as well as from 2005 to 2008 according to the "Impact Analysis 2008 Update to the California Energy Efficiency Standards for Residential and Nonresidential Buildings".

Newhall Ranch has committed to exceed the 2008 Title 24 building code by 15% for all building envelope uses. This includes heating, cooling, ventilation, and water heating and lighting.

2. GHG emission factors are calculated by multiplying the corresponding usage rates or usages by the conversion factors.

3. The total GHG emissions are calculated by multiplying the corresponding usage rates or usages by the conversion factors and the total square footage of the buildings.

4. For this calculation, it is assumed that a 2.0 kW photovoltaic unit from Sunpower company will be mounted on every 1,600 square feet of roof space (this would cover approximately 8% of the rooftop building space). Here, we assume that the rooftop space available is approximately half of the total square footage. The yearly electricity savings are estimated to be 3,356 kWh for a 2 kW solar system with a 30 degree roof slope and a south roof direction as provided for the City of Santa Clarita, CA in http://sunpower1.cleanpowerestimator.com/default.aspx Number of systems = (commercial square footage) / (1,600 SF per system) / 2 (SF roof space per SF building space).

Abbreviations:

CEC - California Energy Commission
CEUS - California Commerical End-Use Survey
CO_2 - carbon dioxide
CO_2e - carbon dioxide equivalent
EF - emission factor
GHG - greenhouse gas
kBTU - kilo (1000) British thermal units
kW - kilowatt
kWh - kilowatt hour
SCE - Southern California Edison
SF - square feet
T24 - Title 24
tonnes - metric tonnes
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Sources:

California Energy Commission. 2006. California Commercial End-Use Survey. Prepared by Itron Inc. Available at: Available at: http://www.energy.ca.gov/ceus/
California Energy Commission. 2003. Impact Analysis: 2005 Update to the California Energy Efficiency Standards for Residential and Nonresidential Buildings. Available at: http://www.energy.ca.gov/title24/2005standards/archive/rulemaking/documents/2003
California Energy Commission. 2007. Impact Analysis: 2008 Update to the California Energy Efficiency Standards for Residential and Nonresidential Buildings. Available at: http://www.energy.ca.gov/title24/2008standards/rulemaking/documents/2007-11-07_I

Table 3-B-6-Entrada-D2,D3,D4,D5,D6
GHG Emissions (Non-Residential D2-D6)
Entrada
Newhall Ranch, California

Building Type	CEUS Building Type	Size	Energy Type	Unit	15% Better than 2008 T24 Energy Use [1]	CO_2e Emissions[2]	Total CO_2e Emissions[3]
		[SF]			[Unit/SF/yr]	[tonnes CO_2e/SF/yr]	[tonnes CO_2e/yr]
Grocery	Grocery	45000	Electricity	kWhr	37.19	9.83E-03	443
			Gas	kBTU	21.05	1.12E-03	50
Hotel	Lodging	200000	Electricity	kWhr	7.67	2.03E-03	406
			Gas	kBTU	21.88	1.16E-03	232
Institutional (schools, library, etc.)	School	60000	Electricity	kWhr	5.95	1.57E-03	94
			Gas	kBTU	9.43	5.00E-04	30
Misc Retail / Commercial / Office	Large Office	31250	Electricity	kWhr	14.25	3.77E-03	118
			Gas	kBTU	8.78	4.66E-04	15
Misc Retail / Commercial / Office	Restaurant	50000	Electricity	kWhr	44.11	1.17E-02	583
			Gas	kBTU	226.24	1.20E-02	600
Misc Retail / Commercial / Office	Retail	137500	Electricity	kWhr	13.39	3.54E-03	487
			Gas	kBTU	1.52	8.08E-05	11
Misc Retail / Commercial / Office	Small Office	31250	Electricity	kWhr	11.42	3.02E-03	94
			Gas	kBTU	10.15	5.39E-04	17
Public Safety	Miscellaneous	15000	Electricity	kWhr	11.12	2.94E-03	44
			Gas	kBTU	16.67	8.85E-04	13
						Total Emissions	**3,238**
						Total Savings from Solar Panels[4]	**158**
						Final Emissions	**3,080**

Notes:

1. Baseline usage rates were taken from the 2006 California Commercial End-Use Survey (CEUS), performed by Itron under contract to the California Energy Commission (CEC). Energy use rates are based on 2002 consumption data. ENVIRON used data for Southern California Edison (SCE), Zone 9, which is the sector in which the Entrada would be located.

ENVIRON used the 2002 CEUS data to represent energy use for buildings that are minimally compliant with the 2001 Title 24 standards. Title 24 usage rates have been adjusted to reflect improvements in Title 24 building codes from 2002 to 2005 according to CEC's "Impact Analysis for 2005 Energy Efficiency Standards", as well as from 2005 to 2008 according to the "Impact Analysis 2008 Update to the California Energy Efficiency Standards for Residential and Nonresidential Buildings".

Entrada has committed to exceed the 2008 Title 24 building code by 15% for all building envelope uses. This includes heating, cooling, ventilation, and water heating and lighting.

2. GHG emission factors are calculated by multiplying the corresponding usage rates or usages by the conversion factors.

3. The total GHG emissions are calculated by multiplying the corresponding usage rates or usages by the conversion factors and the total square footage of the buildings.

4. For this calculation, it is assumed that a 2.0 kW photovoltaic unit from Sunpower company will be mounted on every 1,600 square feet of roof space (this would cover approximately 8% of the rooftop building space). Here, we assume that the rooftop space available is approximately half of the total square footage. The yearly electricity savings are estimated to be 3,356 kWh for a 2 kW solar system with a 30 degree roof slope and a south roof direction as provided for the City of Santa Clarita, CA in http://sunpower1.cleanpowerestimator.com/default.aspx Number of systems = (commercial square footage) / (1,600 SF per system) / 2 (SF roof space per SF building space).

Abbreviations:

CEC - California Energy Commission
CEUS - California Commerical End-Use Survey
CO_2 - carbon dioxide
CO_2e - carbon dioxide equivalent
EF - emission factor
GHG - greenhouse gas
kBTU - kilo (1000) British thermal units
kW - kilowatt
kWh - kilowatt hour
SCE - Southern California Edison
SF - square feet
T24 - Title 24
tonnes - metric tonnes
yr - year

Sources:

California Energy Commission. 2006. California Commercial End-Use Survey. Prepared by Itron Inc. Available at: Available at: http://www.energy.ca.gov/ceus/
California Energy Commission. 2003. Impact Analysis: 2005 Update to the California Energy Efficiency Standards for Residential and Nonresidential Buildings. Available at: http://www.energy.ca.gov/title24/2005standards/archive/rulemaking/documents/2003
California Energy Commission. 2007. Impact Analysis: 2008 Update to the California Energy Efficiency Standards for Residential and Nonresidential Buildings. Available at: http://www.energy.ca.gov/title24/2008standards/rulemaking/documents/2007-11-07_I

Table 3-B-6-Entrada-D7
GHG Emissions (Non-Residential D7)
Entrada
Newhall Ranch, California

Building Type	CEUS Building Type	Size [SF]	Energy Type	Unit	15% Better than 2008 T24 Energy Use [1] [Unit/SF/yr]	CO_2e Emissions[2] [tonnes CO_2e/SF/yr]	Total CO_2e Emissions[3] [tonnes CO_2e/yr]
Misc Retail / Commercial / Office	Large Office	6250	Electricity	kWh	14.25	3.77E-03	24
			Gas	kBTU	8.78	4.66E-04	3
Misc Retail / Commercial / Office	Restaurant	10000	Electricity	kWh	44.11	1.17E-02	117
			Gas	kBTU	226.24	1.20E-02	120
Misc Retail / Commercial / Office	Retail	27500	Electricity	kWh	13.39	3.54E-03	97
			Gas	kBTU	1.52	8.08E-05	2
Misc Retail / Commercial / Office	Small Office	6250	Electricity	kWh	11.42	3.02E-03	19
			Gas	kBTU	10.15	5.39E-04	3
						Total Emissions	**385**
						Total Savings from Solar Panels[4]	**14**
						Final Emissions	**371**

Notes:

1. Baseline usage rates were taken from the 2006 California Commercial End-Use Survey (CEUS), performed by Itron under contract to the California Energy Commission (CEC). Energy use rates are based on 2002 consumption data. ENVIRON used data for Southern California Edison (SCE), Zone 9, which is the sector in which the Entrada would be located.
ENVIRON used the 2002 CEUS data to represent energy use for buildings that are minimally compliant with the 2001 Title 24 standards. Title 24 usage rates have been adjusted to reflect improvements in Title 24 building codes from 2002 to 2005 according to CEC's "Impact Analysis for 2005 Energy Efficiency Standards", as well as from 2005 to 2008 according to the "Impact Analysis 2008 Update to the California Energy Efficiency Standards for Residential and Nonresidential Buildings".
Entrada has committed to exceed the 2008 Title 24 building code by 15% for all building envelope uses. This includes heating, cooling, ventilation, and water heating and lighting.

2. GHG emission factors are calculated by multiplying the corresponding usage rates or usages by the conversion factors.

3. The total GHG emissions are calculated by multiplying the corresponding usage rates or usages by the conversion factors and the total square footage of the buildings.

4. For this calculation, it is assumed that a 2.0 kW photovoltaic unit from Sunpower company will be mounted on every 1,600 square feet of roof space (this would cover approximately 8% of the rooftop building space). Here, we assume that the rooftop space available is approximately half of the total square footage. The yearly electricity savings are estimated to be 3,356 kWh for a 2 kW solar system with a 30 degree roof slope and a south roof direction as provided for the City of Santa Clarita, CA in http://sunpower1.cleanpowerestimator.com/default.aspx Number of systems = (commercial square footage) / (1,600 SF per system) / 2 (SF roof space per SF building space).

Abbreviations:

CEC - California Energy Commission
CEUS - California Commerical End-Use Survey
CO_2 - carbon dioxide
CO_2e - carbon dioxide equivalent
EF - emission factor
GHG - greenhouse gas
kBTU - kilo (1000) British thermal units
kW - kilowatt
kWh - kilowatt hour
SCE - Southern California Edison
SF - square feet
T24 - Title 24
tonnes - metric tonnes
yr - year

Sources:

California Energy Commission. 2006. California Commercial End-Use Survey. Prepared by Itron Inc. Available at: Available at: http://www.energy.ca.gov/ceus/
California Energy Commission. 2003. Impact Analysis: 2005 Update to the California Energy Efficiency Standards for Residential and Nonresidential Buildings. Available at: http://www.energy.ca.gov/title24/2005standards/archive/rulemaking/documents/2003
California Energy Commission. 2007. Impact Analysis: 2008 Update to the California Energy Efficiency Standards for Residential and Nonresidential Buildings. Available at: http://www.energy.ca.gov/title24/2008standards/rulemaking/documents/2007-11-07_I

Table 3-B-6-VCC-D2,D3
GHG Emissions (Non-Residential D2-D3)
Valencia Commerce Center
Newhall Ranch, California

Building Type	CEUS Building Type	Size	Energy Type	Unit	15% Better than 2008 T24 Energy Use [1]	CO_2e Emissions[2]	Total CO_2e Emissions[3]
		[SF]			[Unit/SF/yr]	[tonnes CO_2e/SF/yr]	[tonnes CO_2e/yr]
Business Park / Industrial	Large Office	525000	Electricity	kWh	14.25	3.77E-03	1978
			Gas	kBTU	8.78	4.66E-04	245
Business Park / Industrial	Large Office	1750000	Electricity	kWh	14.25	3.77E-03	6594
			Gas	kBTU	8.78	4.66E-04	816
Business Park / Industrial	Refrigerated Wharehouse	350000	Electricity	kWh	16.72	4.42E-03	1547
			Gas	kBTU	0.94	5.00E-05	17
Business Park / Industrial	Small Office	525000	Electricity	kWh	11.42	3.02E-03	1585
			Gas	kBTU	10.15	5.39E-04	283
Business Park / Industrial	Unrefrigerated Wharehouse	350000	Electricity	kWh	3.92	1.04E-03	363
			Gas	kBTU	0.79	4.18E-05	15
						Total Emissions	**13,443**
						Total Savings from Solar Panels[4]	**971**
						Final Emissions	**12,473**

Notes:

1. Baseline usage rates were taken from the 2006 California Commercial End-Use Survey (CEUS), performed by Itron under contract to the California Energy Commission (CEC). Energy use rates are based on 2002 consumption data. ENVIRON used data for Southern California Edison (SCE), Zone 9, which is the sector in which the Newhall Ranch would be located.

ENVIRON used the 2002 CEUS data to represent energy use for buildings that are minimally compliant with the 2001 Title 24 standards. Title 24 usage rates have been adjusted to reflect improvements in Title 24 building codes from 2002 to 2005 according to CEC's "Impact Analysis for 2005 Energy Efficiency Standards", as well as from 2005 to 2008 according to the "Impact Analysis 2008 Update to the California Energy Efficiency Standards for Residential and Nonresidential Buildings".
Newhall Ranch has committed to exceed the 2008 Title 24 building code by 15% for all building envelope uses. This includes heating, cooling, ventilation, and water heating and lighting.

2. GHG emission factors are calculated by multiplying the corresponding usage rates or usages by the conversion factors.

3. The total GHG emissions are calculated by multiplying the corresponding usage rates or usages by the conversion factors and the total square footage of the buildings.

4. For this calculation, it is assumed that a 2.0 kW photovoltaic unit from Sunpower company will be mounted on every 1,600 square feet of roof space (this would cover approximately 8% of the rooftop building space). Here, we assume that the rooftop space available is approximately half of the total square footage. The yearly electricity savings are estimated to be 3,356 kWh for a 2 kW solar system with a 30 degree roof slope and a south roof direction as provided for the City of Santa Clarita, CA in http://sunpower1.cleanpowerestimator.com/default.aspx Number of systems = (commercial square footage) / (1,600 SF per system) / 2 (SF roof space per SF building space).

Abbreviations:

CEC - California Energy Commission
CEUS - California Commerical End-Use Survey
CO_2 - carbon dioxide
CO_2e - carbon dioxide equivalent
EF - emission factor
GHG - greenhouse gas
kBTU - kilo (1000) British thermal units
kW - kilowatt
kWh - kilowatt hour
SCE - Southern California Edison
SF - square feet
T24 - Title 24
tonnes - metric tonnes
yr - year

Sources:

California Energy Commission. 2006. California Commercial End-Use Survey. Prepared by Itron Inc. Available at: Available at: http://www.energy.ca.gov/ceus/
California Energy Commission. 2003. Impact Analysis: 2005 Update to the California Energy Efficiency Standards for Residential and Nonresidential Buildings. Available at: http://www.energy.ca.gov/title24/2005standards/archive/rulemaking/documents/2003
California Energy Commission. 2007. Impact Analysis: 2008 Update to the California Energy Efficiency Standards for Residential and Nonresidential Buildings. Available at: http://www.energy.ca.gov/title24/2008standards/rulemaking/documents/2007-11-07_I

Table 3-B-7
Summary of Non-Residential CO_2e Emissions
Newhall Land
Newhall Ranch, CA

Development	Efficiency Scenario	Newhall CO_2e Emissions	Entrada CO_2e Emissions	VCC CO_2e Emissions	Total Non-Residential CO_2e Emissions	Percentage Reduction from CARB 2020 NAT
		(tonnes/year)				
Design Alternative 2	15% better than 2008 Title 24[1]	40,026	3,238	13,443	**56,707**	**22%**
	15% better than 2008 title 24 plus solar panel[2]	38,322	3,080	12,473	**53,874**	**26%**
	BAU[3]	50,206	4,074	18,061	**72,341**	-
Design Alternative 3	15% better than 2008 Title 24[1]	39,487	3,238	13,443	**56,168**	**22%**
	15% better than 2008 title 24 plus solar panel[2]	37,802	3,080	12,473	**53,355**	**26%**
	BAU[3]	49,538	4,074	18,061	**71,673**	-
Design Alternative 4	15% better than 2008 Title 24[1]	39,641	3,238	-	**42,879**	**20%**
	15% better than 2008 title 24 plus solar panel[2]	37,951	3,080	-	**41,031**	**24%**
	BAU[3]	49,729	4,074	-	**53,803**	-
Design Alternative 5	15% better than 2008 Title 24[1]	38,948	3,238	-	**42,186**	**20%**
	15% better than 2008 title 24 plus solar panel[2]	37,283	3,080	-	**40,362**	**24%**
	BAU[3]	48,870	4,074	-	**52,944**	-
Design Alternative 6	15% better than 2008 Title 24[1]	38,332	3,238	-	**41,570**	**20%**
	15% better than 2008 title 24 plus solar panel[2]	36,689	3,080	-	**39,769**	**24%**
	BAU[3]	48,107	4,074	-	**52,180**	-
Design Alternative 7	15% better than 2008 Title 24[1]	26,242	385	-	**26,628**	**21%**
	15% better than 2008 title 24 plus solar panel[2]	25,035	371	-	**25,406**	**24%**
	BAU[3]	33,125	477	-	**33,602**	-

Notes:
Title 24 = California Code of Regulations (CCR), Title 24, also known as the California Building Standards Code.
1. Newhall has committed to being 15% more efficient than Title 24 2008 standards for non-residential buildings. This 15% improvement applies to the built environment only, as Title 24 does not regulate non-built electricity such as plug-in appliances. These emissions represent the 15% improvements.
2. In additional to being 15% more efficient than Title 24 standards, this scenario considers using energy generated by any renewable resource. For this calculation, it is assumed that a 2.0 kW photovoltaic unit from Sunpower company will be mounted on every 1,600 square feet of roof space (this would cover approximately 8% of the rooftop building space). Here, we assume that the rooftop space available is approximately half of the total square footage. The yearly electricity savings are estimated to be 3,356 kWh for a 2 kW solar system with a 30 degree roof slope and a south roof direction as provided foe the City of Santa Clarita, CA in http://sunpower1.cleanpowerestimator.com/default.aspx Number of systems = (commercial square footage) / (1,600 SF per system) / 2 (SF roof space per SF building space)
3. BAU scenarios assume buildings to be Title 24-compliant, without the 15% improvements.

Abbreviations:
CARB 2020 NAT - California Air Resources Board Scoping Plan projections for 2020 if no actions are taken.
CO_2e - carbon dioxide equivalent
kW - kilowatt
kWh - kilowatt-hour
SF - square feet

Table 3-C-1
Mobile Source Greenhouse Gas Emissions
Newhall Land
Newhall Ranch, California

Site	Design Alternative	Daily Trips	Annual VMT	Emission Factor Running (g/mile)[1]	Emission Factor Starts (g/start)[2]	CO_2 Emissions Running (tonne)	CO_2 Emissions Starts (tonne)	Total CO_2 Emissions (tonne)	Total CO2e Emissions Without Reduction (tonne)[3]	Pavley Standard Emissions Reduction Percentage[4]	Total Emissions (tonne)
Newhall	D2	120,564	336,230,258	353	106	118,719	4,665	123,384	129,878	20%	103,583
	D3	117,955	328,953,452			116,149	4,564	120,713	127,067		101,341
	D4	119,618	333,590,001			117,786	4,629	122,415	128,858		102,770
	D5	116,587	325,137,959			114,802	4,511	119,313	125,593		100,166
	D6	114,226	318,553,417			112,477	4,420	116,897	123,049		98,137
	D7	95,083	265,168,713			93,628	3,679	97,307	102,428		81,691
Entrada	D2	9,958	27,770,993	353	106	9,806	385	10,191	10,727	20%	8,555
	D3	6,494	18,111,517			6,395	251	6,646	6,996		5,580
	D4	6,494	18,111,517			6,395	251	6,646	6,996		5,580
	D5	5,536	15,439,062			5,451	214	5,666	5,964		4,756
	D6	2,503	6,980,980			2,465	97	2,562	2,697		2,151
	D7	4,918	13,716,456			4,843	190	5,033	5,298		4,226

Notes:

1. Emission factors for vehicles based on weighted average of EMFAC estimates for all LDA, LT1, LT2, MDV and MCY classes in 2020 for Los Angeles County, evaluated at 35 mph.
2. Starting emission factors based on the weighted average distribution of time between trip starts from URBEMIS defaults and EMFAC emission estimates for each time period (i.e., 5 min, 10 min, and so on).
3. $CO_2e = CO_2 / 0.95$: The United States Environmental Protection Agency (USEPA) recommends assuming that CH_4, N_2O, and HFCs account for 5% of GHG emissions from on-road vehicles, taking into account their global warming potentials.
4. Estimated 2020 emissions reduction resulting from California fuel efficiency regulation adopted by Air Resources Board in their final form on August 4, 2005 pursuant to AB1493 (Pavley) signed into law in 2002. The percentage reduction calculated by dividing 100.5 tons/day of reduction by 496.4 tons/day of baseline emissions presented in Table 11 of ARB (2008).

Abbreviations:

ADT - Average Daily Trip
ARB - California Air Resources Board
CH_4 - Methane
CO_2 - Carbon Dioxide
CO_2e - Carbon Dioxide Equivalent
EMFAC - EMission FACtors model
GHG - Greenhouse Gas
HFC - Hydro fluorocarbon
LDA - Light Duty Automobile as defined in EMFAC
LDT1 - Light Duty Trucks Class I as defined in EMFAC
LDT2 - Light Duty Trucks Class II as defined in EMFAC
MDV - Medium Duty Trucks as defined in EMFAC
MCY - Motocycle
N_2O - Nitrous oxide
URBEMIS - URBan EMISsions model
VMT - Vehicle Miles Traveled

Source:

Comparison of Greenhouse Gas Reductions for the United States and Canada under U.S. CAFE Standards and California Air Resources Board Greenhouse Gas Regulations, February 2008. California Air Resources Board.

Table 3-D-1
Area CO_2 Emissions
Newhall Land
Newhall Ranch, CA

Development	Newhall CO_2 Emissions[1]	Entrada CO_2 Emissions[1,2]	VCC CO_2 Emissions[1,3]	Total Area CO_2 Emissions
	(tonnes/year)			
Design Alternative 2	2,556	387	0.5	**2,944**
Design Alternative 3	2,503	252	0.5	**2,755**
Design Alternative 4	2,537	252	0.0	**2,789**
Design Alternative 5	2,474	215	0.0	**2,689**
Design Alternative 6	2,423	99	0.0	**2,522**
Design Alternative 7	2,018	191	0.0	**2,210**

Notes:

1. Area emissions here include Landscaping and Hearth. Natural gas emissions are calculated in the residential and non-residential sections.
2. Entrada area source emissions were only available for Design Alternative 2. The values for Design Alternatives 3 - 7 are estimated by scaling D2 emissions directly with residential building area.
3. VCC area source emissions were only available for Design Alternative 2. The values for Design Alternatives 3 - 7 are estimated by scaling D2 emissions directly with building area.

Table 3-E-1
Scaling Factor for VCC
Newhall Land
Newhall Ranch, California

Development	Building Area (sq ft)	Scaling Factor[1]
NRSP	51,486,335	
VCC[1]	3,500,000	0.07

Notes:
1. Scaling factor for VCC is based on total square footage of residential and non-residential buildings. The scaling factor is used to estimate municipal emissions that would otherwise be based on population because VCC has no population.

Abbreviations:
GHG = greenhouse gas
VCC = Valencia Commerce Center
NRSP = Newhall Ranch Specific Plan

Sources:
Building areas provided by Newhall.

Table 3-E-2-NRSP
GHG Emissions for Municipal Sources from the Newhall Ranch Specific Plan
Newhall Land
Newhall Ranch, California

Source[1]	Energy Requirements	Units	Emission Factor	Units	Source Quantity[11]	Units	Total CO_2e Emission [Tonne CO_2e per year]
Lighting							
Public Lighting[2]	148.7	kWh/capita/yr	0.039	tonne CO_2e/capita/year	58,860	residents (capita)	2,313
						Lighting Total:	**2,313**
Municipal Vehicles							
Municipal Vehicles[3]	--	--	0.05	tonne CO_2e/capita/year	58,860	residents (capita)	2,943
						Municipal Vehicles Total:	**2,943**
Water and Wastewater							
Groundwater Supply and Conveyance (Potable)[4]	950	kWh/acre-foot	0.25	tonne CO_2e/acre-foot	8,135	acre-feet/yr	2,042
Average Southern California Supply And Conveyance[5]	3,170	kWh/acre-foot	0.84	tonne CO_2e/acre-foot	0	acre-feet/yr	0
Water Treatment (Potable)[6]	36	kWh/acre-foot	0.01	tonne CO_2e/acre-foot	8,135	acre-feet/yr	78
Water Distribution (Potable)[7]	414	kWh/acre-foot	0.11	tonne CO_2e/acre-foot	8,135	acre-feet/yr	891
Wastewater Treatment (Indirect Emissions)[8]	623	kWh/acre-foot	0.16	tonne CO_2e/acre-foot	10,343	acre-feet/yr	1,702
Wastewater Treament Plant (Direct Emissions)[9]	--	--	0.084	tonne CO_2e/capita/year	58,860	residents (capita)	4,964
Recycled Water Distribution (Non-Potable)[10]	978	kWh/acre-foot	0.26	tonne CO_2e/acre-foot	8,265	acre-feet/yr	2,135
						Water and Wastewater Total:	**11,813**
							17,069

Notes:

1. Public Lighting includes streetlights, traffic signals, area lighting and lighting municipal buildings. Emissions from the Water and Wastewater category are primarily due to the energy required for supply, treatment and distribution. GHG emissions attributed to electricity use are calculated using the Southern California Edison carbon-intensity factor with adjustment to reflect 20% of power provided by renewables (2010 RPS).

2. Emission factor for public lighting is based on a study of energy usage and GHG emissions from Duluth, MN and the Southern California-specific electricity generation emission factor from Southern California Edison with adjustment to reflect 20% of power provided by renewables.

3. Emission factors for municipal vehicles are based on the most conservative number from studies of GHG emission for four cities of different sizes: Medford, MA; Duluth, MN; Northampton, MA; and Santa Rosa, CA. Population data provided by the US Census (2000).

4. Emission factor for groundwater supply and conveyance is based on the estimated energy necessary to pump and convey 1 million gallons of groundwater in Southern California's Chino Basin and the Southern California-specific electricity generation emission factor from Southern California Edison with adjustment to reflect 20% of power provided by renewables. This factor is applied to potable water demand.

5. Emission factor accounts for the various ways water is supplied, the energy intensities of those methods and the amount each method is used. The CEC estimates that 50% of Southern California's water from the State Water Project is supplied by importing water from Northern California and the Colorado River. This factor is provided only for purposes of comparison and was not used in this inventory.

6. Emission factor for water treatment is based on a Navigant Consulting refinement of a CEC study on the energy necessary to initially treat 1 million gallons of water and the Southern California-specific electricity generation emission factor from Southern California Edison with adjustment to reflect 20% of power provided by renewables. This factor is applied to potable water demand.

7. Emission factor for water distribution is based on a Navigant Consulting refinement of a CEC study on the energy necessary to distribute 1 million gallons of treated water and the Southern California-specific electricity generation emission factor from Southern California Edison with adjustment to reflect 20% of power provided by renewables. This factor is applied to potable water demand.

8. Emission factor for wastewater treatment is based on a Navigant Consulting refinement of a CEC study on the energy necessary to treat 1 million gallons of wastewater for indoor (i.e., potable or other household) use and the Southern California-specific electricity generation emission factor from Southern California Edison with adjustment to reflect 20% of power provided by renewables.

9. Emission factor for the wastewater treatment plant accounts for direct methane and nitrous oxide emissions from wastewater. The value used here is based on the 2005 US inventory of GHG emissions for domestic wastewater treatment plants (USEPA) divided by the 2005 US population. (25 Tg CO_2e/year/296,410,404 people = 0.093 ton CO_2e/capita/year)

10. Emission factor for recycled water distribution is based on an estimate of the energy necessary to redistrubute 1 million gallons of reclaimed water (i.e., treated wastewater) and the Southern-California specific electricity generation emission factor from Southern California Edison with adjustment to reflect 20% of power provided by renewables. This factor is applied to non-potable water demand.

11. Source quantities for potable and non-potable water demand are provided by Newhall. The source quantity for wastewater treatment indirect emissions is scaled up from the recycled water quantity based on the ratio of the two quantities from Landmark Village (wastewater treatment quantities specific to Newhall Ranch were unavailable).

Abbreviations:

CEC - California Energy Commission
CO_2e - carbon dioxide equivalent
GHG - greenhouse gas
kW-hr - kilowatt hour
MW-hr - megawatt hour
RPS - Renewables Portfolio Standard
Tg - teragram
USEPA - United States Environmental Protection Agency

References:

California Climate Action Registry Database. Southern California Edison PUP. 2007. Available at: http://www.climateregistry.org/CarrotDocs/26/2007/SCEPUP07r3.xls. Accessed on July, 2, 2009.

California Energy Commission. 2005.*California's Water-Energy Relationship* . Final Staff Report. CEC-700-2005-011-SF.

California Energy Commission. 2006.*Refining Estimates of Water-Related Energy Use in California.* PIER Final Project Report. Prepared by Navigant Consulting, Inc. CEC-500-2006-118. December.

City of Medford. 2001. Climate Action Plan. October. http://www.massclimateaction.org/pdf/MedfordPlan2001.pdf

City of Northampton. 2006. Greenhouse Gas Emissions Inventory. Cities for Climate Protection Campaign. June. http://www.northamptonma.gov/uploads/listWidget/3208/NorthamptonInventoryClimateProtection.pdf

City of Santa Rosa. Cities for Climate Protection: Santa Rosa. http://ci.santa-rosa.ca.us/City_Hall/City_Manager/CCPFinalReport.pdf

M/J Industrial Solutions. 2003. Municipal Wastewater Treatment Plant Energy Baseline Study. June. www.cee1.org/ind/mot-sys/ww/pge1.pdf

Skoog., C. 2001. Greenhouse Gas Inventory and Forecast Report. City of Duluth Facilities Management and The International Council for Local Environmental Initiatives. October.http://www.ci.duluth.mn.us/city/information/ccp/GHGEmissions.pdf

USEPA. 2007. Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2005. #430-R-07-002. April. http://epa.gov/climatechange/emissions/downloads06/07Waste.pdf

Table 3-E-2-Entrada
GHG Emissions for Municipal Sources from Entrada
Newhall Land
Newhall Ranch, California

Source[1]	Energy Requirements	Units	Emission Factor	Units	Source Quantity[11]	Units	Total CO_2e Emission [Tonne CO_2e per year]
Lighting							
Public Lighting[2]	148.7	kW-hr/capita/yr	0.039	tonne CO_2e/capita/year	4,862	residents (capita)	191
						Lighting Total:	**191**
Municipal Vehicles							
Municipal Vehicles[3]	--	--	0.05	tonne CO_2e/capita/year	4,862	residents (capita)	243
						Municipal Vehicles Total:	**243**
Water and Wastewater							
Groundwater Supply and Conveyance (Potable)[4]	950	kW-hr/acre-foot	0.25	tonne CO_2e/acre-foot	0	acre-feet/yr	0
Average Southern California Supply And Conveyance[5]	3,170	kW-hr/acre-foot	0.84	tonne CO_2e/acre-foot	1,721	acre-feet/yr	1,442
Water Treatment (Potable)[6]	36	kW-hr/acre-foot	0.01	tonne CO_2e/acre-foot	1,721	acre-feet/yr	16
Water Distribution (Potable)[7]	414	kW-hr/acre-foot	0.11	tonne CO_2e/acre-foot	1,721	acre-feet/yr	189
Wastewater Treatment (Indirect Emissions)[8]	623	kW-hr/acre-foot	0.16	tonne CO_2e/acre-foot	886	acre-feet/yr	146
Wastewater Treament Plant (Direct Emissions)[9]	--	--	0.084	tonne CO_2e/capita/year	4,862	residents (capita)	410
Recycled Water Distribution (Non-Potable)[10]	978	kW-hr/acre-foot	0.26	tonne CO_2e/acre-foot	708	acre-feet/yr	183
						Water and Wastewater Total:	**2,385**
							2,820

Notes:

1. Public Lighting includes streetlights, traffic signals, area lighting and lighting municipal buildings. Emissions from the Water and Wastewater category are primarily due to the energy required for supply, treatment and distribution. GHG emissions attributed to electricity use are calculated using the Southern California Edison carbon-intensity factor with adjustment to reflect 20% of power provided by renewables (2010 RPS).

2. Emission factor for public lighting is based on a study of energy usage and GHG emissions from Duluth, MN and the Southern California-specific electricity generation emission factor from Southern California Edison with adjustment to reflect 20% of power provided by renewables.

3. Emission factors for municipal vehicles are based on the most conservative number from studies of GHG emission for four cities of different sizes: Medford, MA; Duluth, MN; Northampton, MA; and Santa Rosa, CA. Population data provided by the US Census (2000).

4. Emission factor for groundwater supply and conveyance is based on the estimated energy necessary to pump and convey 1 million gallons of groundwater in Southern California's Chino Basin and the Southern Califor specific electricity generation emission factor from Southern California Edison with adjustment to reflect 20% of power provided by renewables. This factor is provided only for purposes of comparison and was not used in this inventory. ENVIRON assumed that all water in this inventory is sourced from the State Water Project.

5. Emission factor accounts for the various ways water is supplied, the energy intensities of those methods and the amount each method is used. The CEC estimates that 50% of Southern California's water from the State Water Project is supplied by importing water from Northern California and the Colorado River. This factor is applied to potable water demand.

6. Emission factor for water treatment is based on a Navigant Consulting refinement of a CEC study on the energy necessary to initially treat 1 million gallons of water and the Southern California-specific electricity generation emission factor from Southern California Edison with adjustment to reflect 20% of power provided by renewables. This factor is applied to potable water demand.

7. Emission factor for water distribution is based on a Navigant Consulting refinement of a CEC study on the energy necessary to distribute 1 million gallons of treated water and the Southern California-specific electricity generation emission factor from Southern California Edison with adjustment to reflect 20% of power provided by renewables. This factor is applied to potable water demand.

8. Emission factor for wastewater treatment is based on a Navigant Consulting refinement of a CEC study on the energy necessary to treat 1 million gallons of wastewater for indoor (i.e., potable or other household) use a the Southern California-specific electricity generation emission factor from Southern California Edison with adjustment to reflect 20% of power provided by renewables.

9. Emission factor for the wastewater treatment plant accounts for direct methane and nitrous oxide emissions from wastewater. The value used here is based on the 2005 US inventory of GHG emissions for domestic wastewater treatment plants (USEPA) divided by the 2005 US population. (25 Tg CO_2e/year/296,410,404 people = 0.093 ton CO_2e/capita/year)

10. Emission factor for recycled water distribution is based on an estimate of the energy necessary to redistrubute 1 million gallons of reclaimed water (i.e., treated wastewater) and the Southern-California specific electricity generation emission factor from Southern California Edison with adjustment to reflect 20% of power provided by renewables. This factor is applied to non-potable water demand.

11. Source quantities for potable and non-potable water demand are provided by Newhall. The source quantity for wastewater treatment indirect emissions is scaled up from the recycled water quantity based on the ratio of the two quantities from Landmark Village (wastewater treatment quantities specific to Newhall Ranch were unavailable).

Abbreviations:

CEC - California Energy Commission
CO_2e - carbon dioxide equivalent
GHG - greenhouse gas
kW-hr - kilowatt hour
MW-hr - megawatt hour
RPS - Renewables Portfolio Standard
Tg - teragram
USEPA - United States Environmental Protection Agency

References:

California Climate Action Registry Database. Southern California Edison PUP. 2007. Available at: http://www.climateregistry.org/CarrotDocs/26/2007/SCEPUP07r3.xls. Accessed on July, 2, 2009.

California Energy Commission. 2005.*California's Water-Energy Relationship* . Final Staff Report. CEC-700-2005-011-SF.

California Energy Commission. 2006.*Refining Estimates of Water-Related Energy Use in California.* PIER Final Project Report. Prepared by Navigant Consulting, Inc. CEC-500-2006-118. December.

City of Medford. 2001. Climate Action Plan. October. http://www.massclimateaction.org/pdf/MedfordPlan2001.pdf

City of Northampton. 2006. Greenhouse Gas Emissions Inventory. Cities for Climate Protection Campaign. June. http://www.northamptonma.gov/uploads/listWidget/3208/NorthamptonInventoryClimateProtection.pdf

City of Santa Rosa. Cities for Climate Protection: Santa Rosa. http://ci.santa-rosa.ca.us/City_Hall/City_Manager/CCPFinalReport.pdf

M/J Industrial Solutions. 2003. Municipal Wastewater Treatment Plant Energy Baseline Study. June. www.cee1.org/ind/mot-sys/ww/pge1.pdf

Skoog., C. 2001. Greenhouse Gas Inventory and Forecast Report. City of Duluth Facilities Management and The International Council for Local Environmental Initiative October.http://www.ci.duluth.mn.us/city/information/ccp/GHGEmissions.pdf

USEPA. 2007. Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2005. #430-R-07-002. April. http://epa.gov/climatechange/emissions/downloads06/07Waste.pdf

Table 3-E-2-VCC
GHG Emissions for Municipal Sources from the Valencia Commerce Center
Newhall Land
Newhall Ranch, California

Source[1]	Energy Requirements	Units	Emission Factor	Units	Source Quantity[11]	Units	Total CO_2e Emission [Tonne CO_2e per year]
Lighting							
Public Lighting[2]	148.7	kWh/capita/yr	NA	tonne CO_2e/capita/year	NA	residents (capita)	157
						Lighting Total:	**157**
Municipal Vehicles							
Municipal Vehicles[3]	--	--	NA	tonne CO_2e/capita/year	NA	residents (capita)	200
						Municipal Vehicles Total:	**200**
Water and Wastewater							
Groundwater Supply and Conveyance (Potable)[4]	950	kWh/acre-foot	0.25	tonne CO_2e/acre-foot	0	acre-feet/yr	0
Average Southern California Supply And Conveyance[5]	3,170	kWh/acre-foot	0.84	tonne CO_2e/acre-foot	608	acre-feet/yr	509
Water Treatment (Potable)[6]	36	kWh/acre-foot	0.01	tonne CO_2e/acre-foot	608	acre-feet/yr	6
Water Distribution (Potable)[7]	414	kWh/acre-foot	0.11	tonne CO_2e/acre-foot	608	acre-feet/yr	67
Wastewater Treatment (Indirect Emissions)[8]	623	kWh/acre-foot	0.16	tonne CO_2e/acre-foot	591	acre-feet/yr	97
Wastewater Treament Plant (Direct Emissions)[9]	--	--	0.084	tonne CO_2e/capita/year	NA	residents (capita)	337
Recycled Water Distribution (Non-Potable)[10]	978	kWh/acre-foot	0.26	tonne CO_2e/acre-foot	472	acre-feet/yr	122
						Water and Wastewater Total:	**1,138**
							1,496

Notes:

1. Public Lighting includes streetlights, traffic signals, area lighting and lighting municipal buildings. Emissions from the Water and Wastewater category are primarily due to the energy required for supply, treatment and distribution. GHG emissions attributed to electricity use are calculated using the Southern California Edison carbon-intensity factor with adjustment to reflect 20% of power provided by renewables (2010 RPS).

2. Emission factor for public lighting is based on a study of energy usage and GHG emissions from Duluth, MN and the Southern California-specific electricity generation emission factor from Southern California Edison with adjustment to reflect 20% of power provided by renewables.

3. Emission factors for municipal vehicles are based on the most conservative number from studies of GHG emission for four cities of different sizes: Medford, MA; Duluth, MN; Northampton, MA; and Santa Rosa, CA. Population data provided by the US Census (2000).

4. Emission factor for groundwater supply and conveyance is based on the estimated energy necessary to pump and convey 1 million gallons of groundwater in Southern California's Chino Basin and the Southern Califo specific electricity generation emission factor from Southern California Edison with adjustment to reflect 20% of power provided by renewables. This factor is provided only for purposes of comparison and was not used in this inventory. ENVIRON assumed all water in this inventory is sourced from the State Water Project.

5. Emission factor accounts for the various ways water is supplied, the energy intensities of those methods and the amount each method is used. The CEC estimates that 50% of Southern California's water from the State Water Project is supplied by importing water from Northern California and the Colorado River. This factor is applied to potable water demand.

6. Emission factor for water treatment is based on a Navigant Consulting refinement of a CEC study on the energy necessary to initially treat 1 million gallons of water and the Southern California-specific electricity generation emission factor from Southern California Edison with adjustment to reflect 20% of power provided by renewables. This factor is applied to potable water demand.

7. Emission factor for water distribution is based on a Navigant Consulting refinement of a CEC study on the energy necessary to distribute 1 million gallons of treated water and the Southern California-specific electricity generation emission factor from Southern California Edison with adjustment to reflect 20% of power provided by renewables. This factor is applied to potable water demand.

8. Emission factor for wastewater treatment is based on a Navigant Consulting refinement of a CEC study on the energy necessary to treat 1 million gallons of wastewater for indoor (i.e., potable or other household) use and the Southern California-specific electricity generation emission factor from Southern California Edison with adjustment to reflect 20% of power provided by renewables.

9. Emission factor for the wastewater treatment plant accounts for direct methane and nitrous oxide emissions from wastewater. The value used here is based on the 2005 US inventory of GHG emissions for domestic wastewater treatment plants (USEPA) divided by the 2005 US population. (25 Tg CO_2e/year/296,410,404 people = 0.093 ton CO_2e/capita/year)

10. Emission factor for recycled water distribution is based on an estimate of the energy necessary to redistrubute 1 million gallons of reclaimed water (i.e., treated wastewater) and the Southern-California specific electricity generation emission factor from Southern California Edison with adjustment to reflect 20% of power provided by renewables. This factor is applied to non-potable water demand.

11. Source quantities for potable and non-potable water demand are provided by Newhall. The source quantity for wastewater treatment indirect emissions is scaled up from the recycled water quantity based on the ratio of the two quantities from Landmark Village (wastewater treatment quantities specific to Newhall Ranch were unavailable).

Abbreviations:

CEC - California Energy Commission
CO_2e - carbon dioxide equivalent
GHG - greenhouse gas
kW-hr - kilowatt hour
MW-hr - megawatt hour
RPS - Renewables Portfolio Standard
Tg - teragram
USEPA - United States Environmental Protection Agency

References:

California Climate Action Registry Database. Southern California Edison PUP. 2007. Available at: http://www.climateregistry.org/CarrotDocs/26/2007/SCEPUP07r3.xls. Accessed on July, 2, 2009.

California Energy Commission. 2005.*California's Water-Energy Relationship* . Final Staff Report. CEC-700-2005-011-SF.

California Energy Commission. 2006.*Refining Estimates of Water-Related Energy Use in California.* PIER Final Project Report. Prepared by Navigant Consulting, Inc. CEC-500-2006-118. December.

City of Medford. 2001. Climate Action Plan. October. http://www.massclimateaction.org/pdf/MedfordPlan2001.pdf

City of Northampton. 2006. Greenhouse Gas Emissions Inventory. Cities for Climate Protection Campaign. June. http://www.northamptonma.gov/uploads/listWidget/3208/NorthamptonInventoryClimateProtection.pdf

City of Santa Rosa. Cities for Climate Protection: Santa Rosa. http://ci.santa-rosa.ca.us/City_Hall/City_Manager/CCPFinalReport.pdf

M/J Industrial Solutions. 2003. Municipal Wastewater Treatment Plant Energy Baseline Study. June. www.cee1.org/ind/mot-sys/ww/pge1.pdf

Skoog., C. 2001. Greenhouse Gas Inventory and Forecast Report. City of Duluth Facilities Management and The International Council for Local Environmental Initiative October.http://www.ci.duluth.mn.us/city/information/ccp/GHGEmissions.pdf

USEPA. 2007. Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2005. #430-R-07-002. April. http://epa.gov/climatechange/emissions/downloads06/07Waste.pdf

Table 3-E-3-D2
D2 GHG Emissions for Municipal Sources in Newhall Ranch, Entrada, and VCC
Newhall Land
Newhall Ranch, California

Development	Public Lighting[1]	Vehicles[2]	Water/Waste Water[3]	Total Emissions
	(Tonnes CO_2e / year)			
NRSP	2,313	2,943	11,813	17,069
Entrada	191	243	2,385	2,820
VCC	157	200	1,138	1,496
TOTAL	2,661	3,386	15,337	21,384

Notes:

1. Public lighting emission factors for NRSP and Entrada are based on a study of energy usage and GHG emissions from Duluth, MN and the Southern California-specific electricity generation emission factor from Southern California Edison with adjustment to reflect 20% of power provided by renewables. As VCC contains no residential and therefore no population, emissions for public lighting are based on the Newhall Ranch emissions and the scaling factor provided in the previous tables in the municipal section.
2. Municipal vehicle emission factors for NRSP and Entrada are based on the most conservative number from studies of GHG emission for four cities of different sizes: Medford, MA; Duluth, MN; Northampton, MA; and Santa Rosa, CA. Population data provided by the US Census (2000). As VCC contains no residential and therefore no population, emissions for municipal vehicles are based on the Newhall Ranch emissions and the scaling factor provided in the previous tables in the municipal section.
3. Water and waste water emission drivers include water supply and conveyance, water treatment and distribution, waste water treatment, and recycled water distribution.

Abbreviations:

GHG = greenhouse gas
VCC = Valencia Commerce Center
NRSP = Newhall Ranch Specific Plan
CO_2e = carbon dioxide equivalent

Table 3-E-3-D3
D3 GHG Emissions for Municipal Sources in Newhall Ranch, Entrada, and VCC[1]
Newhall Land
Newhall Ranch, California

Development	Public Lighting	Vehicles	Water/Waste Water	Total Emissions
	(Tonnes CO_2e / year)			
NRSP	2,266	2,883	11,572	16,720
Entrada	133	170	1,665	1,968
VCC	157	200	1,138	1,496
TOTAL	2,556	3,253	14,376	20,184

Notes:
1. Alternative 3 values are scaled from Alternative 2 based upon total residential and non-residential building area. Alternative 2 emissions are calculated as described in previous tables and report sections.

Abbreviations:
GHG = greenhouse gas
VCC = Valencia Commerce Center
NRSP = Newhall Ranch Specific Plan
CO_2e = carbon dioxide equivalent

Table 3-E-3-D4
D4 GHG Emissions for Municipal Sources in Newhall Ranch, Entrada, and VCC[1]
Newhall Land
Newhall Ranch, California

Development	Public Lighting	Vehicles	Water/Waste Water	Total Emissions
	(Tonnes CO_2e / year)			
NRSP	2,295	2,920	11,720	16,934
Entrada	133	170	1,665	1,968
VCC	0	0	0	0
TOTAL	2,428	3,089	13,385	18,903

Notes:
1. Alternative 4 values are scaled from Alternative 2 based upon total residential and non-residential building area. Alternative 2 emissions are calculated as described in previous tables and report sections.

Abbreviations:
GHG = greenhouse gas
VCC = Valencia Commerce Center
NRSP = Newhall Ranch Specific Plan
CO_2e = carbon dioxide equivalent

Table 3-E-3-D5
D5 GHG Emissions for Municipal Sources in Newhall Ranch, Entrada, and VCC[1]
Newhall Land
Newhall Ranch, California

Development	Public Lighting	Vehicles	Water/Waste Water	Total Emissions
	(Tonnes CO_2e / year)			
NRSP	2,239	2,850	11,438	16,527
Entrada	117	149	1,466	1,733
VCC	0	0	0	0
TOTAL	2,357	2,999	12,904	18,260

Notes:
1. Alternative 5 values are scaled from Alternative 2 based upon total residential and non-residential building area. Alternative 2 emissions are calculated as described in previous tables and report sections.

Abbreviations:
GHG = greenhouse gas
VCC = Valencia Commerce Center
NRSP = Newhall Ranch Specific Plan
CO_2e = carbon dioxide equivalent

Table 3-E-3-D6
D6 GHG Emissions for Municipal Sources in Newhall Ranch, Entrada, and VCC[1]
Newhall Land
Newhall Ranch, California

Development	Public Lighting	Vehicles	Water/Waste Water	Total Emissions
	(Tonnes CO_2e / year)			
NRSP	2,196	2,794	11,216	16,206
Entrada	67	86	843	996
VCC	0	0	0	0
TOTAL	2,263	2,880	12,059	17,202

Notes:
1. Alternative 6 values are scaled from Alternative 2 based upon total residential and non-residential building area. Alternative 2 emissions are calculated as described in previous tables and report sections.

Abbreviations:
GHG = greenhouse gas
VCC = Valencia Commerce Center
NRSP = Newhall Ranch Specific Plan
CO_2e = carbon dioxide equivalent

Table 3-E-3-D7
D7 GHG Emissions for Municipal Sources in Newhall Ranch, Entrada, and VCC[1]
Newhall Land
Newhall Ranch, California

Development	Public Lighting	Vehicles	Water/Waste Water	Total Emissions
	(Tonnes CO_2e / year)			
NRSP	1,802	2,293	9,204	13,299
Entrada	84	107	1,050	1,241
VCC	0	0	0	0
TOTAL	1,886	2,400	10,254	14,540

Notes:
1. Alternative 7 values are scaled from Alternative 2 based upon total residential and non-residential building area. Alternative 2 emissions are calculated as described in previous tables and report sections.

Abbreviations:
GHG = greenhouse gas
VCC = Valencia Commerce Center
NRSP = Newhall Ranch Specific Plan
CO_2e = carbon dioxide equivalent

Table 3-F-1
nergy Use from Recreation Centers
Newhall Land
Newhall Ranch, California

E

Facility Name[1]	Pool Volume[1]	Number of Heaters[1]	Heater Rating[1]	Operation Schedule[1]		Annual Natural Gas Usage[2]	Average Annual Natural Gas Usage[3]	Annual Electricity Usage[4]	Average Annual Electricity Usage[5]
	(gal)		(BTU/hr)	(hrs / day)	(days / yr)	(MMBTU / yr)	(MMBTU / gal / yr)	(kWh / yr)	(kWh / gal / yr)
Fremont Pool	215,000	4	350,000	12	243	4,088	0.023	106,872	0.496
DeFremery Pool	226,659	1	1,738,800	10	243	4,231		105,120	
Live Oak Pool	260,000	4	350,000	12	365	6,132		95,309	
Lyons Pool	240,000	4	350,000	12	365	6,132		110,376	
Temescal Pool	227,605	4	350,000	12	365	6,132		162,060	

Notes:

1. To estimate the baseline electricity and natural gas energy usage factors for Newhall Land pools, ENVIRON calculated the energy consumption of filter pumps and water heaters of 5 pools in Oakland, California and scaled them to present energy consumption per year per volume of the pool. Oakland pools data including pool volume, number of heaters, heater rating, operation schedule, and annual electricity usage are provided in the City of Oakland Energy Efficient Commercial Pool Program Preliminary Facility Reports.

2. Annual Natural Gas Usage calculated by multiplying the following factors: (Number of hrs/day) x (Number of days/yr) x (Number of Heaters) x (Heater Rating). Each of these factors were taken from the City of Oakland Preliminary Facility Reports for DeFremery Pool, Fremont Pool, Live Oak Pool, Lyons Pool, and Temescal Pool.

3. Average Annual Natural Gas Usage calculated from the Annual Natural Gas Usage of all 5 pools divided by the total Pool Volume of all 5 pools.

4. Annual Electricity Usage for each pool is shown as reported in the City of Oakland Preliminary Facility Reports for DeFremery Pool, Fremont Pool, Live Oak Pool, Lyons Pool, and Temescal Pool.

5. Average Annual Electricity Usage calculated from the Annual Electricity Usage of all 5 pools divided by the total Pool Volume of all 5 pools.

Abbreviations:
kWh - kilowatt-hour
MMBTU - Million British Thermal Units
hr - hour
yr - year

Source:

Energy Efficient Commercial Pool Program; Preliminary Facility Reports for DeFremery Pool, Fremont Pool, Live Oak Pool, Lyons Pool, and Temescal Pool. City of Oakland / Oakland Unified School District. October 2006.

Table 3-F-2
Greenhouse Gas (GHG) Emissions from Recreation Centers[1]
Newhall Land
Newhall Ranch, California

Energy Use Factors (Oakland pools)[2]			Energy Use Factors (adjusted for Landmark Village pools)[3,4]			Pool Volume[5]	Annual Energy Use		Emission Factors[6]		Total Emissions per Pool[7] Without Solar Heating	Total Emissions per Pool Assuming Solar Heating[8]
						(gal)			(lb CO_2 / source unit)	Source Units	(tonnes CO_2 / yr)	(tonnes CO_2 / yr)
Electricity	0.496	(kWh / gal / yr)	Electricity	0.496	(kWh / gal / yr)	736,263	365,049	(kWh / yr)	0.583	(kWh)	632	96
Natural Gas	0.023	(MMBTU / gal / yr)	Natural Gas	0.014	(MMBTU / gal / yr)		10,090	(MMBTU / yr)	117	(MMBTU)		

Notes:

1. ENVIRON assumed an outdoor competition-size swimming pool as the main source of GHGs in an aquatic/recreation center. Only CO_2 emissions are estimated and are assumed to be equivalent to total GHG emissions since the contributions from methane (CH_4) and nitrous oxide (N_2O) are negligible compared to total GHG for emissions associated with electricity generation and natural gas combustion. The emission factors in the California Climate Action Registry General Reporting Protocol show that CH_4 and N_2O emissions (in CO_2e) are less than 1% of CO_2 emissions for these processes.

2. The weighted energy consumption of 5 Oakland pools is used to calculate the baseline energy use of an average sized pool within the project site.

3. ENVIRON adjusted the natural gas usage to account for savings from high-efficiency heaters. ENVIRON conservatively assumed that the Oakland pools used 78% efficient heaters, which is the minimum efficiency legally required (see 10 CFR Part 431). According to the U.S. Department of Energy, newer pools are likely to use heaters with 89-95% efficiency (see http://www.energysavers.gov/your_home/water_heating/index.cfm/mytopic=13170). ENVIRON conservatively assumed 90% efficiency for Newhall Land pool heaters, resulting in a 12% savings over the Oakland pools.

4. ENVIRON adjusted the natural gas usage to account for the difference in average ambient temperature in Newhall and Oakland. The natural gas usage was multiplied by the following adjustment factor: (typical pool temperature - Newhall average ambient temperature) / (typical pool temperature - San Francisco-Richmond average ambient temperature) = (80 deg F - 63.3 deg F) / (80 deg F - 55.5 deg F). Typical pool temperature based on information from the Department of Energy, available at: http://www.energysavers.gov/your_home/water_heating/index.cfm/mytopic=13300. Average ambient temperatures for Newhall and San Francisco-Richmond were obtained from the Western Regional Climate Center: http://www.wrcc.dri.edu/.

5. ENVIRON assumed an outdoor competition-size (50 m x 25 yd x 8 ft) swimming pool.

6. Emission factor for electricity is provided by Southern California Edison, obtained from the California Climate Action Registry Database. The electricity generation emission factor was adjusted to reflect 20% of power provided by renewables (2010 RPS). Emission factor for natural gas is obtained from California Climate Action Registry Reporting Protocol, Table C7.

7. Emissions for a single competition-size pool, assuming no solar heating.

8. Emissions for a single competition-size pool, assuming solar heating replaces all natural gas heating. This value now includes electricity from pumping only.

Abbreviations:

RPS - Renewables Portfolio Standard
CO_2 - carbon dioxide
CH_4 - methane
ft - foot
kWh - kilowatt-hour
lb - pound
MMBTU - Million British Thermal Units
N_2O - nitrous oxide
yr - year

Sources:

California Climate Action Registry General Reporting Protocol, Version 3.1 (January 2009). Available at: http://www.climateregistry.org/resources/docs/protocols/grp/GRP_3.1_January2009.pdf

California Climate Action Registry Database: Southern California Edison Company 2007 PUP Report. 2008. Available at: https://www.climateregistry.org/CARROT/public/Reports.aspx

Energy Efficient Commercial Pool Program; Preliminary Facility Reports for DeFremery Pool, Fremont Pool, Live Oak Pool, Lyons Pool, and Temescal Pool. City of Oakland / Oakland Unified School District. October 2006.

Managing Swimming Pool Water Temperature for Energy Efficiency (September 2009). U.S. Department of Energy. Available at: http://www.energysavers.gov/your_home/water_heating/index.cfm/mytopic=13300

Determining Gas Swimming Pool Heater Energy Efficiency (September 2009). U.S. Department of Energy. Available at: http://www.energysavers.gov/your_home/water_heating/index.cfm/mytopic=13170

Energy Efficiency Program for Certain Commercial and Industrial Equipment: Efficiency Standards for Commercial Heating, Air-Conditioning, and Water-Heating Equipment. U.S. Department of Energy, 10 CFR Part 431. Available at: http://www1.eere.energy.gov/bu

Table 3-F-3
GHG Emissions from Electricity and Natural Gas Usage in Recreation Centers[1]
Newhall Land
Newhall Ranch, CA

Design Alternative	Development	Number of Pools[2]	Total Emissions Without Solar Heating[3]		Total Emissions Assuming Solar Heating[4]	
			(Tonnes CO_2 / yr)			
2	NRSP	40	25,280	26,543	3,859	4,052
	Entrada	2	1,264		193	
3	NRSP	39	24,648	25,911	3,763	3,956
	Entrada	2	1,264		193	
4	NRSP	40	25,280	26,543	3,859	4,052
	Entrada	2	1,264		193	
5	NRSP	39	24,648	25,280	3,763	3,859
	Entrada	1	632		96	
6	NRSP	38	24,016	24,016	3,666	3,666
	Entrada	0	0		0	
7	NRSP	31	19,592	19,592	2,991	2,991
	Entrada	0	0		0	

Notes:

1. ENVIRON assumed an outdoor competition-size (50 m x 25 yd x 8 ft) swimming pool as the main source of GHGs in an aquatic/recreation center.

2. The number of pools for Design Alternative 2 was provided by Newhall. The numbers of pools in the NRSP area for the other design alternatives were scaled based on total residential and non-residential building area; the numbers of pools in Entrada for the other design alternatives were provided by Newhall. It is assumed that no recreation centers will be built in the VCC planning area, as only commercial and industrial land uses are considered for that planning area.

3. Total emissions from recreation centers, assuming no solar heating.

4. Total emissions from recreation centers, assuming solar heating replaces all natural gas heating. This value now includes electricity from pumping only.

Abbreviations:

CO_2 - carbon dioxide
ft - foot
GHG - Greenhouse Gas
m - meter
RPS - Renewables Portfolio Standard
yd - yard
yr - year

Sources:

California Climate Action Registry General Reporting Protocol, Version 3.1 (January 2009). Available at: http://www.climateregistry.org/resources/docs/protocols/grp/GRP_3.1_January2009.pdf

California Climate Action Registry Database: Southern California Edison Company 2007 PUP Report. 2008. Available at: https://www.climateregistry.org/CARROT/public/Reports.aspx

Energy Efficient Commercial Pool Program; Preliminary Facility Reports. Available at: http://www.oaklandpw.com/Page50.aspx

Table 3-G-1
GHG Emissions for the Golf Course
Newhall Land
Newhall Ranch, California

Source	Emission Factor	Units	Quantity	Units	Total Golf Course Emissions[5] [Tonne CO_2 / yr]
Irrigation[1]	0.18	tonne CO_2/acre-foot	345	acre-feet/year	64
Mowing (Maintainence)[2]	0.43	tonne CO_2/acre-year	120	Acres Maintained	52
Electricity and Natural Gas (Building Use)[3,4]	5.07	tonne CO_2/year	1	Pro Shop (1,300 sqft)	50
	44.43	tonne CO_2/year	1	Clubhouse (11,200 sqft)	
Total					**165**

Notes:

1. Irrigation emission factor is based on an average California golf course irrigation water use of 345 acre-feet/year (from *Improving California Golf Course Water Efficiency* , pg. 14). ENVIRON assumed that the irrigation water will be pumped an average elevation of 300 ft from the Water Reclamation Plant (NRSP) to the golf course at an average pressure of 50 psi (Full Coverage Irrigation), with the emission factor for Southern California Edison electricity generation adjusted to reflect 20% of power provided by renewables (2010 RPS). The energy required to pump 1 acre-foot of water an elevation of 1 foot is 1.551 kW-hr (Kansas State University Irrigation Management Series, Table 4).

2. Mowing emission factor is based on an estimated 18 gallons of diesel used for mowing 44 acres of turf. These estimates are based on twice weekly mowing on a John Deere lightweight fairway mower (model 3235C) for 8 hours on one tank of diesel (18 gallons) at an average mowing speed of 5.5 miles per hour with a mowing span of 100 inches (John Deere Product Specifications). Approximately 22.4 lbs of CO_2 are emitted for every gallon of diesel consumed (EIA Fuel and Energy Source Codes and Emission Coefficients). Acres maintained reflects 2/3 of overall golf course size (180 acres), based on an Arizona State University golf couse study.

3. Electricity and natural gas usage rates were taken from the 2006 California Commercial End-Use Survey (CEUS), performed by Itron under contract to the California Energy Commission (CEC). ENVIRON used data for Southern California Edison (SCE), Zone 9, which is the sector in which Newhall Ranch would be located. ENVIRON categorized the Pro Shop as Retail land use and the Clubhouse as Miscellaneous commerical land use.

4. Emission factor for electricity provided by Southern California Edison, obtained from the California Climate Action Registry Database. This has been adjusted to account for the 20% Renewable Portfolio Standard required for utilities to meet by 2010. Emission factor for natural gas obtained from California Climate Action Registry Reporting Protocol, Table C7.

5. Total golf course emissions include non-Title 24 energy use and 15% better than 2008 Title 24 energy use.

Abbreviations:

RPS - Renewables Portfolio Standard
GHG - greenhouse gas
sqft - square foot
CO_2 - carbon dioxide
yr - year
psi - pounds per square inch
kWh - kilowatt hour
EIA - Energy Information Administration

Sources:

California Climate Action Registry Database. Southern California Edison PUP. 2007. Available at: http://www.climateregistry.org/CarrotDocs/26/2007/SCEPUP07r3.xls. Accessed on July 2, 2009.
California Climate Action Registry. 2009. General Reporting Protocol, Version 3.1 (January). Available at: http://www.climateregistry.org/resources/docs/protocols/grp/GRP_3.1_January2009.pdf
Northern California Golf Association. *Improving California Golf Course Water Efficiency* . http://www.owue.water.ca.gov/docs/2004Apps/2004-079.pdf
Full Coverage Irrigation. Partial List of Customers Using FCI Nozzles. http://www.fcinozzles.com/clients.asp
Kansas State University Irrigation Management Series. Comparing Irrigation Energy Costs. http://www.oznet.ksu.edu/library/ageng2/mf2360.pdf
John Deere Product Specifications. 3235C Lightweight Fairway Mower. http://www.deere.com/en_US/ProductCatalog/GT/series/gt_lwfm_c_series.html
EIA. Fuel and Energy Source Codes and Emission Coefficients. http://www.eia.doe.gov/oiaf/1605/factors.html
Arizona State University, Dr. Troy Schmitz. Economic Impacts and Environmental Aspects of the Arizona Golf Course Industry. http://agb.poly.asu.edu/workingpapers/0501.pdf
California Energy Commission. 2006. California Commercial End-Use Survey. Prepared by Itron Inc. Available at: Available at: http://www.energy.ca.gov/ceus/
Clemson University Department of Agriculture and Applied Economics. Economic Impacts of California's Golf Course Facilities in 2000. Table 9. http://ucrturf.ucr.edu/topics/EconImpact_Clemson.pdf

Table 3-H-1
Summary of Greenhouse Gas Emissions - Annual Emissions
Newhall Land
Newhall Ranch, CA

Development	Source	GHG Emissions			Improvement over CARB 2020 NAT
		Unit	Project	CARB 2020 NAT	(%)
Design Alternative 2	Residential	tonnes CO_2e / year	59,449	86,607	31%
	Non-Residential		53,874	72,341	26%
	Mobile		112,138	150,365	25%
	Municipal		21,384	35,348	40%
	Golf Course		165	182	9%
	Recreational (Pools)		4,052	27,213	85%
	Area		2,944	2,944	0%
	Total (annual emissions)		**254,007**	**375,000**	**32.3%**
Design Alternative 3	Residential	tonnes CO_2e / year	56,683	82,578	31%
	Non-Residential		53,355	71,673	26%
	Mobile		106,921	143,369	25%
	Municipal		20,184	33,638	40%
	Golf Course		165	182	9%
	Recreational (Pools)		3,956	26,565	85%
	Area		2,755	2,755	0%
	Total (annual emissions)		**244,019**	**360,761**	**32.4%**
Design Alternative 4	Residential	tonnes CO_2e / year	57,440	83,681	31%
	Non-Residential		41,031	53,803	24%
	Mobile		108,349	145,284	25%
	Municipal		18,903	32,038	41%
	Golf Course		165	182	9%
	Recreational (Pools)		4,052	27,213	85%
	Area		2,789	2,789	0%
	Total (annual emissions)		**232,729**	**344,990**	**32.5%**
Design Alternative 5	Residential	tonnes CO_2e / year	55,624	81,035	31%
	Non-Residential		40,362	52,944	24%
	Mobile		104,922	140,688	25%
	Municipal		18,260	31,023	41%
	Golf Course		165	182	9%
	Recreational (Pools)		3,859	25,917	85%
	Area		2,689	2,689	0%
	Total (annual emissions)		**225,881**	**334,478**	**32.5%**
Design Alternative 6	Residential	tonnes CO_2e / year	53,165	77,449	31%
	Non-Residential		39,769	52,180	24%
	Mobile		100,288	134,419	25%
	Municipal		17,202	29,509	42%
	Golf Course		165	182	9%
	Recreational (Pools)		3,666	24,621	85%
	Area		2,522	2,522	0%
	Total (annual emissions)		**216,777**	**320,883**	**32.4%**
Design Alternative 7	Residential	tonnes CO_2e / year	45,553	66,363	31%
	Non-Residential		25,406	33,602	24%
	Mobile		85,917	115,204	25%
	Municipal		14,540	24,765	41%
	Golf Course		165	182	9%
	Recreational (Pools)		2,991	20,086	85%
	Area		2,210	2,210	0%
	Total (annual emissions)		**176,781**	**262,412**	**32.6%**

Abbreviations:
CARB 2020 NAT - California Air Resources Board Scoping Plan projections for 2020 if no actions are taken
CO_2e - carbon dioxide equivalent
GHG - Greenhouse Gas

Table 3-H-2
Summary of Greenhouse Gas Emissions - One-time and Annual Emissions
Newhall Land
Newhall Ranch, CA

Development	Source	GHG Emissions			Improvement over CARB 2020 NAT
		Unit	Project	CARB 2020 NAT	(%)
Design Alternative 2	Vegetation	tonnes CO_2e	44,988	44,988	N/A
	Construction		556,868	556,868	N/A
	Total (one-time emissions)		**601,856**	**601,856**	**N/A**
	Residential	tonnes CO2e / year	59,449	86,607	31%
	Non-Residential		53,874	72,341	26%
	Mobile		112,138	150,365	25%
	Municipal		21,384	35,348	40%
	Golf Course		165	182	9%
	Recreational (Pools)		4,052	27,213	85%
	Area		2,944	2,944	0%
	Total (annual emissions		**254,007**	**375,000**	**32.3%**
	Annualized Total[1]	**tonnes CO2e / year**	**269,053**	**390,046**	**31.0%**
Design Alternative 3	Vegetation	tonnes CO_2e	43,737	43,737	N/A
	Construction		527,600	527,600	N/A
	Total (one-time emissions)		**571,337**	**571,337**	**N/A**
	Residential	tonnes CO_2e / year	56,683	82,578	31%
	Non-Residential		53,355	71,673	26%
	Mobile		106,921	143,369	25%
	Municipal		20,184	33,638	40%
	Golf Course		165	182	9%
	Recreational (Pools)		3,956	26,565	85%
	Area		2,755	2,755	0%
	Total (annual emissions		**244,019**	**360,761**	**32.4%**
	Annualized Total[1]	**tonnes CO2e / year**	**258,303**	**375,044**	**31.1%**
Design Alternative 4	Vegetation	tonnes CO_2e	43,531	43,531	N/A
	Construction		499,698	499,698	N/A
	Total (one-time emissions)		**543,229**	**543,229**	**N/A**
	Residential	tonnes CO_2e / year	57,440	83,681	31%
	Non-Residential		41,031	53,803	24%
	Mobile		108,349	145,284	25%
	Municipal		18,903	32,038	41%
	Golf Course		165	182	9%
	Recreational (Pools)		4,052	27,213	85%
	Area		2,789	2,789	0%
	Total (annual emissions		**232,729**	**344,990**	**32.5%**
	Annualized Total[1]	**tonnes CO2e / year**	**246,310**	**358,571**	**31.3%**
Design Alternative 5	Vegetation	tonnes CO_2e	42,953	42,953	N/A
	Construction		483,263	483,263	N/A
	Total (one-time emissions)		**526,215**	**526,215**	**N/A**
	Residential	tonnes CO_2e / year	55,624	81,035	31%
	Non-Residential		40,362	52,944	24%
	Mobile		104,922	140,688	25%
	Municipal		18,260	31,023	41%
	Golf Course		165	182	9%
	Recreational (Pools)		3,859	25,917	85%
	Area		2,689	2,689	0%
	Total (annual emissions		**225,881**	**334,478**	**32.5%**
	Annualized Total[1]	**tonnes CO2e / year**	**239,036**	**347,633**	**31.2%**
Design Alternative 6	Vegetation	tonnes CO_2e	43,531	43,531	N/A
	Construction		457,415	457,415	N/A
	Total (one-time emissions)		**500,946**	**500,946**	**N/A**
	Residential	tonnes CO_2e / year	53,165	77,449	31%
	Non-Residential		39,769	52,180	24%
	Mobile		100,288	134,419	25%
	Municipal		17,202	29,509	42%
	Golf Course		165	182	9%
	Recreational (Pools)		3,666	24,621	85%
	Area		2,522	2,522	0%
	Total (annual emissions		**216,777**	**320,883**	**32.4%**
	Annualized Total[1]	**tonnes CO2e / year**	**229,301**	**333,407**	**31.2%**
Design Alternative 7	Vegetation	tonnes CO_2e	33,670	33,670	N/A
	Construction		385,285	385,285	N/A
	Total (one-time emissions)		**418,955**	**418,955**	**N/A**
	Residential	tonnes CO_2e / year	45,553	66,363	31%
	Non-Residential		25,406	33,602	24%
	Mobile		85,917	115,204	25%
	Municipal		14,540	24,765	41%
	Golf Course		165	182	9%
	Recreational (Pools)		2,991	20,086	85%
	Area		2,210	2,210	0%
	Total (annual emissions		**176,781**	**262,412**	**32.6%**
	Annualized Total[1]	**tonnes CO2e / year**	**187,255**	**272,885**	**31.4%**

Notes:
1. Annualized totals are (one-time emissions / 40 years) + (annual emissions).

Abbreviations:
CARB 2020 NAT - California Air Resources Board Scoping Plan projections for 2020 if no actions are taken
CO_2e - carbon dioxide equivalent
GHG - Greenhouse Gas

Table 4-B-1-NRSP-D2
CARB 2020 NAT Energy Use (Non-Residential D2)
Newhall Ranch Specific Plan
Newhall Ranch, California

Building Type	CEUS Building Type	Energy Type	Units	T24 Energy Use Base[1,3]	T24 Energy Use 2005[2,3]	Non-Title 24 Energy Use[1,4]	Total CARB 2020 NAT Energy Use[5]
				[Unit/SF/yr]			
Business Park / Industrial	Large Office	Electricity	kWh	12.59	11.87	4.80	16.66
		Gas	kBTU	12.17	11.80	0.19	11.99
Business Park / Industrial	Refrigerated Wharehouse	Electricity	kWh	4.13	3.91	13.61	17.52
		Gas	kBTU	1.10	1.08	0.10	1.18
Business Park / Industrial	Small Office	Electricity	kWh	9.48	8.89	4.40	13.28
		Gas	kBTU	12.68	12.42	0.67	13.09
Business Park / Industrial	Unrefrigerated Wharehouse	Electricity	kWh	3.43	3.24	1.35	4.59
		Gas	kBTU	1.04	1.01	0.04	1.05
Grocery	Grocery	Electricity	kWh	15.08	14.22	25.89	40.11
		Gas	kBTU	11.22	11.08	12.24	23.32
Hotel	Lodging	Electricity	kWh	6.58	6.19	2.90	9.08
		Gas	kBTU	21.96	21.79	4.06	25.86
Institutional (schools, library, etc.)	School	Electricity	kWh	5.84	5.50	1.60	7.09
		Gas	kBTU	10.90	10.72	1.08	11.80
Misc Retail / Commercial / Office	Large Office	Electricity	kWh	12.59	11.87	4.80	16.66
		Gas	kBTU	12.17	11.80	0.19	11.99
Misc Retail / Commercial / Office	Restaurant	Electricity	kWh	21.56	20.17	28.16	48.33
		Gas	kBTU	46.85	46.58	187.78	234.36
Misc Retail / Commercial / Office	Retail	Electricity	kWh	13.52	12.74	3.23	15.97
		Gas	kBTU	1.36	1.33	0.49	1.83
Misc Retail / Commercial / Office	Small Office	Electricity	kWh	9.48	8.89	4.40	13.28
		Gas	kBTU	12.68	12.42	0.67	13.09
Public Safety	Miscellaneous	Electricity	kWh	7.26	6.81	5.76	12.57
		Gas	kBTU	15.77	15.36	4.45	19.81

Notes:

1. Baseline usage rates were taken from the 2006 California Commercial End-Use Survey (CEUS), performed by Itron under contract to the California Energy Commission (CEC). Energy use rates are based on 2002 consumption data. ENVIRON used data for Southern California Edison (SCE), Zone 9, which is the sector in which the Entrada would be located.
2. ENVIRON multiplied the T24 Energy Use Base for each T24 end use category by the reduction factors for 2001 to 2005 and summed all applicable end use categories.
3. Includes Title 24-regulated building envelope uses of electricity (heating, cooling, ventilation, water heating) and gas (heating, water heating) and all lighting.
4. Includes all other uses of electricity (cooking, refrigeration office equipment, miscellaneous, process, motors, air compressors) and gas (cooling, cooking, miscellaneous, process) not included in the Title 24-regulated building envelope or lighting.
5. Total CARB 2020 NAT Energy Use sums the previous two columns (T24 Energy Use 2005 and Non-Title 24 Energy Use).

Abbreviations:

CARB 2020 NAT - California Air Resources Board Scoping Plan projections for 2020 if no actions are taken.
CEC - California Energy Commission
CEUS - California Commerical End-Use Survey
kBTU - kilo (1000) British thermal units
kWh - kilowatt hour
SCE - Southern California Edison
SF - square feet
T24 - Title 24
yr - year

Sources:

California Energy Commission. 2006. California Commercial End-Use Survey. Prepared by Itron Inc. Available at: Available at: http://www.energy.ca.gov/ceus/

California Energy Commission. 2003. Impact Analysis: 2005 Update to the California Energy Efficiency Standards for Residential and Nonresidential Buildings. Available at: http://www.energy.ca.gov/title24/2005standards/archive/rulemaking/documents/2003-07-11_400-03-014.PDF

California Energy Commission. 2007. Impact Analysis: 2008 Update to the California Energy Efficiency Standards for Residential and Nonresidential Buildings. Available at: http://www.energy.ca.gov/title24/2008standards/rulemaking/documents/2007-11-07_IMPACT_ANALYSIS.PDF

Table 4-B-1-NRSP-D3
CARB 2020 NAT Energy Use (Non-Residential D3)
Newhall Ranch Specific Plan
Newhall Ranch, California

Building Type	CEUS Building Type	Energy Type	Units	T24 Energy Use Base[1,3]	T24 Energy Use 2005[2,3]	Non-Title 24 Energy Use[1,4]	Total CARB 2020 NAT Energy Use[5]
				[Unit/SF/yr]			
Business Park / Industrial	Large Office	Electricity	kWh	12.59	11.87	4.80	16.66
		Gas	kBTU	12.17	11.80	0.19	11.99
Business Park / Industrial	Refrigerated Wharehouse	Electricity	kWh	4.13	3.91	13.61	17.52
		Gas	kBTU	1.10	1.08	0.10	1.18
Business Park / Industrial	Small Office	Electricity	kWh	9.48	8.89	4.40	13.28
		Gas	kBTU	12.68	12.42	0.67	13.09
Business Park / Industrial	Unrefrigerated Wharehouse	Electricity	kWh	3.43	3.24	1.35	4.59
		Gas	kBTU	1.04	1.01	0.04	1.05
Grocery	Grocery	Electricity	kWh	15.08	14.22	25.89	40.11
		Gas	kBTU	11.22	11.08	12.24	23.32
Hotel	Lodging	Electricity	kWh	6.58	6.19	2.90	9.08
		Gas	kBTU	21.96	21.79	4.06	25.86
Institutional (schools, library, etc.)	School	Electricity	kWh	5.84	5.50	1.60	7.09
		Gas	kBTU	10.90	10.72	1.08	11.80
Misc Retail / Commercial / Office	Large Office	Electricity	kWh	12.59	11.87	4.80	16.66
		Gas	kBTU	12.17	11.80	0.19	11.99
Misc Retail / Commercial / Office	Restaurant	Electricity	kWh	21.56	20.17	28.16	48.33
		Gas	kBTU	46.85	46.58	187.78	234.36
Misc Retail / Commercial / Office	Retail	Electricity	kWh	13.52	12.74	3.23	15.97
		Gas	kBTU	1.36	1.33	0.49	1.83
Misc Retail / Commercial / Office	Small Office	Electricity	kWh	9.48	8.89	4.40	13.28
		Gas	kBTU	12.68	12.42	0.67	13.09
Public Safety	Miscellaneous	Electricity	kWh	7.26	6.81	5.76	12.57
		Gas	kBTU	15.77	15.36	4.45	19.81

Notes:

1. Baseline usage rates were taken from the 2006 California Commercial End-Use Survey (CEUS), performed by Itron under contract to the California Energy Commission (CEC). Energy use rates are based on 2002 consumption data. ENVIRON used data for Southern California Edison (SCE), Zone 9, which is the sector in which the Entrada would be located.
2. ENVIRON multiplied the T24 Energy Use Base for each T24 end use category by the reduction factors for 2001 to 2005 and summed all applicable end use categories.
3. Includes Title 24-regulated building envelope uses of electricity (heating, cooling, ventilation, water heating) and gas (heating, water heating) and all lighting.
4. Includes all other uses of electricity (cooking, refrigeration office equipment, miscellaneous, process, motors, air compressors) and gas (cooling, cooking, miscellaneous, process) not included in the Title 24-regulated building envelope or lighting.
5. Total CARB 2020 NAT Energy Use sums the previous two columns (T24 Energy Use 2005 and Non-Title 24 Energy Use).

Abbreviations:

CARB 2020 NAT - California Air Resources Board Scoping Plan projections for 2020 if no actions are taken.
CEC - California Energy Commission
CEUS - California Commerical End-Use Survey
kBTU - kilo (1000) British thermal units
kWh - kilowatt hour
SCE - Southern California Edison
SF - square feet
T24 - Title 24
yr - year

Sources:

California Energy Commission. 2006. California Commercial End-Use Survey. Prepared by Itron Inc. Available at: Available at: http://www.energy.ca.gov/ceus/
California Energy Commission. 2003. Impact Analysis: 2005 Update to the California Energy Efficiency Standards for Residential and Nonresidential Buildings. Available at: http://www.energy.ca.gov/title24/2005standards/archive/rulemaking/documents/2003-07-11_400-03-014.PDF
California Energy Commission. 2007. Impact Analysis: 2008 Update to the California Energy Efficiency Standards for Residential and Nonresidential Buildings. Available at: http://www.energy.ca.gov/title24/2008standards/rulemaking/documents/2007-11-07_IMPACT_ANALYSIS.PDF

Table 4-B-1-NRSP-D4
CARB 2020 NAT Energy Use (Non-Residential D4)
Newhall Ranch Specific Plan
Newhall Ranch, California

Building Type	CEUS Building Type	Energy Type	Units	T24 Energy Use Base[1,3]	T24 Energy Use 2005[2,3]	Non-Title 24 Energy Use[1,4]	Total CARB 2020 NAT Energy Use[5]
				[Unit/SF/yr]			
Business Park / Industrial	Large Office	Electricity	kWh	12.59	11.87	4.80	16.66
		Gas	kBTU	12.17	11.80	0.19	11.99
Business Park / Industrial	Refrigerated Wharehouse	Electricity	kWh	4.13	3.91	13.61	17.52
		Gas	kBTU	1.10	1.08	0.10	1.18
Business Park / Industrial	Small Office	Electricity	kWh	9.48	8.89	4.40	13.28
		Gas	kBTU	12.68	12.42	0.67	13.09
Business Park / Industrial	Unrefrigerated Wharehouse	Electricity	kWh	3.43	3.24	1.35	4.59
		Gas	kBTU	1.04	1.01	0.04	1.05
Grocery	Grocery	Electricity	kWh	15.08	14.22	25.89	40.11
		Gas	kBTU	11.22	11.08	12.24	23.32
Hotel	Lodging	Electricity	kWh	6.58	6.19	2.90	9.08
		Gas	kBTU	21.96	21.79	4.06	25.86
Institutional (schools, library, etc.)	School	Electricity	kWh	5.84	5.50	1.60	7.09
		Gas	kBTU	10.90	10.72	1.08	11.80
Misc Retail / Commercial / Office	Large Office	Electricity	kWh	12.59	11.87	4.80	16.66
		Gas	kBTU	12.17	11.80	0.19	11.99
Misc Retail / Commercial / Office	Restaurant	Electricity	kWh	21.56	20.17	28.16	48.33
		Gas	kBTU	46.85	46.58	187.78	234.36
Misc Retail / Commercial / Office	Retail	Electricity	kWh	13.52	12.74	3.23	15.97
		Gas	kBTU	1.36	1.33	0.49	1.83
Misc Retail / Commercial / Office	Small Office	Electricity	kWh	9.48	8.89	4.40	13.28
		Gas	kBTU	12.68	12.42	0.67	13.09
Public Safety	Miscellaneous	Electricity	kWh	7.26	6.81	5.76	12.57
		Gas	kBTU	15.77	15.36	4.45	19.81

Notes:

1. Baseline usage rates were taken from the 2006 California Commercial End-Use Survey (CEUS), performed by Itron under contract to the California Energy Commission (CEC). Energy use rates are based on 2002 consumption data. ENVIRON used data for Southern California Edison (SCE), Zone 9, which is the sector in which the Entrada would be located.
2. ENVIRON multiplied the T24 Energy Use Base for each T24 end use category by the reduction factors for 2001 to 2005 and summed all applicable end use categories.
3. Includes Title 24-regulated building envelope uses of electricity (heating, cooling, ventilation, water heating) and gas (heating, water heating) and all lighting.
4. Includes all other uses of electricity (cooking, refrigeration office equipment, miscellaneous, process, motors, air compressors) and gas (cooling, cooking, miscellaneous, process) not included in the Title 24-regulated building envelope or lighting.
5. Total CARB 2020 NAT Energy Use sums the previous two columns (T24 Energy Use 2005 and Non-Title 24 Energy Use).

Abbreviations:

CARB 2020 NAT - California Air Resources Board Scoping Plan projections for 2020 if no actions are taken.
CEC - California Energy Commission
CEUS - California Commerical End-Use Survey
kBTU - kilo (1000) British thermal units
kWh - kilowatt hour
SCE - Southern California Edison
SF - square feet
T24 - Title 24
yr - year

Sources:

California Energy Commission. 2006. California Commercial End-Use Survey. Prepared by Itron Inc. Available at: Available at: http://www.energy.ca.gov/ceus/
California Energy Commission. 2003. Impact Analysis: 2005 Update to the California Energy Efficiency Standards for Residential and Nonresidential Buildings. Available at: http://www.energy.ca.gov/title24/2005standards/archive/rulemaking/documents/2003-07-11_400-03-014.PDF
California Energy Commission. 2007. Impact Analysis: 2008 Update to the California Energy Efficiency Standards for Residential and Nonresidential Buildings. Available at: http://www.energy.ca.gov/title24/2008standards/rulemaking/documents/2007-11-07_IMPACT_ANALYSIS.PDF

Table 4-B-1-NRSP-D5
CARB 2020 NAT Energy Use (Non-Residential D5)
Newhall Ranch Specific Plan
Newhall Ranch, California

Building Type	CEUS Building Type	Energy Type	Units	T24 Energy Use Base[1,3]	T24 Energy Use 2005[2,3]	Non-Title 24 Energy Use[1,4]	Total CARB 2020 NAT Energy Use[5]
				[Unit/SF/yr]			
Business Park / Industrial	Large Office	Electricity	kWh	12.59	11.87	4.80	16.66
		Gas	kBTU	12.17	11.80	0.19	11.99
Business Park / Industrial	Refrigerated Wharehouse	Electricity	kWh	4.13	3.91	13.61	17.52
		Gas	kBTU	1.10	1.08	0.10	1.18
Business Park / Industrial	Small Office	Electricity	kWh	9.48	8.89	4.40	13.28
		Gas	kBTU	12.68	12.42	0.67	13.09
Business Park / Industrial	Unrefrigerated Wharehouse	Electricity	kWh	3.43	3.24	1.35	4.59
		Gas	kBTU	1.04	1.01	0.04	1.05
Grocery	Grocery	Electricity	kWh	15.08	14.22	25.89	40.11
		Gas	kBTU	11.22	11.08	12.24	23.32
Hotel	Lodging	Electricity	kWh	6.58	6.19	2.90	9.08
		Gas	kBTU	21.96	21.79	4.06	25.86
Institutional (schools, library, etc.)	School	Electricity	kWh	5.84	5.50	1.60	7.09
		Gas	kBTU	10.90	10.72	1.08	11.80
Misc Retail / Commercial / Office	Large Office	Electricity	kWh	12.59	11.87	4.80	16.66
		Gas	kBTU	12.17	11.80	0.19	11.99
Misc Retail / Commercial / Office	Restaurant	Electricity	kWh	21.56	20.17	28.16	48.33
		Gas	kBTU	46.85	46.58	187.78	234.36
Misc Retail / Commercial / Office	Retail	Electricity	kWh	13.52	12.74	3.23	15.97
		Gas	kBTU	1.36	1.33	0.49	1.83
Misc Retail / Commercial / Office	Small Office	Electricity	kWh	9.48	8.89	4.40	13.28
		Gas	kBTU	12.68	12.42	0.67	13.09
Public Safety	Miscellaneous	Electricity	kWh	7.26	6.81	5.76	12.57
		Gas	kBTU	15.77	15.36	4.45	19.81

Notes:

1. Baseline usage rates were taken from the 2006 California Commercial End-Use Survey (CEUS), performed by Itron under contract to the California Energy Commission (CEC). Energy use rates are based on 2002 consumption data. ENVIRON used data for Southern California Edison (SCE), Zone 9, which is the sector in which the Entrada would be located.
2. ENVIRON multiplied the T24 Energy Use Base for each T24 end use category by the reduction factors for 2001 to 2005 and summed all applicable end use categories.
3. Includes Title 24-regulated building envelope uses of electricity (heating, cooling, ventilation, water heating) and gas (heating, water heating) and all lighting.
4. Includes all other uses of electricity (cooking, refrigeration office equipment, miscellaneous, process, motors, air compressors) and gas (cooling, cooking, miscellaneous, process) not included in the Title 24-regulated building envelope or lighting.
5. Total CARB 2020 NAT Energy Use sums the previous two columns (T24 Energy Use 2005 and Non-Title 24 Energy Use).

Abbreviations:

CARB 2020 NAT - California Air Resources Board Scoping Plan projections for 2020 if no actions are taken.
CEC - California Energy Commission
CEUS - California Commerical End-Use Survey
kBTU - kilo (1000) British thermal units
kWh - kilowatt hour
SCE - Southern California Edison
SF - square feet
T24 - Title 24
yr - year

Sources:

California Energy Commission. 2006. California Commercial End-Use Survey. Prepared by Itron Inc. Available at: Available at: http://www.energy.ca.gov/ceus/
California Energy Commission. 2003. Impact Analysis: 2005 Update to the California Energy Efficiency Standards for Residential and Nonresidential Buildings. Available at: http://www.energy.ca.gov/title24/2005standards/archive/rulemaking/documents/2003-07-11_400-03-014.PDF
California Energy Commission. 2007. Impact Analysis: 2008 Update to the California Energy Efficiency Standards for Residential and Nonresidential Buildings. Available at: http://www.energy.ca.gov/title24/2008standards/rulemaking/documents/2007-11-07_IMPACT_ANALYSIS.PDF

Table 4-B-1-NRSP-D6
Business-As-Usual Energy Use (Non-Residential D6)
Newhall Ranch Specific Plan
Newhall Ranch, California

Building Type	CEUS Building Type	Energy Type	Units	T24 Energy Use Base[1,3]	T24 Energy Use 2005[2,3]	Non-Title 24 Energy Use[1,4]	Total CARB 2020 NAT Energy Use[5]
				[Unit/SF/yr]			
Business Park / Industrial	Large Office	Electricity	kWh	12.59	11.87	4.80	16.66
		Gas	kBTU	12.17	11.80	0.19	11.99
Business Park / Industrial	Refrigerated Wharehouse	Electricity	kWh	4.13	3.91	13.61	17.52
		Gas	kBTU	1.10	1.08	0.10	1.18
Business Park / Industrial	Small Office	Electricity	kWh	9.48	8.89	4.40	13.28
		Gas	kBTU	12.68	12.42	0.67	13.09
Business Park / Industrial	Unrefrigerated Wharehouse	Electricity	kWh	3.43	3.24	1.35	4.59
		Gas	kBTU	1.04	1.01	0.04	1.05
Grocery	Grocery	Electricity	kWh	15.08	14.22	25.89	40.11
		Gas	kBTU	11.22	11.08	12.24	23.32
Hotel	Lodging	Electricity	kWh	6.58	6.19	2.90	9.08
		Gas	kBTU	21.96	21.79	4.06	25.86
Institutional (schools, library, etc.)	School	Electricity	kWh	5.84	5.50	1.60	7.09
		Gas	kBTU	10.90	10.72	1.08	11.80
Misc Retail / Commercial / Office	Large Office	Electricity	kWh	12.59	11.87	4.80	16.66
		Gas	kBTU	12.17	11.80	0.19	11.99
Misc Retail / Commercial / Office	Restaurant	Electricity	kWh	21.56	20.17	28.16	48.33
		Gas	kBTU	46.85	46.58	187.78	234.36
Misc Retail / Commercial / Office	Retail	Electricity	kWh	13.52	12.74	3.23	15.97
		Gas	kBTU	1.36	1.33	0.49	1.83
Misc Retail / Commercial / Office	Small Office	Electricity	kWh	9.48	8.89	4.40	13.28
		Gas	kBTU	12.68	12.42	0.67	13.09
Public Safety	Miscellaneous	Electricity	kWh	7.26	6.81	5.76	12.57
		Gas	kBTU	15.77	15.36	4.45	19.81

Notes:

1. Baseline usage rates were taken from the 2006 California Commercial End-Use Survey (CEUS), performed by Itron under contract to the California Energy Commission (CEC). Energy use rates are based on 2002 consumption data. ENVIRON used data for Southern California Edison (SCE), Zone 9, which is the sector in which the Entrada would be located.
2. ENVIRON multiplied the T24 Energy Use Base for each T24 end use category by the reduction factors for 2001 to 2005 and summed all applicable end use categories.
3. Includes Title 24-regulated building envelope uses of electricity (heating, cooling, ventilation, water heating) and gas (heating, water heating) and all lighting.
4. Includes all other uses of electricity (cooking, refrigeration office equipment, miscellaneous, process, motors, air compressors) and gas (cooling, cooking, miscellaneous, process) not included in the Title 24-regulated building envelope or lighting.
5. Total CARB 2020 NAT Energy Use sums the previous two columns (T24 Energy Use 2005 and Non-Title 24 Energy Use).

Abbreviations:

CARB 2020 NAT - California Air Resources Board Scoping Plan projections for 2020 if no actions are taken.
CEC - California Energy Commission
CEUS - California Commerical End-Use Survey
kBTU - kilo (1000) British thermal units
kWh - kilowatt hour
SCE - Southern California Edison
SF - square feet
T24 - Title 24
yr - year

Sources:

California Energy Commission. 2006. California Commercial End-Use Survey. Prepared by Itron Inc. Available at: Available at: http://www.energy.ca.gov/ceus/

California Energy Commission. 2003. Impact Analysis: 2005 Update to the California Energy Efficiency Standards for Residential and Nonresidential Buildings. Available at: http://www.energy.ca.gov/title24/2005standards/archive/rulemaking/documents/2003-07-11_400-03-014.PDF

California Energy Commission. 2007. Impact Analysis: 2008 Update to the California Energy Efficiency Standards for Residential and Nonresidential Buildings. Available at: http://www.energy.ca.gov/title24/2008standards/rulemaking/documents/2007-11-07_IMPACT_ANALYSIS.PDF

Table 4-B-1-NRSP-D7
CARB 2020 NAT Energy Use (Non-Residential D7)
Newhall Ranch Specific Plan
Newhall Ranch, California

Building Type	CEUS Building Type	Energy Type	Units	T24 Energy Use Base[1,3]	T24 Energy Use 2005[2,3]	Non-Title 24 Energy Use[1,4]	Total CARB 2020 NAT Energy Use[5]
				[Unit/SF/yr]			
Business Park / Industrial	Large Office	Electricity	kWh	12.59	11.87	4.80	16.66
		Gas	kBTU	12.17	11.80	0.19	11.99
Business Park / Industrial	Refrigerated Wharehouse	Electricity	kWh	4.13	3.91	13.61	17.52
		Gas	kBTU	1.10	1.08	0.10	1.18
Business Park / Industrial	Small Office	Electricity	kWh	9.48	8.89	4.40	13.28
		Gas	kBTU	12.68	12.42	0.67	13.09
Business Park / Industrial	Unrefrigerated Wharehouse	Electricity	kWh	3.43	3.24	1.35	4.59
		Gas	kBTU	1.04	1.01	0.04	1.05
Grocery	Grocery	Electricity	kWh	15.08	14.22	25.89	40.11
		Gas	kBTU	11.22	11.08	12.24	23.32
Hotel	Lodging	Electricity	kWh	6.58	6.19	2.90	9.08
		Gas	kBTU	21.96	21.79	4.06	25.86
Institutional (schools, library, etc.)	School	Electricity	kWh	5.84	5.50	1.60	7.09
		Gas	kBTU	10.90	10.72	1.08	11.80
Misc Retail / Commercial / Office	Large Office	Electricity	kWh	12.59	11.87	4.80	16.66
		Gas	kBTU	12.17	11.80	0.19	11.99
Misc Retail / Commercial / Office	Restaurant	Electricity	kWh	21.56	20.17	28.16	48.33
		Gas	kBTU	46.85	46.58	187.78	234.36
Misc Retail / Commercial / Office	Retail	Electricity	kWh	13.52	12.74	3.23	15.97
		Gas	kBTU	1.36	1.33	0.49	1.83
Misc Retail / Commercial / Office	Small Office	Electricity	kWh	9.48	8.89	4.40	13.28
		Gas	kBTU	12.68	12.42	0.67	13.09
Public Safety	Miscellaneous	Electricity	kWh	7.26	6.81	5.76	12.57
		Gas	kBTU	15.77	15.36	4.45	19.81

Notes:

1. Baseline usage rates were taken from the 2006 California Commercial End-Use Survey (CEUS), performed by Itron under contract to the California Energy Commission (CEC). Energy use rates are based on 2002 consumption data. ENVIRON used data for Southern California Edison (SCE), Zone 9, which is the sector in which the Entrada would be located.
2. ENVIRON multiplied the T24 Energy Use Base for each T24 end use category by the reduction factors for 2001 to 2005 and summed all applicable end use categories.
3. Includes Title 24-regulated building envelope uses of electricity (heating, cooling, ventilation, water heating) and gas (heating, water heating) and all lighting.
4. Includes all other uses of electricity (cooking, refrigeration office equipment, miscellaneous, process, motors, air compressors) and gas (cooling, cooking, miscellaneous, process) not included in the Title 24-regulated building envelope or lighting.
5. Total CARB 2020 NAT Energy Use sums the previous two columns (T24 Energy Use 2005 and Non-Title 24 Energy Use).

Abbreviations:

CARB 2020 NAT - California Air Resources Board Scoping Plan projections for 2020 if no actions are taken.
CEC - California Energy Commission
CEUS - California Commerical End-Use Survey
kBTU - kilo (1000) British thermal units
kWh - kilowatt hour
SCE - Southern California Edison
SF - square feet
T24 - Title 24
yr - year

Sources:

California Energy Commission. 2006. California Commercial End-Use Survey. Prepared by Itron Inc. Available at: Available at: http://www.energy.ca.gov/ceus/
California Energy Commission. 2003. Impact Analysis: 2005 Update to the California Energy Efficiency Standards for Residential and Nonresidential Buildings. Available at: http://www.energy.ca.gov/title24/2005standards/archive/rulemaking/documents/2003-07-11_400-03-014.PDF
California Energy Commission. 2007. Impact Analysis: 2008 Update to the California Energy Efficiency Standards for Residential and Nonresidential Buildings. Available at: http://www.energy.ca.gov/title24/2008standards/rulemaking/documents/2007-11-07_IMPACT_ANALYSIS.PDF

Table 4-B-1-Entrada-D2,D3,D4,D5,D6
CARB 2020 NAT Energy Use (Non-Residential D2-D6)
Entrada
Newhall Ranch, California

Building Type	CEUS Building Type	Energy Type	Units	T24 Energy Use Base[1,3]	T24 Energy Use 2005[2,3]	Non-Title 24 Energy Use[1,4]	Total CARB 2020 NAT Energy Use[5]
				[Unit/SF/yr]			
Grocery	Grocery	Electricity	kWh	15.08	14.22	25.89	40.11
		Gas	kBTU	11.22	11.08	12.24	23.32
Hotel	Lodging	Electricity	kWh	6.58	6.19	2.90	9.08
		Gas	kBTU	21.96	21.79	4.06	25.86
Institutional (schools, library, etc.)	School	Electricity	kWh	5.84	5.50	1.60	7.09
		Gas	kBTU	10.90	10.72	1.08	11.80
Misc Retail / Commercial / Office	Large Office	Electricity	kWh	12.59	11.87	4.80	16.66
		Gas	kBTU	12.17	11.80	0.19	11.99
Misc Retail / Commercial / Office	Restaurant	Electricity	kWh	21.56	20.17	28.16	48.33
		Gas	kBTU	46.85	46.58	187.78	234.36
Misc Retail / Commercial / Office	Retail	Electricity	kWh	13.52	12.74	3.23	15.97
		Gas	kBTU	1.36	1.33	0.49	1.83
Misc Retail / Commercial / Office	Small Office	Electricity	kWh	9.48	8.89	4.40	13.28
		Gas	kBTU	12.68	12.42	0.67	13.09
Public Safety	Miscellaneous	Electricity	kWh	7.26	6.81	5.76	12.57
		Gas	kBTU	15.77	15.36	4.45	19.81

Notes:

1. Baseline usage rates were taken from the 2006 California Commercial End-Use Survey (CEUS), performed by Itron under contract to the California Energy Commission (CEC). Energy use rates are based on 2002 consumption data. ENVIRON used data for Southern California Edison (SCE), Zone 9, which is the sector in which the Entrada would be located.
2. ENVIRON multiplied the T24 Energy Use Base for each T24 end use category by the reduction factors for 2001 to 2005 and summed all applicable end use categories.
3. Includes Title 24-regulated building envelope uses of electricity (heating, cooling, ventilation, water heating) and gas (heating, water heating) and all lighting.
4. Includes all other uses of electricity (cooking, refrigeration office equipment, miscellaneous, process, motors, air compressors) and gas (cooling, cooking, miscellaneous, process) not included in the Title 24-regulated building envelope or lighting.
5. Total CARB 2020 NAT Energy Use sums the previous two columns (T24 Energy Use 2005 and Non-Title 24 Energy Use).

Abbreviations:

CARB 2020 NAT - California Air Resources Board Scoping Plan projections for 2020 if no actions are taken.
CEC - California Energy Commission
CEUS - California Commerical End-Use Survey
kBTU - kilo (1000) British thermal units
kWh - kilowatt hour
SCE - Southern California Edison
SF - square feet
T24 - Title 24
yr - year

Sources:

California Energy Commission. 2006. California Commercial End-Use Survey. Prepared by Itron Inc. Available at: Available at: http://www.energy.ca.gov/ceus/

California Energy Commission. 2003. Impact Analysis: 2005 Update to the California Energy Efficiency Standards for Residential and Nonresidential Buildings. Available at: http://www.energy.ca.gov/title24/2005standards/archive/rulemaking/documents/2003-07-11_400-03-014.PDF

California Energy Commission. 2007. Impact Analysis: 2008 Update to the California Energy Efficiency Standards for Residential and Nonresidential Buildings. Available at: http://www.energy.ca.gov/title24/2008standards/rulemaking/documents/2007-11-07_IMPACT_ANALYSIS.PDF

Table 4-B-1-Entrada-D7
Business-As-Usual Energy Use (Non-Residential D7)
Entrada
Newhall Ranch, California

Building Type	CEUS Building Type	Energy Type	Units	T24 Energy Use Base[1,3]	T24 Energy Use 2005[2,3]	Non-Title 24 Energy Use[1,4]	Total CARB 2020 NAT Energy Use[5]
				[Unit/SF/yr]			
Misc Retail / Commercial / Office	Large Office	Electricity	kWh	12.59	11.87	4.80	16.66
		Gas	kBTU	12.17	11.80	0.19	11.99
Misc Retail / Commercial / Office	Restaurant	Electricity	kWh	21.56	20.17	28.16	48.33
		Gas	kBTU	46.85	46.58	187.78	234.36
Misc Retail / Commercial / Office	Retail	Electricity	kWh	13.52	12.74	3.23	15.97
		Gas	kBTU	1.36	1.33	0.49	1.83
Misc Retail / Commercial / Office	Small Office	Electricity	kWh	9.48	8.89	4.40	13.28
		Gas	kBTU	12.68	12.42	0.67	13.09

Notes:

1. Baseline usage rates were taken from the 2006 California Commercial End-Use Survey (CEUS), performed by Itron under contract to the California Energy Commission (CEC). Energy use rates are based on 2002 consumption data. ENVIRON used data for Southern California Edison (SCE), Zone 9, which is the sector in which the Entrada would be located.
2. ENVIRON multiplied the T24 Energy Use Base for each T24 end use category by the reduction factors for 2001 to 2005 and summed all applicable end use categories.
3. Includes Title 24-regulated building envelope uses of electricity (heating, cooling, ventilation, water heating) and gas (heating, water heating) and all lighting.
4. Includes all other uses of electricity (cooking, refrigeration office equipment, miscellaneous, process, motors, air compressors) and gas (cooling, cooking, miscellaneous, process) not included in the Title 24-regulated building envelope or lighting.
5. Total CARB 2020 NAT Energy Use sums the previous two columns (T24 Energy Use 2005 and Non-Title 24 Energy Use).

Abbreviations:

CARB 2020 NAT - California Air Resources Board Scoping Plan projections for 2020 if no actions are taken.
CEC - California Energy Commission
CEUS - California Commerical End-Use Survey
kBTU - kilo (1000) British thermal units
kWh - kilowatt hour
SCE - Southern California Edison
SF - square feet
T24 - Title 24
yr - year

Sources:

California Energy Commission. 2006. California Commercial End-Use Survey. Prepared by Itron Inc. Available at: Available at: http://www.energy.ca.gov/ceus/
California Energy Commission. 2003. Impact Analysis: 2005 Update to the California Energy Efficiency Standards for Residential and Nonresidential Buildings. Available at: http://www.energy.ca.gov/title24/2005standards/archive/rulemaking/documents/2003-07-11_400-03-014.PDF
California Energy Commission. 2007. Impact Analysis: 2008 Update to the California Energy Efficiency Standards for Residential and Nonresidential Buildings. Available at: http://www.energy.ca.gov/title24/2008standards/rulemaking/documents/2007-11-07_IMPACT_ANALYSIS.PDF

Table 4-B-1-VCC-D2,D3
CARB 2020 NAT Energy Use (Non-Residential D2-D3)
Valencia Commerce Center
Newhall Ranch, California

Building Type	CEUS Building Type	Energy Type	Units	T24 Energy Use Base[1,3]	T24 Energy Use 2005[2,3]	Non-Title 24 Energy Use[1,4]	Total CARB 2020 NAT Energy Use[5]
				[Unit/SF/yr]			
Business Park / Industrial	Large Office	Electricity	kWh	12.59	11.87	4.80	16.66
		Gas	kBTU	12.17	11.80	0.19	11.99
Business Park / Industrial	Refrigerated Wharehouse	Electricity	kWh	4.13	3.91	13.61	17.52
		Gas	kBTU	1.10	1.08	0.10	1.18
Business Park / Industrial	Small Office	Electricity	kWh	9.48	8.89	4.40	13.28
		Gas	kBTU	12.68	12.42	0.67	13.09
Business Park / Industrial	Unrefrigerated Wharehouse	Electricity	kWh	3.43	3.24	1.35	4.59
		Gas	kBTU	1.04	1.01	0.04	1.05

Notes:

1. Baseline usage rates were taken from the 2006 California Commercial End-Use Survey (CEUS), performed by Itron under contract to the California Energy Commission (CEC). Energy use rates are based on 2002 consumption data. ENVIRON used data for Southern California Edison (SCE), Zone 9, which is the sector in which the Entrada would be located.
2. ENVIRON multiplied the T24 Energy Use Base for each T24 end use category by the reduction factors for 2001 to 2005 and summed all applicable end use categories.
3. Includes Title 24-regulated building envelope uses of electricity (heating, cooling, ventilation, water heating) and gas (heating, water heating) and all lighting.
4. Includes all other uses of electricity (cooking, refrigeration office equipment, miscellaneous, process, motors, air compressors) and gas (cooling, cooking, miscellaneous, process) not included in the Title 24-regulated building envelope or lighting.
5. Total CARB 2020 NAT Energy Use sums the previous two columns (T24 Energy Use 2005 and Non-Title 24 Energy Use).

Abbreviations:

CARB 2020 NAT - California Air Resources Board Scoping Plan projections for 2020 if no actions are taken.
CEC - California Energy Commission
CEUS - California Commerical End-Use Survey
kBTU - kilo (1000) British thermal units
kWh - kilowatt hour
SCE - Southern California Edison
SF - square feet
T24 - Title 24
yr - year

Sources:

California Energy Commission. 2006. California Commercial End-Use Survey. Prepared by Itron Inc. Available at: Available at: http://www.energy.ca.gov/ceus/
California Energy Commission. 2003. Impact Analysis: 2005 Update to the California Energy Efficiency Standards for Residential and Nonresidential Buildings. Available at: http://www.energy.ca.gov/title24/2005standards/archive/rulemaking/documents/2003-07-11_400-03-014.PDF
California Energy Commission. 2007. Impact Analysis: 2008 Update to the California Energy Efficiency Standards for Residential and Nonresidential Buildings. Available at: http://www.energy.ca.gov/title24/2008standards/rulemaking/documents/2007-11-07_IMPACT_ANALYSIS.PDF

Table 4-B-2-NRSP-D2
CARB 2020 NAT GHG Emissions (Non-Residential D2)
Newhall Ranch Specific Plan
Newhall Ranch, California

Building Type	CEUS Building Type	Size	Energy Type	Unit	CARB 2020 NAT Energy Use[1]	CO_2e Emissions[2]	Total CARB 2020 NAT CO_2e Emissions[3]
		[SF]			[Unit/SF/yr]	[tonnes CO_2e/SF/yr]	[tonnes CO_2e/yr]
Business Park / Industrial	Large Office	165000	Electricity	kWh	16.66	5.13E-03	847
			Gas	kBTU	11.99	6.36E-04	105
Business Park / Industrial	Large Office	550000	Electricity	kWh	16.66	5.13E-03	2823
			Gas	kBTU	11.99	6.36E-04	350
Business Park / Industrial	Refrigerated Wharehouse	110000	Electricity	kWh	17.52	5.40E-03	594
			Gas	kBTU	1.18	6.27E-05	7
Business Park / Industrial	Small Office	165000	Electricity	kWh	13.28	4.09E-03	675
			Gas	kBTU	13.09	6.95E-04	115
Business Park / Industrial	Unrefrigerated Wharehouse	110000	Electricity	kWh	4.59	1.41E-03	155
			Gas	kBTU	1.05	5.58E-05	6
Grocery	Grocery	180000	Electricity	kWh	40.11	1.24E-02	2224
			Gas	kBTU	23.32	1.24E-03	223
Hotel	Lodging	100000	Electricity	kWh	9.08	2.80E-03	280
			Gas	kBTU	25.86	1.37E-03	137
Institutional (schools, library, etc.)	School	500000	Electricity	kWh	7.09	2.19E-03	1093
			Gas	kBTU	11.80	6.26E-04	313
Misc Retail / Commercial / Office	Large Office	521250	Electricity	kWh	16.66	5.13E-03	2675
			Gas	kBTU	11.99	6.36E-04	332
Misc Retail / Commercial / Office	Restaurant	834000	Electricity	kWh	48.33	1.49E-02	12415
			Gas	kBTU	234.36	1.24E-02	10373
Misc Retail / Commercial / Office	Retail	2293500	Electricity	kWh	15.97	4.92E-03	11281
			Gas	kBTU	1.83	9.69E-05	222
Misc Retail / Commercial / Office	Small Office	521250	Electricity	kWh	13.28	4.09E-03	2132
			Gas	kBTU	13.09	6.95E-04	362
Public Safety	Miscellaneous	95000	Electricity	kWh	12.57	3.87E-03	368
			Gas	kBTU	19.81	1.05E-03	100
						Total	**50,206**

Notes:

1. Baseline usage rates were taken from the 2006 California Commercial End-Use Survey (CEUS), performed by Itron under contract to the California Energy Commission (CEC). Energy use rates are based on 2002 consumption data. ENVIRON used data for Southern California Edison (SCE), Zone 9, which is the sector in which the Newhall Ranch would be located.

The CARB 2020 NAT scenario uses 2005 Title 24 building standards since this is what ARB used in their Scoping Plan. ENVIRON used the 2002 CEUS data to represent energy use for buildings that are minimally compliant with the 2001 Title 24 standards. Title 24 usage rates have been adjusted to reflect improvements in Title 24 building codes from 2002 to 2005 according to CEC's "Impact Analysis for 2005 Energy Efficiency Standards" .

2. GHG emission factors are calculated by multiplying the corresponding usage rates or usages by the conversion factors.

3. The total GHG emissions are calcualted by multiplying the corresponding usage rates or usages by the conversion factors and the total square footage of the buildings.

Abbreviations:

CARB 2020 NAT - California Air Resources Board Scoping Plan projections for 2020 if no actions are taken.
CEC - California Energy Commission
CEUS - California Commerical End-Use Survey
CO_2 - carbon dioxide
CO_2e - carbon dioxide equivalent
GHG - greenhouse gas
kBTU - kilo (1000) British thermal units
kWh - kilowatt hour
SCE - Southern California Edison
SF - square feet
tonnes - metric tonnes
yr - year

Sources:

California Energy Commission. 2006. California Commercial End-Use Survey. Prepared by Itron Inc. Available at: Available at: http://www.energy.ca.gov/ceus/
California Energy Commission. 2003. Impact Analysis: 2005 Update to the California Energy Efficiency Standards for Residential and Nonresidential Buildings. Available at: http://www.energy.ca.gov/title24/2005standards/archive/rulemaking/documents/2003-07-11_400-03-014.PDF
California Energy Commission. 2007. Impact Analysis: 2008 Update to the California Energy Efficiency Standards for Residential and Nonresidential Buildings. Available at: http://www.energy.ca.gov/title24/2008standards/rulemaking/documents/2007-11-07_IMPACT_ANALYSIS.PDF

Table 4-B-2-NRSP-D3
CARB 2020 NAT GHG Emissions (Non-Residential D3)
Newhall Ranch Specific Plan
Newhall Ranch, California

Building Type	CEUS Building Type	Size	Energy Type	Unit	CARB 2020 NAT Energy Use[1]	CO_2e Emissions[2]	Total CARB 2020 NAT CO_2e Emissions[3]
		[SF]			[Unit/SF/yr]	[tonnes CO_2e/SF/yr]	[tonnes CO_2e/yr]
Business Park / Industrial	Large Office	165000	Electricity	kWh	16.66	5.13E-03	847
			Gas	kBTU	11.99	6.36E-04	105
Business Park / Industrial	Large Office	550000	Electricity	kWh	16.66	5.13E-03	2823
			Gas	kBTU	11.99	6.36E-04	350
Business Park / Industrial	Refrigerated Wharehouse	110000	Electricity	kWh	17.52	5.40E-03	594
			Gas	kBTU	1.18	6.27E-05	7
Business Park / Industrial	Small Office	165000	Electricity	kWh	13.28	4.09E-03	675
			Gas	kBTU	13.09	6.95E-04	115
Business Park / Industrial	Unrefrigerated Wharehouse	110000	Electricity	kWh	4.59	1.41E-03	155
			Gas	kBTU	1.05	5.58E-05	6
Grocery	Grocery	180000	Electricity	kWh	40.11	1.24E-02	2224
			Gas	kBTU	23.32	1.24E-03	223
Hotel	Lodging	100000	Electricity	kWh	9.08	2.80E-03	280
			Gas	kBTU	25.86	1.37E-03	137
Institutional (schools, library, etc.)	School	500000	Electricity	kWh	7.09	2.19E-03	1093
			Gas	kBTU	11.80	6.26E-04	313
Misc Retail / Commercial / Office	Large Office	512500	Electricity	kWh	16.66	5.13E-03	2630
			Gas	kBTU	11.99	6.36E-04	326
Misc Retail / Commercial / Office	Restaurant	820000	Electricity	kWh	48.33	1.49E-02	12206
			Gas	kBTU	234.36	1.24E-02	10199
Misc Retail / Commercial / Office	Retail	2255000	Electricity	kWh	15.97	4.92E-03	11092
			Gas	kBTU	1.83	9.69E-05	219
Misc Retail / Commercial / Office	Small Office	512500	Electricity	kWh	13.28	4.09E-03	2097
			Gas	kBTU	13.09	6.95E-04	356
Public Safety	Miscellaneous	95000	Electricity	kWh	12.57	3.87E-03	368
			Gas	kBTU	19.81	1.05E-03	100
						Total	**49,538**

Notes:

1. Baseline usage rates were taken from the 2006 California Commercial End-Use Survey (CEUS), performed by Itron under contract to the California Energy Commission (CEC). Energy use rates are based on 2002 consumption data. ENVIRON used data for Southern California Edison (SCE), Zone 9, which is the sector in which the Newhall Ranch would be located.
The CARB 2020 NAT scenario uses 2005 Title 24 building standards since this is what ARB used in their Scoping Plan. ENVIRON used the 2002 CEUS data to represent energy use for buildings that are minimally compliant with the 2001 Title 24 standards. Title 24 usage rates have been adjusted to reflect improvements in Title 24 building codes from 2002 to 2005 according to CEC's "Impact Analysis for 2005 Energy Efficiency Standards" .

2. GHG emission factors are calculated by multiplying the corresponding usage rates or usages by the conversion factors.

3. The total GHG emissions are calcualted by multiplying the corresponding usage rates or usages by the conversion factors and the total square footage of the buildings.

Abbreviations:

CARB 2020 NAT - California Air Resources Board Scoping Plan projections for 2020 if no actions are taken.
CEC - California Energy Commission
CEUS - California Commerical End-Use Survey
CO_2 - carbon dioxide
CO_2e - carbon dioxide equivalent
GHG - greenhouse gas
kBTU - kilo (1000) British thermal units
kWh - kilowatt hour
SCE - Southern California Edison
SF - square feet
tonnes - metric tonnes
yr - year

Sources:

California Energy Commission. 2006. California Commercial End-Use Survey. Prepared by Itron Inc. Available at: Available at: http://www.energy.ca.gov/ceus/

California Energy Commission. 2003. Impact Analysis: 2005 Update to the California Energy Efficiency Standards for Residential and Nonresidential Buildings. Available at: http://www.energy.ca.gov/title24/2005standards/archive/rulemaking/documents/2003-07-11_400-03-014.PDF

California Energy Commission. 2007. Impact Analysis: 2008 Update to the California Energy Efficiency Standards for Residential and Nonresidential Buildings. Available at: http://www.energy.ca.gov/title24/2008standards/rulemaking/documents/2007-11-07_IMPACT_ANALYSIS.PDF

Table 4-B-2-NRSP-D4
CARB 2020 NAT GHG Emissions (Non-Residential D4)
Newhall Ranch Specific Plan
Newhall Ranch, California

Building Type	CEUS Building Type	Size	Energy Type	Unit	CARB 2020 NAT Energy Use[1]	CO_2e Emissions[2]	Total CARB 2020 NAT CO_2e Emissions[3]
		[SF]			[Unit/SF/yr]	[tonnes CO_2/SF/yr]	[tonnes CO_2/yr]
Business Park / Industrial	Large Office	165000	Electricity	kWh	16.66	5.13E-03	847
			Gas	kBTU	11.99	6.36E-04	105
Business Park / Industrial	Large Office	550000	Electricity	kWh	16.66	5.13E-03	2823
			Gas	kBTU	11.99	6.36E-04	350
Business Park / Industrial	Refrigerated Wharehouse	110000	Electricity	kWh	17.52	5.40E-03	594
			Gas	kBTU	1.18	6.27E-05	7
Business Park / Industrial	Small Office	165000	Electricity	kWh	13.28	4.09E-03	675
			Gas	kBTU	13.09	6.95E-04	115
Business Park / Industrial	Unrefrigerated Wharehouse	110000	Electricity	kWh	4.59	1.41E-03	155
			Gas	kBTU	1.05	5.58E-05	6
Grocery	Grocery	180000	Electricity	kWh	40.11	1.24E-02	2224
			Gas	kBTU	23.32	1.24E-03	223
Hotel	Lodging	100000	Electricity	kWh	9.08	2.80E-03	280
			Gas	kBTU	25.86	1.37E-03	137
Institutional (schools, library, etc.)	School	500000	Electricity	kWh	7.09	2.19E-03	1093
			Gas	kBTU	11.80	6.26E-04	313
Misc Retail / Commercial / Office	Large Office	515000	Electricity	kWh	16.66	5.13E-03	2643
			Gas	kBTU	11.99	6.36E-04	328
Misc Retail / Commercial / Office	Restaurant	824000	Electricity	kWh	48.33	1.49E-02	12266
			Gas	kBTU	234.36	1.24E-02	10249
Misc Retail / Commercial / Office	Retail	2266000	Electricity	kWh	15.97	4.92E-03	11146
			Gas	kBTU	1.83	9.69E-05	220
Misc Retail / Commercial / Office	Small Office	515000	Electricity	kWh	13.28	4.09E-03	2107
			Gas	kBTU	13.09	6.95E-04	358
Public Safety	Miscellaneous	95000	Electricity	kWh	12.57	3.87E-03	368
			Gas	kBTU	19.81	1.05E-03	100
						Total	**49,729**

Notes:

1. Baseline usage rates were taken from the 2006 California Commercial End-Use Survey (CEUS), performed by Itron under contract to the California Energy Commission (CEC). Energy use rates are based on 2002 consumption data. ENVIRON used data for Southern California Edison (SCE), Zone 9, which is the sector in which the Newhall Ranch would be located.

The CARB 2020 NAT scenario uses 2005 Title 24 building standards since this is what ARB used in their Scoping Plan. ENVIRON used the 2002 CEUS data to represent energy use for buildings that are minimally compliant with the 2001 Title 24 standards. Title 24 usage rates have been adjusted to reflect improvements in Title 24 building codes from 2002 to 2005 according to CEC's "Impact Analysis for 2005 Energy Efficiency Standards" .

2. GHG emission factors are calculated by multiplying the corresponding usage rates or usages by the conversion factors.

3. The total GHG emissions are calcualted by multiplying the corresponding usage rates or usages by the conversion factors and the total square footage of the buildings.

Abbreviations:

CARB 2020 NAT - California Air Resources Board Scoping Plan projections for 2020 if no actions are taken.
CEC - California Energy Commission
CEUS - California Commerical End-Use Survey
CO_2 - carbon dioxide
CO_2e - carbon dioxide equivalent
GHG - greenhouse gas
kBTU - kilo (1000) British thermal units
kWh - kilowatt hour
SCE - Southern California Edison
SF - square feet
tonnes - metric tonnes
yr - year

Sources:

California Energy Commission. 2006. California Commercial End-Use Survey. Prepared by Itron Inc. Available at: Available at:
California Energy Commission. 2003. Impact Analysis: 2005 Update to the California Energy Efficiency Standards for Residential and Nonresidential Buildings. Available at: http://www.energy.ca.gov/title24/2005standards/archive/rulemaking/documents/2003-07-11_400-03-014.PDF

California Energy Commission. 2007. Impact Analysis: 2008 Update to the California Energy Efficiency Standards for Residential and Nonresidential Buildings. Available at: http://www.energy.ca.gov/title24/2008standards/rulemaking/documents/2007-11-07_IMPACT_ANALYSIS.PDF

Table 4-B-2-NRSP-D5
CARB 2020 NAT GHG Emissions (Non-Residential D5)
Newhall Ranch Specific Plan
Newhall Ranch, California

Building Type	CEUS Building Type	Size	Energy Type	Unit	CARB 2020 NAT Energy Use[1]	CO_2e Emissions[2]	Total CARB 2020 NAT CO_2e Emissions[3]
		[SF]			[Unit/SF/yr]	[tonnes CO_2/SF/yr]	[tonnes CO_2/yr]
Business Park / Industrial	Large Office	165000	Electricity	kWhr	16.66	5.13E-03	847
			Gas	kBTU	11.99	6.36E-04	105
Business Park / Industrial	Large Office	550000	Electricity	kWhr	16.66	5.13E-03	2823
			Gas	kBTU	11.99	6.36E-04	350
Business Park / Industrial	Refrigerated Wharehouse	110000	Electricity	kWhr	17.52	5.40E-03	594
			Gas	kBTU	1.18	6.27E-05	7
Business Park / Industrial	Small Office	165000	Electricity	kWhr	13.28	4.09E-03	675
			Gas	kBTU	13.09	6.95E-04	115
Business Park / Industrial	Unrefrigerated Wharehouse	110000	Electricity	kWhr	4.59	1.41E-03	155
			Gas	kBTU	1.05	5.58E-05	6
Grocery	Grocery	180000	Electricity	kWhr	40.11	1.24E-02	2224
			Gas	kBTU	23.32	1.24E-03	223
Hotel	Lodging	100000	Electricity	kWhr	9.08	2.80E-03	280
			Gas	kBTU	25.86	1.37E-03	137
Institutional (schools, library, etc.)	School	500000	Electricity	kWhr	7.09	2.19E-03	1093
			Gas	kBTU	11.80	6.26E-04	313
Misc Retail / Commercial / Office	Large Office	503750	Electricity	kWhr	16.66	5.13E-03	2586
			Gas	kBTU	11.99	6.36E-04	321
Misc Retail / Commercial / Office	Restaurant	806000	Electricity	kWhr	48.33	1.49E-02	11998
			Gas	kBTU	234.36	1.24E-02	10025
Misc Retail / Commercial / Office	Retail	2216500	Electricity	kWhr	15.97	4.92E-03	10902
			Gas	kBTU	1.83	9.69E-05	215
Misc Retail / Commercial / Office	Small Office	503750	Electricity	kWhr	13.28	4.09E-03	2061
			Gas	kBTU	13.09	6.95E-04	350
Public Safety	Miscellaneous	95000	Electricity	kWhr	12.57	3.87E-03	368
			Gas	kBTU	19.81	1.05E-03	100
						Total	**48,870**

Notes:

1. Baseline usage rates were taken from the 2006 California Commercial End-Use Survey (CEUS), performed by Itron under contract to the California Energy Commission (CEC). Energy use rates are based on 2002 consumption data. ENVIRON used data for Southern California Edison (SCE), Zone 9, which is the sector in which the Newhall Ranch would be located.
The CARB 2020 NAT scenario uses 2005 Title 24 building standards since this is what ARB used in their Scoping Plan. ENVIRON used the 2002 CEUS data to represent energy use for buildings that are minimally compliant with the 2001 Title 24 standards. Title 24 usage rates have been adjusted to reflect improvements in Title 24 building codes from 2002 to 2005 according to CEC's "Impact Analysis for 2005 Energy Efficiency Standards" .

2. GHG emission factors are calculated by multiplying the corresponding usage rates or usages by the conversion factors.

3. The total GHG emissions are calcualted by multiplying the corresponding usage rates or usages by the conversion factors and the total square footage of the buildings.

Abbreviations:

CARB 2020 NAT - California Air Resources Board Scoping Plan projections for 2020 if no actions are taken.
CEC - California Energy Commission
CEUS - California Commerical End-Use Survey
CO_2 - carbon dioxide
CO_2e - carbon dioxide equivalent
GHG - greenhouse gas
kBTU - kilo (1000) British thermal units
kWh - kilowatt hour
SCE - Southern California Edison
SF - square feet
tonnes - metric tonnes
yr - year

Sources:

California Energy Commission. 2006. California Commercial End-Use Survey. Prepared by Itron Inc. Available at: Available at:

California Energy Commission. 2003. Impact Analysis: 2005 Update to the California Energy Efficiency Standards for Residential and Nonresidential Buildings. Available at: http://www.energy.ca.gov/title24/2005standards/archive/rulemaking/documents/2003-07-11_400-03-014.PDF

California Energy Commission. 2007. Impact Analysis: 2008 Update to the California Energy Efficiency Standards for Residential and Nonresidential Buildings. Available at: http://www.energy.ca.gov/title24/2008standards/rulemaking/documents/2007-11-07_IMPACT_ANALYSIS.PDF

Table 4-B-2-NRSP-D6
CARB 2020 NAT GHG Emissions (Non-Residential D6)
Newhall Ranch Specific Plan
Newhall Ranch, California

Building Type	CEUS Building Type	Size	Energy Type	Unit	CARB 2020 NAT Energy Use[1]	CO_2e Emissions[2]	Total CARB 2020 NAT CO_2e Emissions[3]
		[SF]			[Unit/SF/yr]	[tonnes CO_2/SF/yr]	[tonnes CO_2/yr]
Business Park / Industrial	Large Office	165000	Electricity	kWh	16.66	5.13E-03	847
			Gas	kBTU	11.99	6.36E-04	105
Business Park / Industrial	Large Office	550000	Electricity	kWh	16.66	5.13E-03	2823
			Gas	kBTU	11.99	6.36E-04	350
Business Park / Industrial	Refrigerated Wharehouse	110000	Electricity	kWh	17.52	5.40E-03	594
			Gas	kBTU	1.18	6.27E-05	7
Business Park / Industrial	Small Office	165000	Electricity	kWh	13.28	4.09E-03	675
			Gas	kBTU	13.09	6.95E-04	115
Business Park / Industrial	Unrefrigerated Wharehouse	110000	Electricity	kWh	4.59	1.41E-03	155
			Gas	kBTU	1.05	5.58E-05	6
Grocery	Grocery	180000	Electricity	kWh	40.11	1.24E-02	2224
			Gas	kBTU	23.32	1.24E-03	223
Hotel	Lodging	100000	Electricity	kWh	9.08	2.80E-03	280
			Gas	kBTU	25.86	1.37E-03	137
Institutional (schools, library, etc.)	School	500000	Electricity	kWh	7.09	2.19E-03	1093
			Gas	kBTU	11.80	6.26E-04	313
Misc Retail / Commercial / Office	Large Office	493750	Electricity	kWh	16.66	5.13E-03	2534
			Gas	kBTU	11.99	6.36E-04	314
Misc Retail / Commercial / Office	Restaurant	790000	Electricity	kWh	48.33	1.49E-02	11760
			Gas	kBTU	234.36	1.24E-02	9826
Misc Retail / Commercial / Office	Retail	2172500	Electricity	kWh	15.97	4.92E-03	10686
			Gas	kBTU	1.83	9.69E-05	211
Misc Retail / Commercial / Office	Small Office	493750	Electricity	kWh	13.28	4.09E-03	2020
			Gas	kBTU	13.09	6.95E-04	343
Public Safety	Miscellaneous	95000	Electricity	kWh	12.57	3.87E-03	368
			Gas	kBTU	19.81	1.05E-03	100
						Total	**48,107**

Notes:

1. Baseline usage rates were taken from the 2006 California Commercial End-Use Survey (CEUS), performed by Itron under contract to the California Energy Commission (CEC). Energy use rates are based on 2002 consumption data. ENVIRON used data for Southern California Edison (SCE), Zone 9, which is the sector in which the Newhall Ranch would be located.

The CARB 2020 NAT scenario uses 2005 Title 24 building standards since this is what ARB used in their Scoping Plan. ENVIRON used the 2002 CEUS data to represent energy use for buildings that are minimally compliant with the 2001 Title 24 standards. Title 24 usage rates have been adjusted to reflect improvements in Title 24 building codes from 2002 to 2005 according to CEC's "Impact Analysis for 2005 Energy Efficiency Standards" .

2. GHG emission factors are calculated by multiplying the corresponding usage rates or usages by the conversion factors.

3. The total GHG emissions are calcualted by multiplying the corresponding usage rates or usages by the conversion factors and the total square footage of the buildings.

Abbreviations:

CARB 2020 NAT - California Air Resources Board Scoping Plan projections for 2020 if no actions are taken.
CEC - California Energy Commission
CEUS - California Commerical End-Use Survey
CO_2 - carbon dioxide
CO_2e - carbon dioxide equivalent
GHG - greenhouse gas
kBTU - kilo (1000) British thermal units
kWh - kilowatt hour
SCE - Southern California Edison
SF - square feet
tonnes - metric tonnes
yr - year

Sources:

California Energy Commission. 2006. California Commercial End-Use Survey. Prepared by Itron Inc. Available at: Available at:
California Energy Commission. 2003. Impact Analysis: 2005 Update to the California Energy Efficiency Standards for Residential and Nonresidential Buildings. Available at: http://www.energy.ca.gov/title24/2005standards/archive/rulemaking/documents/2003-07-11_400-03-014.PDF
California Energy Commission. 2007. Impact Analysis: 2008 Update to the California Energy Efficiency Standards for Residential and Nonresidential Buildings. Available at: http://www.energy.ca.gov/title24/2008standards/rulemaking/documents/2007-11-07_IMPACT_ANALYSIS.PDF

Table 4-B-2-NRSP-D7
CARB 2020 NAT GHG Emissions (Non-Residential D7)
Newhall Ranch Specific Plan
Newhall Ranch, California

Building Type	CEUS Building Type	Size	Energy Type	Unit	CARB 2020 NAT Energy Use[1]	CO_2e Emissions[2]	Total CARB 2020 NAT CO_2e Emissions[3]
		[SF]			[Unit/SF/yr]	[tonnes CO_2/SF/yr]	[tonnes CO_2/yr]
Business Park / Industrial	Large Office	165000	Electricity	kWh	16.66	5.13E-03	847
			Gas	kBTU	11.99	6.36E-04	105
Business Park / Industrial	Large Office	550000	Electricity	kWh	16.66	5.13E-03	2823
			Gas	kBTU	11.99	6.36E-04	350
Business Park / Industrial	Refrigerated Wharehouse	110000	Electricity	kWh	17.52	5.40E-03	594
			Gas	kBTU	1.18	6.27E-05	7
Business Park / Industrial	Small Office	165000	Electricity	kWh	13.28	4.09E-03	675
			Gas	kBTU	13.09	6.95E-04	115
Business Park / Industrial	Unrefrigerated Wharehouse	110000	Electricity	kWh	4.59	1.41E-03	155
			Gas	kBTU	1.05	5.58E-05	6
Grocery	Grocery	180000	Electricity	kWh	40.11	1.24E-02	2224
			Gas	kBTU	23.32	1.24E-03	223
Hotel	Lodging	100000	Electricity	kWh	9.08	2.80E-03	280
			Gas	kBTU	25.86	1.37E-03	137
Institutional (schools, library, etc.)	School	500000	Electricity	kWh	7.09	2.19E-03	1093
			Gas	kBTU	11.80	6.26E-04	313
Misc Retail / Commercial / Office	Large Office	297500	Electricity	kWh	16.66	5.13E-03	1527
			Gas	kBTU	11.99	6.36E-04	189
Misc Retail / Commercial / Office	Restaurant	476000	Electricity	kWh	48.33	1.49E-02	7086
			Gas	kBTU	234.36	1.24E-02	5920
Misc Retail / Commercial / Office	Retail	1309000	Electricity	kWh	15.97	4.92E-03	6439
			Gas	kBTU	1.83	9.69E-05	127
Misc Retail / Commercial / Office	Small Office	297500	Electricity	kWh	13.28	4.09E-03	1217
			Gas	kBTU	13.09	6.95E-04	207
Public Safety	Miscellaneous	95000	Electricity	kWh	12.57	3.87E-03	368
			Gas	kBTU	19.81	1.05E-03	100
						Total	**33,125**

Notes:

1. Baseline usage rates were taken from the 2006 California Commercial End-Use Survey (CEUS), performed by Itron under contract to the California Energy Commission (CEC). Energy use rates are based on 2002 consumption data. ENVIRON used data for Southern California Edison (SCE), Zone 9, which is the sector in which the Newhall Ranch would be located.

The CARB 2020 NAT scenario uses 2005 Title 24 building standards since this is what ARB used in their Scoping Plan. ENVIRON used the 2002 CEUS data to represent energy use for buildings that are minimally compliant with the 2001 Title 24 standards. Title 24 usage rates have been adjusted to reflect improvements in Title 24 building codes from 2002 to 2005 according to CEC's "Impact Analysis for 2005 Energy Efficiency Standards" .

2. GHG emission factors are calculated by multiplying the corresponding usage rates or usages by the conversion factors.

3. The total GHG emissions are calcualted by multiplying the corresponding usage rates or usages by the conversion factors and the total square footage of the buildings.

Abbreviations:

CARB 2020 NAT - California Air Resources Board Scoping Plan projections for 2020 if no actions are taken.
CEC - California Energy Commission
CEUS - California Commerical End-Use Survey
CO_2 - carbon dioxide
CO_2e - carbon dioxide equivalent
GHG - greenhouse gas
kBTU - kilo (1000) British thermal units
kWh - kilowatt hour
SCE - Southern California Edison
SF - square feet
tonnes - metric tonnes
yr - year

Sources:

California Energy Commission. 2006. California Commercial End-Use Survey. Prepared by Itron Inc. Available at: Available at: http://www.energy.ca.gov/ceus/
California Energy Commission. 2003. Impact Analysis: 2005 Update to the California Energy Efficiency Standards for Residential and Nonresidential Buildings. Available at: http://www.energy.ca.gov/title24/2005standards/archive/rulemaking/documents/2003-07-11_400-03-014.PDF
California Energy Commission. 2007. Impact Analysis: 2008 Update to the California Energy Efficiency Standards for Residential and Nonresidential Buildings. Available at: http://www.energy.ca.gov/title24/2008standards/rulemaking/documents/2007-11-07_IMPACT_ANALYSIS.PDF

Table 4-B-2-Entrada-D2,D3,D4,D5,D6
CARB 2020 NAT GHG Emissions (Non-Residential D2-D6)
Entrada
Newhall Ranch, California

Building Type	CEUS Building Type	Size	Energy Type	Unit	CARB 2020 NAT Energy Use[1]	CO_2e Emissions[2]	Total CARB 2020 NAT CO_2e Emissions[3]
		[SF]			[Unit/SF/yr]	[tonnes CO_2e/SF/yr]	[tonnes CO_2e/yr]
Grocery	Grocery	45000	Electricity	kWh	40.11	1.24E-02	556
			Gas	kBTU	23.32	1.24E-03	56
Hotel	Lodging	200000	Electricity	kWh	9.08	2.80E-03	560
			Gas	kBTU	25.86	1.37E-03	274
Institutional (schools, library, etc.)	School	60000	Electricity	kWh	7.09	2.19E-03	131
			Gas	kBTU	11.80	6.26E-04	38
Misc Retail / Commercial / Office	Large Office	31250	Electricity	kWh	16.66	5.13E-03	160
			Gas	kBTU	11.99	6.36E-04	20
Misc Retail / Commercial / Office	Restaurant	50000	Electricity	kWh	48.33	1.49E-02	744
			Gas	kBTU	234.36	1.24E-02	622
Misc Retail / Commercial / Office	Retail	137500	Electricity	kWh	15.97	4.92E-03	676
			Gas	kBTU	1.83	9.69E-05	13
Misc Retail / Commercial / Office	Small Office	31250	Electricity	kWh	13.28	4.09E-03	128
			Gas	kBTU	13.09	6.95E-04	22
Public Safety	Miscellaneous	15000	Electricity	kWh	12.57	3.87E-03	58
			Gas	kBTU	19.81	1.05E-03	16
						Total	**4,074**

Notes:

1. Baseline usage rates were taken from the 2006 California Commercial End-Use Survey (CEUS), performed by Itron under contract to the California Energy Commission (CEC). Energy use rates are based on 2002 consumption data. ENVIRON used data for Southern California Edison (SCE), Zone 9, which is the sector in which the Entrada would be located. The CARB 2020 NAT scenario uses 2005 Title 24 building standards since this is what ARB used in their Scoping Plan. ENVIRON used the 2002 CEUS data to represent energy use for buildings that are minimally compliant with the 2001 Title 24 standards. Title 24 usage rates have been adjusted to reflect improvements in Title 24 building codes from 2002 to 2005 according to CEC's "Impact Analysis for 2005 Energy Efficiency Standards" .

2. GHG emission factors are calculated by multiplying the corresponding usage rates or usages by the conversion factors.

3. The total GHG emissions are calcualted by multiplying the corresponding usage rates or usages by the conversion factors and the total square footage of the buildings.

Abbreviations:
CARB 2020 NAT - California Air Resources Board Scoping Plan projections for 2020 if no actions are taken.
CEC - California Energy Commission
CEUS - California Commerical End-Use Survey
CO_2 - carbon dioxide
CO_2e - carbon dioxide equivalent
GHG - greenhouse gas
kBTU - kilo (1000) British thermal units
kWh - kilowatt hour
SCE - Southern California Edison
SF - square feet
tonnes - metric tonnes
yr - year

Sources:
California Energy Commission. 2006. California Commercial End-Use Survey. Prepared by Itron Inc. Available at: Available at: http://www.energy.ca.gov/ceus/
California Energy Commission. 2003. Impact Analysis: 2005 Update to the California Energy Efficiency Standards for Residential and Nonresidential Buildings. Available at: http://www.energy.ca.gov/title24/2005standards/archive/rulemaking/documents/2003-07-11_400-03-014.PDF
California Energy Commission. 2007. Impact Analysis: 2008 Update to the California Energy Efficiency Standards for Residential and Nonresidential Buildings. Available at: http://www.energy.ca.gov/title24/2008standards/rulemaking/documents/2007-11-07_IMPACT_ANALYSIS.PDF

Table 4-B-2-Entrada-D7
Business-As-Usual GHG Emissions (Non-Residential D7)
Entrada
Newhall Ranch, California

Building Type	CEUS Building Type	Size	Energy Type	Unit	CARB 2020 NAT Energy Use[1]	CO_2e Emissions[2]	Total CARB 2020 NAT CO_2e Emissions[3]
		[SF]			[Unit/SF/yr]	[tonnes CO_2e/SF/yr]	[tonnes CO_2e/yr]
Misc Retail / Commercial / Office	Large Office	6250	Electricity	kWh	16.66	5.13E-03	32
			Gas	kBTU	11.99	6.36E-04	4
Misc Retail / Commercial / Office	Restaurant	10000	Electricity	kWh	48.33	1.49E-02	149
			Gas	kBTU	234.36	1.24E-02	124
Misc Retail / Commercial / Office	Retail	27500	Electricity	kWh	15.97	4.92E-03	135
			Gas	kBTU	1.83	9.69E-05	3
Misc Retail / Commercial / Office	Small Office	6250	Electricity	kWh	13.28	4.09E-03	26
			Gas	kBTU	13.09	6.95E-04	4
						Total	**477**

Notes:

1. Baseline usage rates were taken from the 2006 California Commercial End-Use Survey (CEUS), performed by Itron under contract to the California Energy Commission (CEC). Energy use rates are based on 2002 consumption data. ENVIRON used data for Southern California Edison (SCE), Zone 9, which is the sector in which the Entrada would be located.

The CARB 2020 NAT scenario uses 2005 Title 24 building standards since this is what ARB used in their Scoping Plan. ENVIRON used the 2002 CEUS data to represent energy use for buildings that are minimally compliant with the 2001 Title 24 standards. Title 24 usage rates have been adjusted to reflect improvements in Title 24 building codes from 2002 to 2005 according to CEC's "Impact Analysis for 2005 Energy Efficiency Standards" .

2. GHG emission factors are calculated by multiplying the corresponding usage rates or usages by the conversion factors.

3. The total GHG emissions are calcualted by multiplying the corresponding usage rates or usages by the conversion factors and the total square footage of the buildings.

Abbreviations:
CARB 2020 NAT - California Air Resources Board Scoping Plan projections for 2020 if no actions are taken.
CEC - California Energy Commission
CEUS - California Commerical End-Use Survey
CO_2 - carbon dioxide
CO_2e - carbon dioxide equivalent
GHG - greenhouse gas
kBTU - kilo (1000) British thermal units
kWh - kilowatt hour
SCE - Southern California Edison
SF - square feet
tonnes - metric tonnes
yr - year

Sources:
California Energy Commission. 2006. California Commercial End-Use Survey. Prepared by Itron Inc. Available at: Available at: http://www.energy.ca.gov/ceus/
California Energy Commission. 2003. Impact Analysis: 2005 Update to the California Energy Efficiency Standards for Residential and Nonresidential Buildings. Available at: http://www.energy.ca.gov/title24/2005standards/archive/rulemaking/documents/2003-07-11_400-03-014.PDF
California Energy Commission. 2007. Impact Analysis: 2008 Update to the California Energy Efficiency Standards for Residential and Nonresidential Buildings. Available at: http://www.energy.ca.gov/title24/2008standards/rulemaking/documents/2007-11-07_IMPACT_ANALYSIS.PDF

Table 4-B-2-VCC-D2,D3
CARB 2020 NAT GHG Emissions (Non-Residential D2-D3)
Valencia Commerce Center
Newhall Ranch, California

Building Type	CEUS Building Type	Size	Energy Type	Unit	CARB 2020 NAT Energy Use[1]	CO_2e Emissions[2]	Total CARB 2020 NAT CO_2e Emissions[3]
		[SF]			[Unit/SF/yr]	[tonnes CO_2e/SF/yr]	[tonnes CO_2e/yr]
Business Park / Industrial	Large Office	525000	Electricity	kWh	16.66	5.13E-03	2695
			Gas	kBTU	11.99	6.36E-04	334
Business Park / Industrial	Large Office	1750000	Electricity	kWh	16.66	5.13E-03	8982
			Gas	kBTU	11.99	6.36E-04	1113
Business Park / Industrial	Refrigerated Wharehouse	350000	Electricity	kWh	17.52	5.40E-03	1889
			Gas	kBTU	1.18	6.27E-05	22
Business Park / Industrial	Small Office	525000	Electricity	kWh	13.28	4.09E-03	2148
			Gas	kBTU	13.09	6.95E-04	365
Business Park / Industrial	Unrefrigerated Wharehouse	350000	Electricity	kWh	4.59	1.41E-03	494
			Gas	kBTU	1.05	5.58E-05	20
						Total	**18,061**

Notes:

1. Baseline usage rates were taken from the 2006 California Commercial End-Use Survey (CEUS), performed by Itron under contract to the California Energy Commission (CEC). Energy use rates are based on 2002 consumption data. ENVIRON used data for Southern California Edison (SCE), Zone 9, which is the sector in which the Newhall Ranch would be located.

The CARB 2020 NAT scenario uses 2005 Title 24 building standards since this is what ARB used in their Scoping Plan. ENVIRON used the 2002 CEUS data to represent energy use for buildings that are minimally compliant with the 2001 Title 24 standards. Title 24 usage rates have been adjusted to reflect improvements in Title 24 building codes from 2002 to 2005 according to CEC's "Impact Analysis for 2005 Energy Efficiency Standards" .

2. GHG emission factors are calculated by multiplying the corresponding usage rates or usages by the conversion factors.

3. The total GHG emissions are calcualted by multiplying the corresponding usage rates or usages by the conversion factors and the total square footage of the buildings.

Abbreviations:

CARB 2020 NAT - California Air Resources Board Scoping Plan projections for 2020 if no actions are taken.
CEC - California Energy Commission
CEUS - California Commerical End-Use Survey
CO_2 - carbon dioxide
CO_2e - carbon dioxide equivalent
GHG - greenhouse gas
kBTU - kilo (1000) British thermal units
kWh - kilowatt hour
SCE - Southern California Edison
SF - square feet
tonnes - metric tonnes
yr - year

Sources:

California Energy Commission. 2006. California Commercial End-Use Survey. Prepared by Itron Inc. Available at: Available at: http://www.energy.ca.gov/ceus/
California Energy Commission. 2003. Impact Analysis: 2005 Update to the California Energy Efficiency Standards for Residential and Nonresidential Buildings. Available at: http://www.energy.ca.gov/title24/2005standards/archive/rulemaking/documents/2003-07-11_400-03-014.PDF
California Energy Commission. 2007. Impact Analysis: 2008 Update to the California Energy Efficiency Standards for Residential and Nonresidential Buildings. Available at: http://www.energy.ca.gov/title24/2008standards/rulemaking/documents/2007-11-07_IMPACT_ANALYSIS.PDF

Table 4-C-1
CARB 2020 NAT Mobile Source Housing Density Adjustment
Newhall Land
Newhall Ranch, California

Site	Design Alternative	Newhall							Santa Clarita Valley[1]					Reduction
		ADT Rate/Dwelling Unit[2]		Dwelling Unit[2]		Trips[2]		Trip/DU	Dwelling Unit[3]		Trips[3]		Trip/DU	
		SF Residential	MF Residential	SF Residential	MF Residential	SF Residential	MF Residential	--	SF Residential	MF Residential	SF Residential	MF Residential	--	
Newhall	D2	9.9	7.8	6,683	14,202	66,164	110,168	8.4	79,117	46,276	775,575	356,606	9.0	6%
	D3	9.9	7.8	6,539	13,894	64,732	107,784	8.4					9.0	6%
	D4	9.9	7.8	6,631	14,090	65,644	109,303	8.4					9.0	6%
	D5	9.9	7.8	6,463	13,733	63,981	106,534	8.4					9.0	6%
	D6	9.9	7.8	5,271	11,200	52,180	86,885	8.4					9.0	6%
	D7	9.9	7.8	5,271	11,200	52,180	86,885	8.4					9.0	6%
Entrada	D2	9.9	7.8	552	1,173	5,465	9,099	8.4					9.0	6%
	D3	9.9	7.8	360	765	3,564	5,934	8.4					9.0	6%
	D4	9.9	7.8	360	765	3,564	5,934	8.4					9.0	6%
	D5	9.9	7.8	307	652	3,038	5,059	8.4					9.0	6%
	D6	9.9	8.0	273	579	2,699	4,635	8.6					9.0	5%
	D7	9.9	7.8	273	579	2,699	4,494	8.4					9.0	6%

Notes:

1. The area of Santa Clarita Valley at full build-out, excluding the Newhall Ranch development, represents the CARB 2020 NAT scenario. Newhall has a larger percentage of multifamily homes (68% MF) as compared to the rest of Santa Clarita Valley (37% MF), which results in a lower trip rate.
2. Number of DU and trip rate for each land use type for Newhall presented in previous tables.
3. Number of DU and total trips for each land use type for Santa Clarita Valley obtained from the Austin Faust traffic study (2006) at full build-out, subtracting the contributions from Newhall Ranch development. Number of DU and total trips for each land use type for Newhall Ranch and Entrada from Climate Change Technical Report prepared by ENVIRON (2009).

Abreviations:

ADT - Average Daily Trip
CARB 2020 NAT - California Air Resources Board Scoping Plan projections for 2020 if no actions are taken.
DU - Dwelling Unit
MF - MultiFamily
SF - Single Family

Source:

Newhall Ranch RMDP and SCP EIR/EIS, Traffic Analysis, November 2006, Austin Foust Associates.
Climate Change Technical Report, Resource Management and Development Plan, Spineflower Conservation Plan, January 2009, ENVIRON.

Table 4-C-2
CARB 2020 NAT Mobile Source Greenhouse Gas Emissions
Newhall Land
Newhall Ranch, California

Scenario	Site	Design Alternative	Daily Trips[1]	Annual VMT[2]	Emission Factor Running (g/mile)[3]	Emission Factor Starts (g/start)[4]	CO_2 Emissions Running (tonne)	CO_2 Emissions Starts (tonne)	Total CO_2 Emissions (tonne)	Total CO_2e Emissions (tonne)[3]	Pavley Reduction (-)[5]	Final CO_2e Emissions (tonne)
Project	Newhall	D2	120,564	336,230,258	353	106	118,719	4,665	123,384	129,878	20%	103,583
		D3	117,955	328,953,452	353	106	116,149	4,564	120,713	127,067	20%	101,341
		D4	119,618	333,590,001	353	106	117,786	4,629	122,415	128,858	20%	102,770
		D5	116,587	325,137,959	353	106	114,802	4,511	119,313	125,593	20%	100,166
		D6	114,226	318,553,417	353	106	112,477	4,420	116,897	123,049	20%	98,137
		D7	95,083	265,168,713	353	106	93,628	3,679	97,307	102,428	20%	81,691
	Entrada	D2	9,958	27,770,993	353	106	9,806	385	10,191	10,727	20%	8,555
		D3	6,494	18,111,517	353	106	6,395	251	6,646	6,996	20%	5,580
		D4	6,494	18,111,517	353	106	6,395	251	6,646	6,996	20%	5,580
		D5	5,536	15,439,062	353	106	5,451	214	5,666	5,964	20%	4,756
		D6	2,503	6,980,980	353	106	2,465	97	2,562	2,697	20%	2,151
		D7	4,918	13,716,456	353	106	4,843	190	5,033	5,298	20%	4,226
CARB 2020 NAT	Newhall	D2	128,933	359,569,201	353	106	126,959	4,989	131,948	138,893	-	138,893
		D3	126,143	351,787,287	353	106	124,211	4,881	129,093	135,887	-	135,887
		D4	127,921	356,745,675	353	106	125,962	4,950	130,912	137,802	-	137,802
		D5	124,680	347,706,947	353	106	122,771	4,824	127,595	134,311	-	134,311
		D6	122,155	340,665,348	353	106	120,284	4,727	125,011	131,591	-	131,591
		D7	101,683	283,575,021	353	106	100,127	3,935	104,061	109,538	-	109,538
	Entrada	D2	10,649	29,698,677	353	106	10,486	412	10,898	11,472	-	11,472
		D3	6,945	19,368,702	353	106	6,839	269	7,108	7,482	-	7,482
		D4	6,945	19,368,702	353	106	6,839	269	7,108	7,482	-	7,482
		D5	5,920	16,510,743	353	106	5,830	229	6,059	6,378	-	6,378
		D6	2,626	7,322,453	353	106	2,585	102	2,687	2,828	-	2,828
		D7	5,260	14,668,564	353	106	5,179	204	5,383	5,666	-	5,666

Notes:

1. Daily trips calculated by dividing Newhall trips presented in table 4-D-2 by (1- reduction% presented in table 5-D-1).
2. Annual VMT calculated by dividing Newhall VMT presented in table 4-D-2 by (1-reduction% presented in table 5-D-1).
3. Emission factors for vehicles based on weighted average of EMFAC estimates for all LDA, LT1, LT2, MDV and MCY classes in 2020 for Los Angeles County, evaluated at 35 mph.
4. Starting emission factors based on the weighted average distribution of time between trip starts from URBEMIS defaults and EMFAC emission estimates for each time period (i.e., 5 min, 10 min, and so on).
5. Estimated 2020 emissions reduction resulting from California fuel efficiency regulation adopted by Air Resources Board in their final form on August 4, 2005 pursuant to AB1493 (Pavley) signed into law in 2002. The percentage reduction calculated by dividing 100.5 tons/day of reduction by 496.4 tons/day of baseline emissions presented in Table 11 of ARB (2008).

Abbreviations:

ADT - Average Daily Trip
ARB - California Air Resources Board
CARB 2020 NAT - California Air Resources Board Scoping Plan projections for 2020 if no actions are taken.
CH_4 - Methane
CO_2 - Carbon Dioxide
CO_2e - Carbon Dioxide Equivalent
EMFAC - EMission FACtors model
GHG - Greenhouse Gas
HFC - Hydro fluorocarbon
LDA - Light Duty Automobile as defined in EMFAC
LDT1 - Light Duty Trucks Class I as defined in EMFAC
LDT2 - Light Duty Trucks Class II as defined in EMFAC
MDV - Medium Duty Trucks as defined in EMFAC
MCY - Motocycle
N_2O - Nitrous oxide
URBEMIS - URBan EMISsions model
VMT - Vehicle Miles Traveled

Source:

Comparison of Greenhouse Gas Reductions for the United States and Canada under U.S. CAFE Standards and California Air Resources Board Greenhouse Gas Regulations, February 2008. California Air Resources Board.

Table 4-E-1-NRSP
GHG Emissions for Municipal Sources from the Newhall Ranch Specific Plan - CARB 2020 NAT
Newhall Land
Newhall Ranch, California

Source[1]	Energy Requirements	Units	Emission Factor	Units	Source Quantity[11]	Units	Total CO_2e Emission [Tonne CO_2e per year]
Lighting							
Public Lighting[2]	148.7	kW-hr/capita/yr	0.046	tonne CO_2e/capita/year	58,860	residents (capita)	2,695
						Lighting Total:	**2,695**
Municipal Vehicles							
Municipal Vehicles[3]	--	--	0.05	tonne CO_2e/capita/year	58,860	residents (capita)	2,943
						Municipal Vehicles Total:	**2,943**
Water and Wastewater							
Groundwater Supply and Conveyance (Potable)[4]	950	kW-hr/acre-foot	0.29	tonne CO_2e/acre-foot	0	acre-feet/yr	0
Average Southern California Supply And Conveyance[5]	3,170	kW-hr/acre-foot	0.98	tonne CO_2e/acre-foot	16400	acre-feet/yr	16,007
Water Treatment (Potable)[6]	36	kW-hr/acre-foot	0.01	tonne CO_2e/acre-foot	8,135	acre-feet/yr	91
Water Distribution (Potable)[7]	414	kW-hr/acre-foot	0.13	tonne CO_2e/acre-foot	8,135	acre-feet/yr	1,038
Wastewater Treatment (Indirect Emissions)[8]	623	kW-hr/acre-foot	0.19	tonne CO_2e/acre-foot	10,343	acre-feet/yr	1,983
Wastewater Treament Plant (Direct Emissions)[9]	--	--	0.084	tonne CO_2e/capita/year	58,860	residents (capita)	4,964
Recycled Water Distribution (Non-Potable)[10]	978	kW-hr/acre-foot	0.30	tonne CO_2e/acre-foot	0	acre-feet/yr	0
						Water and Wastewater Total:	**24,083**
							29,721

Notes:

1. Public Lighting includes streetlights, traffic signals, area lighting and lighting municipal buildings. Emissions from the Water and Wastewater category are primarily due to the energy required for supply, treatment and distribution. GHG emissions attributed to electricity use are calculated using the Southern California Edison carbon-intensity factor

2. Emission factor for public lighting is based on a study of energy usage and GHG emissions from Duluth, MN and the Southern California-specific electricity generation emission factor from Southern California Edison.

3. Emission factors for municipal vehicles are based on the most conservative number from studies of GHG emission for four cities of different sizes: Medford, MA; Duluth, MN; Northampton, MA; and Santa Rosa, CA. Population data provided by the US Census (2000).

4. Emission factor for groundwater supply and conveyance is based on the estimated energy necessary to pump and convey 1 million gallons of groundwater in Southern California's Chino Basin and the Southern California-specific electricity generation emission factor from Southern California Edison. This factor is not applicable to the BAU scenario but was used in the Newhall Ranch Specific Plan inventory and is provided here for comparison.

5. Emission factor accounts for the various ways water is supplied, the energy intensities of those methods and the amount each method is used. The CEC estimates that 50% of Southern California's water from the State Water Project is supplied by importing water from Northern California and the Colorado River. For the BAU scenario, ENVIRON assumed that all water is sourced from the State Water Project. This factor is applied to total water demand.

6. Emission factor for water treatment is based on a Navigant Consulting refinement of a CEC study on the energy necessary to initially treat 1 million gallons of water and the Southern California-specific electricity generation emission factor from Southern California Edison. This factor is applied to potable water demand.

7. Emission factor for water distribution is based on a Navigant Consulting refinement of a CEC study on the energy necessary to distribute 1 million gallons of treated water and the Southern California-specific electricity generation emission factor from Southern California Edison. This factor is applied to potable water demand.

8. Emission factor for wastewater treatment is based on a Navigant Consulting refinement of a CEC study on the energy necessary to treat 1 million gallons of wastewater for indoor (i.e., potable or other household) use and the Southern California-specific electricity generation emission factor from Southern California Edison.

9. Emission factor for the wastewater treatment plant accounts for direct methane and nitrous oxide emissions from wastewater. The value used here is based on the 2005 US inventory of GHG emissions for domestic wastewater treatment plants (USEPA) divided by the 2005 US population. (25 Tg CO_2e/year/296,410,404 people = 0.093 ton CO_2e/capita/year)

10. Emission factor for recycled water distribution is based on an estimate of the energy necessary to redistrubute 1 million gallons of reclaimed water (i.e., treated wastewater) and the Southern-California specific electricity generation emission factor from Southern California Edison. For the BAU scenario, ENVIRON assumed that no water is recycled.

11. Source quantities for potable and non-potable water demand are provided by Newhall. The source quantity for wastewater treatment indirect emissions is scaled up from the non-potable water demand based on the ratio of the two quantities from Landmark Village (wastewater treatment quantities specific to Newhall Ranch were unavailable).

Abbreviations:

CARB 2020 NAT - California Air Resources Board Scoping Plan projections for 2020 if no actions are taken
CEC - California Energy Commission
CO_2e - carbon dioxide equivalent
GHG - Greenhouse Gas
kW-hr - kilowatt hour
MW-hr - megawatt hour
Tg - teragram
USEPA - United States Environmental Protection Agency

References:

California Climate Action Registry Database. Southern California Edison PUP. 2007. Available at: http://www.climateregistry.org/CarrotDocs/26/2007/SCEPUP07r3.xls. Accessed on July, 2, 2009.

California Energy Commission. 2005. *California's Water-Energy Relationship* . Final Staff Report. CEC-700-2005-011-SF.

California Energy Commission. 2006. *Refining Estimates of Water-Related Energy Use in California.* PIER Final Project Report. Prepared by Navigant Consulting, Inc. CEC-500-2006-118. December.

City of Medford. 2001. Climate Action Plan. October. http://www.massclimateaction.org/pdf/MedfordPlan2001.pdf

City of Northampton. 2006. Greenhouse Gas Emissions Inventory. Cities for Climate Protection Campaign. June. http://www.northamptonma.gov/uploads/listWidget/3208/NorthamptonInventoryClimateProtection.pdf

City of Santa Rosa. Cities for Climate Protection: Santa Rosa. http://ci.santa-rosa.ca.us/City_Hall/City_Manager/CCPFinalReport.pdf

M/J Industrial Solutions. 2003. Municipal Wastewater Treatment Plant Energy Baseline Study. June. www.cee1.org/ind/mot-sys/ww/pge1.pdf

Skoog., C. 2001. Greenhouse Gas Inventory and Forecast Report. City of Duluth Facilities Management and The International Council for Local Environmental Initiatives. October.http://www.ci.duluth.mn.us/city/information/ccp/GHGEmissions.pdf

USEPA. 2007. Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2005. #430-R-07-002. April. http://epa.gov/climatechange/emissions/downloads06/07Waste.pdf

Table 4-E-1-Entrada
GHG Emissions for Municipal Sources from Entrada - CARB 2020 NAT
Newhall Land
Newhall Ranch, California

Source[1]	Energy Requirements	Units	Emission Factor	Units	Source Quantity[11]	Units	Total CO_2e Emission [Tonne CO_2e per year]
Lighting							
Public Lighting[2]	148.7	kW-hr/capita/yr	0.046	tonne CO_2e/capita/year	4,862	residents (capita)	223
						Lighting Total:	**223**
Municipal Vehicles							
Municipal Vehicles[3]	--	--	0.05	tonne CO_2e/capita/year	4,862	residents (capita)	243
						Municipal Vehicles Total:	**243**
Water and Wastewater							
Groundwater Supply and Conveyance (Potable)[4]	950	kW-hr/acre-foot	0.29	tonne CO_2e/acre-foot	0	acre-feet/yr	0
Average Southern California Supply And Conveyance[5]	3,170	kW-hr/acre-foot	0.98	tonne CO_2e/acre-foot	2,429	acre-feet/yr	2,371
Water Treatment (Potable)[6]	36	kW-hr/acre-foot	0.01	tonne CO_2e/acre-foot	1,721	acre-feet/yr	19
Water Distribution (Potable)[7]	414	kW-hr/acre-foot	0.13	tonne CO_2e/acre-foot	1,721	acre-feet/yr	220
Wastewater Treatment (Indirect Emissions)[8]	623	kW-hr/acre-foot	0.19	tonne CO_2e/acre-foot	886	acre-feet/yr	170
Wastewater Treament Plant (Direct Emissions)[9]	--	--	0.084	tonne CO_2e/capita/year	4,862	residents (capita)	410
Recycled Water Distribution (Non-Potable)[10]	978	kW-hr/acre-foot	0.30	tonne CO_2e/acre-foot	0	acre-feet/yr	0
						Water and Wastewater Total:	**3,189**
							3,655

Notes:

1. Public Lighting includes streetlights, traffic signals, area lighting and lighting municipal buildings. Emissions from the Water and Wastewater category are primarily due to the energy required for supply, treatment and distribution. GHG emissions attributed to electricity use are calculated using the Southern California Edison carbon-intensity factor

2. Emission factor for public lighting is based on a study of energy usage and GHG emissions from Duluth, MN and the Southern California-specific electricity generation emission factor from Southern California Edison.

3. Emission factors for municipal vehicles are based on the most conservative number from studies of GHG emission for four cities of different sizes: Medford, MA; Duluth, MN; Northampton, MA; and Santa Rosa, CA. Population data provided by the US Census (2000).

4. Emission factor for groundwater supply and conveyance is based on the estimated energy necessary to pump and convey 1 million gallons of groundwater in Southern California's Chino Basin and the Southern California-specific electricity generation emission factor from Southern California Edison. This factor is provided only for purposes of comparison and was not used in this inventory. ENVIRON assumed that all water in this inventory is sourced from the State Water Project.

5. Emission factor accounts for the various ways water is supplied, the energy intensities of those methods and the amount each method is used. The CEC estimates that 50% of Southern California's water from the State Water Project is supplied by importing water from Northern California and the Colorado River. This factor is applied to total water demand.

6. Emission factor for water treatment is based on a Navigant Consulting refinement of a CEC study on the energy necessary to initially treat 1 million gallons of water and the Southern California-specific electricity generation emission factor from Southern California Edison. This factor is applied to potable water demand.

7. Emission factor for water distribution is based on a Navigant Consulting refinement of a CEC study on the energy necessary to distribute 1 million gallons of treated water and the Southern California-specific electricity generation emission factor from Southern California Edison. This factor is applied to potable water demand.

8. Emission factor for wastewater treatment is based on a Navigant Consulting refinement of a CEC study on the energy necessary to treat 1 million gallons of wastewater for indoor (i.e., potable or other household) use and the Southern California-specific electricity generation emission factor from Southern California Edison.

9. Emission factor for the wastewater treatment plant accounts for direct methane and nitrous oxide emissions from wastewater. The value used here is based on the 2005 US inventory of GHG emissions for domestic wastewater treatment plants (USEPA) divided by the 2005 US population. (25 Tg CO_2e/year/296,410,404 people = 0.093 ton CO_2e/capita/year)

10. Emission factor for recycled water distribution is based on an estimate of the energy necessary to redistrubute 1 million gallons of reclaimed water (i.e., treated wastewater) and the Southern-California specific electricity generation emission factor from Southern California Edison. For the BAU scenario, ENVIRON assumed that no water is recycled.

11. Source quantities for potable and non-potable water demand are provided by Newhall. The source quantity for wastewater treatment indirect emissions is scaled up from the non-potable water demand based on the ratio of the two quantities from Landmark Village (wastewater treatment quantities specific to Newhall Ranch were unavailable).

Abbreviations:

CARB 2020 NAT - California Air Resources Board Scoping Plan projections for 2020 if no actions are taken
CEC - California Energy Commission
CO_2e - carbon dioxide equivalent
GHG - Greenhouse Gas
kW-hr - kilowatt hour
MW-hr - megawatt hour
Tg - teragram
USEPA - United States Environmental Protection Agency

References:

California Climate Action Registry Database. Southern California Edison PUP. 2007. Available at: http://www.climateregistry.org/CarrotDocs/26/2007/SCEPUP07r3.xls. Accessed on July, 2, 2009.

California Energy Commission. 2005. *California's Water-Energy Relationship* . Final Staff Report. CEC-700-2005-011-SF.

California Energy Commission. 2006. *Refining Estimates of Water-Related Energy Use in California*. PIER Final Project Report. Prepared by Navigant Consulting, Inc. CEC-500-2006-118. December.

City of Medford. 2001. Climate Action Plan. October. http://www.massclimateaction.org/pdf/MedfordPlan2001.pdf

City of Northampton. 2006. Greenhouse Gas Emissions Inventory. Cities for Climate Protection Campaign. June. http://www.northamptonma.gov/uploads/listWidget/3208/NorthamptonInventoryClimateProtection.pdf

City of Santa Rosa. Cities for Climate Protection: Santa Rosa. http://ci.santa-rosa.ca.us/City_Hall/City_Manager/CCPFinalReport.pdf

M/J Industrial Solutions. 2003. Municipal Wastewater Treatment Plant Energy Baseline Study. June. www.cee1.org/ind/mot-sys/ww/pge1.pdf

Skoog., C. 2001. Greenhouse Gas Inventory and Forecast Report. City of Duluth Facilities Management and The International Council for Local Environmental Initiatives. October.http://www.ci.duluth.mn.us/city/information/ccp/GHGEmissions.pdf

USEPA. 2007. Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2005. #430-R-07-002. April. http://epa.gov/climatechange/emissions/downloads06/07Waste.pdf

Table 4-E-1-VCC
GHG Emissions for Municipal Sources from the Valencia Commerce Center - CARB 2020 NAT
Newhall Land
Newhall Ranch, California

Source[1]	Energy Requirements	Units	Emission Factor	Units	Source Quantity[11]	Units	Total CO_2e Emission [Tonne CO_2e per year]
Lighting							
Public Lighting[2]	148.7	kW-hr/capita/yr	NA	tonne CO_2e/capita/year	NA	residents (capita)	183
						Lighting Total:	**183**
Municipal Vehicles							
Municipal Vehicles[3]	--	--	NA	tonne CO_2e/capita/year	NA	residents (capita)	200
						Municipal Vehicles Total:	**200**
Water and Wastewater							
Groundwater Supply and Conveyance (Potable)[4]	950	kW-hr/acre-foot	0.29	tonne CO_2e/acre-foot	0	acre-feet/yr	0
Average Southern California Supply And Conveyance[5]	3,170	kW-hr/acre-foot	0.98	tonne CO_2e/acre-foot	1080	acre-feet/yr	1,054
Water Treatment (Potable)[6]	36	kW-hr/acre-foot	0.01	tonne CO_2e/acre-foot	608	acre-feet/yr	7
Water Distribution (Potable)[7]	414	kW-hr/acre-foot	0.13	tonne CO_2e/acre-foot	608	acre-feet/yr	78
Wastewater Treatment (Indirect Emissions)[8]	623	kW-hr/acre-foot	0.19	tonne CO_2e/acre-foot	591	acre-feet/yr	113
Wastewater Treament Plant (Direct Emissions)[9]	--	--	0.084	tonne CO_2e/capita/year	NA	residents (capita)	337
Recycled Water Distribution (Non-Potable)[10]	978	kW-hr/acre-foot	0.30	tonne CO_2e/acre-foot	0	acre-feet/yr	0
						Water and Wastewater Total:	**1,589**
							1,972

Notes:

1. Public Lighting includes streetlights, traffic signals, area lighting and lighting municipal buildings. Emissions from the Water and Wastewater category are primarily due to the energy required for supply, treatmer and distribution. GHG emissions attributed to electricity use are calculated using the Southern California Edison carbon-intensity factor

2. Emission factor for public lighting is based on a study of energy usage and GHG emissions from Duluth, MN and the Southern California-specific electricity generation emission factor from Southern California Edison.

3. Emission factors for municipal vehicles are based on the most conservative number from studies of GHG emission for four cities of different sizes: Medford, MA; Duluth, MN; Northampton, MA; and Santa Rosa, CA. Population data provided by the US Census (2000).

4. Emission factor for groundwater supply and conveyance is based on the estimated energy necessary to pump and convey 1 million gallons of groundwater in Southern California's Chino Basin and the Southern California-specific electricity generation emission factor from Southern California Edison. This factor is provided only for purposes of comparison and was not used in this inventory. ENVIRON assumed that all water in this inventory is sourced from the State Water Project.

5. Emission factor accounts for the various ways water is supplied, the energy intensities of those methods and the amount each method is used. The CEC estimates that 50% of Southern California's water from the State Water Project is supplied by importing water from Northern California and the Colorado River. This factor is applied to total water demand.

6. Emission factor for water treatment is based on a Navigant Consulting refinement of a CEC study on the energy necessary to initially treat 1 million gallons of water and the Southern California-specific electricity generation emission factor from Southern California Edison. This factor is applied to potable water demand.

7. Emission factor for water distribution is based on a Navigant Consulting refinement of a CEC study on the energy necessary to distribute 1 million gallons of treated water and the Southern California-specific electricity generation emission factor from Southern California Edison. This factor is applied to potable water demand.

8. Emission factor for wastewater treatment is based on a Navigant Consulting refinement of a CEC study on the energy necessary to treat 1 million gallons of wastewater for indoor (i.e., potable or other household) use and the Southern California-specific electricity generation emission factor from Southern California Edison.

9. Emission factor for the wastewater treatment plant accounts for direct methane and nitrous oxide emissions from wastewater. The value used here is based on the 2005 US inventory of GHG emissions for domestic wastewater treatment plants (USEPA) divided by the 2005 US population. (25 Tg CO_2e/year/296,410,404 people = 0.093 ton CO_2e/capita/year)

10. Emission factor for recycled water distribution is based on an estimate of the energy necessary to redistrubute 1 million gallons of reclaimed water (i.e., treated wastewater) and the Southern-California specific electricity generation emission factor from Southern California Edison. For the BAU scenario, ENVIRON assumed that no water is recycled.

11. Source quantities for potable and non-potable water demand are provided by Newhall. The source quantity for wastewater treatment indirect emissions is scaled up from the non-potable water demand based on the ratio of the two quantities from Landmark Village (wastewater treatment quantities specific to Newhall Ranch were unavailable).

Abbreviations:

CARB 2020 NAT - California Air Resources Board Scoping Plan projections for 2020 if no actions are taken
CEC - California Energy Commission
CO_2e - carbon dioxide equivalent
GHG - Greenhouse Gas
kW-hr - kilowatt hour
MW-hr - megawatt hour
Tg - teragram
USEPA - United States Environmental Protection Agency

References:

California Climate Action Registry Database. Southern California Edison PUP. 2007. Available at: http://www.climateregistry.org/CarrotDocs/26/2007/SCEPUP07r3.xls. Accessed on July, 2, 2009.

California Energy Commission. 2005. *California's Water-Energy Relationship* . Final Staff Report. CEC-700-2005-011-SF.

California Energy Commission. 2006. *Refining Estimates of Water-Related Energy Use in California.* PIER Final Project Report. Prepared by Navigant Consulting, Inc. CEC-500-2006-118. December.

City of Medford. 2001. Climate Action Plan. October. http://www.massclimateaction.org/pdf/MedfordPlan2001.pdf

City of Northampton. 2006. Greenhouse Gas Emissions Inventory. Cities for Climate Protection Campaign. June. http://www.northamptonma.gov/uploads/listWidget/3208/NorthamptonInventoryClimateProtection.pdf

City of Santa Rosa. Cities for Climate Protection: Santa Rosa. http://ci.santa-rosa.ca.us/City_Hall/City_Manager/CCPFinalReport.pdf

M/J Industrial Solutions. 2003. Municipal Wastewater Treatment Plant Energy Baseline Study. June. www.cee1.org/ind/mot-sys/ww/pge1.pdf

Skoog., C. 2001. Greenhouse Gas Inventory and Forecast Report. City of Duluth Facilities Management and The International Council for Local Environmental Initiatives. October.http://www.ci.duluth.mn.us/city/information/ccp/GHGEmissions.pdf

USEPA. 2007. Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2005. #430-R-07-002. April. http://epa.gov/climatechange/emissions/downloads06/07Waste.pdf

Table 4-E-2-D2
D2 GHG Emissions for Municipal Sources in Newhall Ranch, Entrada, and VCC - CARB 2020 NAT
Newhall Land
Newhall Ranch, California

Development	Public Lighting[1]	Vehicles[2]	Water/Waste Water[3]	Total Emissions
	(Tonnes CO_2e / year)			
NRSP	2,695	2,943	24,083	29,721
Entrada	223	243	3,189	3,655
VCC	183	200	1,589	1,972
TOTAL	3,100	3,386	28,862	35,348

Notes:

1. Public lighting emission factors for NRSP and Entrada are based on a study of energy usage and GHG emissions from Duluth, MN and the Southern California-specific electricity generation emission factor from Southern California Edison. As VCC contains no residential and therefore no population, emissions for public lighting are based on the Newhall Ranch emissions and the scaling factor provided in the previous tables in the municipal section.
2. Municipal vehicle emission factors for NRSP and Entrada are based on the most conservative number from studies of GHG emission for four cities of different sizes: Medford, MA; Duluth, MN; Northampton, MA; and Santa Rosa, CA. Population data provided by the US Census (2000). As VCC contains no residential and therefore no population, emissions for municipal vehicles are based on the Newhall Ranch emissions and the scaling factor provided in the previous tables in the municipal section.
3. Water and waste water emission drivers include water supply and conveyance, water treatment and distribution, waste water treatment, and recycled water distribution.

Abbreviations:

CARB 2020 NAT - California Air Resources Board Scoping Plan projections for 2020 if no actions are taken
GHG - greenhouse gas
VCC - Valencia Commerce Center
NRSP - Newhall Ranch Specific Plan
CO_2e - carbon dioxide equivalent

Table 4-E-2-D3
D3 GHG Emissions for Municipal Sources in Newhall Ranch, Entrada, and VCC[1] - CARB 2020 NAT
Newhall Land
Newhall Ranch, California

Development	Public Lighting	Vehicles	Water/Waste Water	Total Emissions
	(Tonnes CO_2e / year)			
NRSP	2,640	2,883	23,591	29,114
Entrada	155	170	2,227	2,552
VCC	183	200	1,589	1,972
TOTAL	2,978	3,253	27,407	33,638

Notes:
1. Alternative 3 values are scaled from Alternative 2 based upon total residential and non-residential building area. Alternative 2 emissions are calculated as described in previous tables and report sections.

Abbreviations:
CARB 2020 NAT - California Air Resources Board Scoping Plan projections for 2020 if no actions are taken
GHG - greenhouse gas
VCC - Valencia Commerce Center
NRSP - Newhall Ranch Specific Plan
CO_2e - carbon dioxide equivalent

Table 4-E-2-D4
D4 GHG Emissions for Municipal Sources in Newhall Ranch, Entrada, and VCC[1] - CARB 2020 NAT
Newhall Land
Newhall Ranch, California

Development	Public Lighting	Vehicles	Water/Waste Water	Total Emissions
	(Tonnes CO_2e / year)			
NRSP	2,673	2,920	23,893	29,486
Entrada	155	170	2,227	2,552
VCC	0	0	0	0
TOTAL	2,829	3,089	26,120	32,038

Notes:
1. Alternative 4 values are scaled from Alternative 2 based upon total residential and non-residential building area. Alternative 2 emissions are calculated as described in previous tables and report sections.

Abbreviations:
CARB 2020 NAT - California Air Resources Board Scoping Plan projections for 2020 if no actions are taken
GHG - greenhouse gas
VCC - Valencia Commerce Center
NRSP - Newhall Ranch Specific Plan
CO_2e - carbon dioxide equivalent

Table 4-E-2-D5
D5 GHG Emissions for Municipal Sources in Newhall Ranch, Entrada, and VCC[1] - CARB 2020 NAT
Newhall Land
Newhall Ranch, California

Development	Public Lighting	Vehicles	Water/Waste Water	Total Emissions
	(Tonnes CO_2e / year)			
NRSP	2,609	2,850	23,318	28,776
Entrada	137	149	1,960	2,246
VCC	0	0	0	0
TOTAL	2,746	2,999	25,278	31,023

Notes:
1. Alternative 5 values are scaled from Alternative 2 based upon total residential and non-residential building area. Alternative 2 emissions are calculated as described in previous tables and report sections.

Abbreviations:
CARB 2020 NAT - California Air Resources Board Scoping Plan projections for 2020 if no actions are taken
GHG - greenhouse gas
VCC - Valencia Commerce Center
NRSP - Newhall Ranch Specific Plan
CO_2e - carbon dioxide equivalent

Table 4-E-2-D6
D6 GHG Emissions for Municipal Sources in Newhall Ranch, Entrada, and VCC[1] - CARB 2020 NAT
Newhall Land
Newhall Ranch, California

Development	Public Lighting	Vehicles	Water/Waste Water	Total Emissions
	(Tonnes CO_2e / year)			
NRSP	2,558	2,794	22,865	28,218
Entrada	79	86	1,127	1,291
VCC	0	0	0	0
TOTAL	2,637	2,880	23,992	29,509

Notes:
1. Alternative 6 values are scaled from Alternative 2 based upon total residential and non-residential building area. Alternative 2 emissions are calculated as described in previous tables and report sections.

Abbreviations:
CARB 2020 NAT - California Air Resources Board Scoping Plan projections for 2020 if no actions are taken
GHG - greenhouse gas
VCC - Valencia Commerce Center
NRSP - Newhall Ranch Specific Plan
CO_2e - carbon dioxide equivalent

Table 4-E-2-D7
D7 GHG Emissions for Municipal Sources in Newhall Ranch, Entrada, and VCC[1] - CARB 2020 NAT
Newhall Land
Newhall Ranch, California

Development	Public Lighting	Vehicles	Water/Waste Water	Total Emissions
	(Tonnes CO_2e / year)			
NRSP	2,099	2,293	18,763	23,156
Entrada	98	107	1,404	1,609
VCC	0	0	0	0
TOTAL	2,197	2,400	20,168	24,765

Notes:
1. Alternative 7 values are scaled from Alternative 2 based upon total residential and non-residential building area. Alternative 2 emissions are calculated as described in previous tables and report sections.

Abbreviations:
CARB 2020 NAT - California Air Resources Board Scoping Plan projections for 2020 if no actions are taken
GHG - greenhouse gas
VCC - Valencia Commerce Center
NRSP - Newhall Ranch Specific Plan
CO_2e - carbon dioxide equivalent

Table 4-F-1
Greenhouse Gas (GHG) Emissions from Recreation Centers[1] - CARB 2020 NAT
Newhall Land
Newhall Ranch, California

Energy Use Factors (Oakland pools)[2]			Energy Use Factors (adjusted for Landmark Village pools)[3,4]			Pool Volume[5]	Annual Energy Use		Emission Factors[6]		Total Emissions per Pool[7]
						(gal)			(lb CO_2 / source unit)	Source Units	(tonnes CO_2 / yr)
Electricity	0.496	(kWh / gal / yr)	Electricity	0.496	(kWh / gal / yr)	736,263	365,049	(kWh / yr)	0.679	(kWh)	648
Natural Gas	0.023	(MMBTU / gal / yr)	Natural Gas	0.014	(MMBTU / gal / yr)		10,090	(MMBTU / yr)	117	(MMBTU)	

Notes:

1. ENVIRON assumed an outdoor competition-size swimming pool as the main source of GHGs in an aquatic/recreation center. Only CO_2 emissions are estimated and are assumed to be equivalent to total GHG emissions since the contributions from methane (CH_4) and nitrous oxide (N_2O) are negligible compared to total GHG for emissions associated with electricity generation and natural gas combustion. The emission factors in the California Climate Action Registry General Reporting Protocol show that CH_4 and N_2O emissions (in CO_2e) are less than 1% of CO_2 emissions for these processes.

2. The weighted energy consumption of 5 Oakland pools is used to calculate the baseline energy use of an average sized pool within the project site.

3. ENVIRON adjusted the natural gas usage to account for savings from high-efficiency heaters. ENVIRON conservatively assumed that the Oakland pools used 78% efficient heaters, which is the minimum efficiency legally required (see 10 CFR Part 431). According to the U.S. Department of Energy, newer pools are likely to use heaters with 89-95% efficiency (see http://www.energysavers.gov/your_home/water_heating/index.cfm/mytopic=13170). ENVIRON conservatively assumed 90% efficiency for Newhall Land pool heaters, resulting in a 12% savings over the Oakland pools.

4. ENVIRON adjusted the natural gas usage to account for the difference in average ambient temperature in Newhall and Oakland. The natural gas usage was multiplied by the following adjustment factor: (typical pool temperature - Newhall average ambient temperature) / (typical pool temperature - San Francisco-Richmond average ambient temperature) = (80 deg F - 63.3 deg F) / (80 deg F - 55.5 deg F). Typical pool temperature based on information from the Department of Energy, available at: http://www.energysavers.gov/your_home/water_heating/index.cfm/mytopic=13300. Average ambient temperatures for Newhall and San Francisco-Richmond were obtained from the Western Regional Climate Center: http://www.wrcc.dri.edu/.

5. ENVIRON assumed an outdoor competition-size (50 m x 25 yd x 8 ft) swimming pool.

6. Emission factor for electricity is provided by Southern California Edison, obtained from the California Climate Action Registry Database. The electricity generation emission factor was adjusted to reflect 20% of pow provided by renewables (2010 RPS). Emission factor for natural gas is obtained from California Climate Action Registry Reporting Protocol, Table C7.

7. Emissions for a single competition-size pool, assuming no solar heating.

8. Emissions for a single competition-size pool, assuming solar heating replaces all natural gas heating. This value now includes electricity from pumping only.

Abbreviations:

CARB 2020 NAT - California Air Resources Board Scoping Plan projections for 2020 if no actions are taken
CO_2 - carbon dioxide
CH_4 - methane
ft - foot
kWh - kilowatt-hour
lb - pound
MMBTU - Million British Thermal Units
N_2O - nitrous oxide
yr - year

Sources:

California Climate Action Registry General Reporting Protocol, Version 3.1 (January 2009). Available at: http://www.climateregistry.org/resources/docs/protocols/grp/GRP_3.1_January2009.pdf

California Climate Action Registry Database: Southern California Edison Company 2007 PUP Report. 2008. Available at: https://www.climateregistry.org/CARROT/public/Reports.aspx

Energy Efficient Commercial Pool Program; Preliminary Facility Reports for DeFremery Pool, Fremont Pool, Live Oak Pool, Lyons Pool, and Temescal Pool. City of Oakland / Oakland Unified School District. October 2006.

Managing Swimming Pool Water Temperature for Energy Efficiency (September 2009). U.S. Department of Energy. Available at: http://www.energysavers.gov/your_home/water_heating/index.cfm/mytopic=13300

Determining Gas Swimming Pool Heater Energy Efficiency (September 2009). U.S. Department of Energy. Available at: http://www.energysavers.gov/your_home/water_heating/index.cfm/mytopic=13170

Energy Efficiency Program for Certain Commercial and Industrial Equipment: Efficiency Standards for Commercial Heating, Air-Conditioning, and Water-Heating Equipment. U.S. Department of Energy, 10 CFR Part 431. Available at: http://www1.eere.energy.gov/bu

Table 4-F-2
GHG Emissions from Electricity and Natural Gas Usage in Recreation Centers[1] - CARB 2020 NAT
Newhall Land
Newhall Ranch, CA

Design Alternative	Development	Number of Pools[2]	Total Emissions[3] (Tonnes CO_2 / yr)	
2	NRSP	40	25,917	27,213
	Entrada	2	1,296	
3	NRSP	39	25,269	26,565
	Entrada	2	1,296	
4	NRSP	40	25,917	27,213
	Entrada	2	1,296	
5	NRSP	39	25,269	25,917
	Entrada	1	648	
6	NRSP	38	24,621	24,621
	Entrada	0	0	
7	NRSP	31	20,086	20,086
	Entrada	0	0	

Notes:

1. ENVIRON assumed an outdoor competition-size (50 m x 25 yd x 8 ft) swimming pool as the main source of GHGs in an

2. The number of pools for Design Alternative 2 was provided by Newhall. The numbers of pools in the NRSP area for the other design alternatives were scaled based on total residential and non-residential building area; the numbers of pools in Entrada for the other design alternatives were provided by Newhall. It is assumed that no recreation centers will be built in the VCC planning area, as only commercial and industrial land uses are considered for that planning area.

3. Total emissions from recreation centers, assuming no solar heating.

4. Total emissions from recreation centers, assuming solar heating replaces all natural gas heating. This value now includes electricity from pumping only.

Abbreviations:

CARB 2020 NAT - California Air Resources Board Scoping Plan projections for 2020 if no actions are taken

CO_2 - carbon dioxide

ft - foot

GHG - Greenhouse Gas

m - meter

yd - yard

yr - year

Sources:

California Climate Action Registry General Reporting Protocol, Version 3.1 (January 2009). Available at: http://www.climateregistry.org/resources/docs/protocols/grp/GRP_3.1_January2009.pdf

California Climate Action Registry Database: Southern California Edison Company 2007 PUP Report. 2008. Available at: https://www.climateregistry.org/CARROT/public/Reports.aspx

Energy Efficient Commercial Pool Program; Preliminary Facility Reports. Available at: http://www.oaklandpw.com/Page50.aspx

Table 4-G-1
GHG Emissions for the Golf Course - CARB 2020 NAT
Newhall Land
Newhall Ranch, California

Source	Emission Factor	Units	Quantity	Units	Total Golf Course Emissions[5] [Tonne CO_2 / yr]
Irrigation[1]	0.21	tonne CO_2/acre-foot	345	acre-feet/year	74
Mowing (Maintainence)[2]	0.43	tonne CO_2/acre-year	120	Acres Maintained	52
Electricity and Natural Gas (Building Use)[3,4]	5.89	tonne CO_2/year	1	Pro Shop (1,300 sqft)	56
	50.13	tonne CO_2/year	1	Clubhouse (11,200 sqft)	
Total					**182**

Notes:

1. Irrigation emission factor is based on an average California golf course irrigation water use of 345 acre-feet/year (from *Improving California Golf Course Water Efficiency* , pg. 14). ENVIRON assumed that the irrigation water will be pumped an average elevation of 300 ft from the Water Reclamation Plant (NRSP) to the golf course at an average pressure of 50 psi (Full Coverage Irrigation), with the emission factor for Southern California Edison electricity generation adjusted to reflect 20% of power provided by renewables (2010 RPS). The energy required to pump 1 acre-foot of water an elevation of 1 foot is 1.551 kW-hr (Kansas State University Irrigation Management Series, Table 4).

2. Mowing emission factor is based on an estimated 18 gallons of diesel used for mowing 44 acres of turf. These estimates are based on twice weekly mowing on a John Deere lightweight fairway mower (model 3235C) for 8 hours on one tank of diesel (18 gallons) at an average mowing speed of 5.5 miles per hour with a mowing span of 100 inches (John Deere Product Specifications). Approximately 22.4 lbs of CO2 are emitted for every gallon of diesel consumed (EIA Fuel and Energy Source Codes and Emission Coefficients). Acres maintained reflects 2/3 of overall golf course size (180 acres), based on an Arizona State University golf couse study.

3. Electricity and natural gas usage rates were taken from the 2006 California Commercial End-Use Survey (CEUS), performed by Itron under contract to the California Energy Commission (CEC). ENVIRON used data for Southern California Edison (SCE), Zone 9, which is the sector in which Newhall Ranch would be located. ENVIRON categorized the Pro Shop as Retail land use and the Clubhouse as Miscellaneous commerical land use.

4. Emission factor for electricity provided by Southern California Edison for year 2004, obtained from the California Climate Action Registry Database. Emission factor for natural gas obtained from California Climate Action Registry Reporting Protocol, Table C7.

5. Total golf course emissions include non-Title 24 energy use and 15% better than 2008 Title 24 energy use.

Abbreviations:

CARB 2020 NAT - California Air Resources Board Scoping Plan projections for 2020 if no actions are taken
GHG - greenhouse gas
sqft - square foot
CO_2 - carbon dioxide
yr - year
psi - pounds per square inch
kWh - kilowatt hour
EIA - Energy Information Administration

Sources:

California Climate Action Registry Database. Southern California Edison PUP. 2007. Available at: http://www.climateregistry.org/CarrotDocs/26/2007/SCEPUP07r3.xls. Accessed on July 2, 2009.
California Climate Action Registry. 2009. General Reporting Protocol, Version 3.1 (January). Available at: http://www.climateregistry.org/resources/docs/protocols/grp/GRP_3.1_January2009.pdf
Northern California Golf Association. *Improving California Golf Course Water Efficiency* . http://www.owue.water.ca.gov/docs/2004Apps/2004-079.pdf
Full Coverage Irrigation. Partial List of Customers Using FCI Nozzles. http://www.fcinozzles.com/clients.asp
Kansas State University Irrigation Management Series. Comparing Irrigation Energy Costs. http://www.oznet.ksu.edu/library/ageng2/mf2360.pdf
John Deere Product Specifications. 3235C Lightweight Fairway Mower. http://www.deere.com/en_US/ProductCatalog/GT/series/gt_lwfm_c_series.html
EIA. Fuel and Energy Source Codes and Emission Coefficients. http://www.eia.doe.gov/oiaf/1605/factors.html
Arizona State University, Dr. Troy Schmitz. Economic Impacts and Environmental Aspects of the Arizona Golf Course Industry. http://agb.poly.asu.edu/workingpapers/0501.pdf
California Energy Commission. 2006. California Commercial End-Use Survey. Prepared by Itron Inc. Available at: Available at: http://www.energy.ca.gov/ceus/
Clemson University Department of Agriculture and Applied Economics. Economic Impacts of California's Golf Course Facilities in 2000. Table 9. http://ucrturf.ucr.edu/topics/EconImpact_Clemson.pdf

APPENDIX A
Utilities: Electricity and Natural Gas Usage

Table 1

Summary of Electricity Usage for Newhall Land

Newhall Land

Newhall Ranch, CA

Development	Source	Electricity Usage	
		Unit	Project
Design Alternative 2	Residential	kWh/yr	110,341,065
	Non-Residential		160,929,653
	Municipal		45,890,900
	Golf Course		149,342
	Recreational (Pools)		15,332,059
	Total (annual emissions)		**332,643,019**
Design Alternative 3	Residential	kWh/yr	105,208,441
	Non-Residential		159,571,971
	Municipal		42,708,628
	Golf Course		149,342
	Recreational (Pools)		14,967,010
	Total (annual emissions)		**322,605,392**
Design Alternative 4	Residential	kWh/yr	106,613,739
	Non-Residential		114,325,600
	Municipal		40,112,765
	Golf Course		149,342
	Recreational (Pools)		15,332,059
	Total (annual emissions)		**276,533,505**
Design Alternative 5	Residential	kWh/yr	103,241,935
	Non-Residential		112,580,009
	Municipal		38,600,200
	Golf Course		149,342
	Recreational (Pools)		14,601,961
	Total (annual emissions)		**269,173,447**
Design Alternative 6	Residential	kWh/yr	98,674,118
	Non-Residential		111,028,372
	Municipal		35,806,790
	Golf Course		149,342
	Recreational (Pools)		13,871,863
	Total (annual emissions)		**259,530,485**
Design Alternative 7	Residential	kWh/yr	84,549,642
	Non-Residential		72,966,195
	Municipal		30,615,586
	Golf Course		149,342
	Recreational (Pools)		11,316,519
	Total (annual emissions)		**199,597,284**

Abbreviations:

kWh - kilowatt-hour

yr - year

Table 2
Summary of Natural Gas Usage for Newhall Land
Newhall Land
Newhall Ranch, CA

Development	Source	Natural Gas Usage	
		Unit	Project
Design Alternative 2	Residential	MMBTU/yr	691,711
	Non-Residential		266,632
	Golf Course		189
	Total (annual emissions)		**958,532**
Design Alternative 3	Residential	MMBTU/yr	659,537
	Non-Residential		263,241
	Golf Course		189
	Total (annual emissions)		**922,966**
Design Alternative 4	Residential	MMBTU/yr	668,346
	Non-Residential		238,292
	Golf Course		189
	Total (annual emissions)		**906,827**
Design Alternative 5	Residential	MMBTU/yr	647,209
	Non-Residential		233,931
	Golf Course		189
	Total (annual emissions)		**881,329**
Design Alternative 6	Residential	MMBTU/yr	618,579
	Non-Residential		230,055
	Golf Course		189
	Total (annual emissions)		**848,823**
Design Alternative 7	Residential	MMBTU/yr	530,029
	Non-Residential		138,157
	Golf Course		189
	Total (annual emissions)		**668,374**

Abbreviations:

yr - year

MMBTU - Million British Thermal Units

APPENDIX B
Existing Conditions Emissions

Summary of Existing Emissions

This appendix summarizes ENVIRON International Corporation's (ENVIRON) estimates for existing greenhouse gas (GHG) emissions associated with the project site.

By way of background, portions of the Specific Plan area currently are leased for oil and natural gas production, as well as for cattle grazing, ranching, and agricultural operations. In addition, the applicant periodically leases the Specific Plan area to the movie industry for set locations. Minor existing on-site structures within the Specific Plan area include employee houses, an oil company office, and miscellaneous structures. Portions of the VCC area are leased for agricultural operations, and portions of the Entrada site are leased for cattle grazing and agricultural operations. All existing emission sources would be eliminated during project buildout.

In light of the existing conditions, ENVIRON evaluated the following sources that currently exist on the project site:

1. Oil derricks
    a. Methane releases
    b. Electricity use
2. Farmland/Agricultural Operations
    a. Water use
    b. Fertilizer
    c. Equipment

Please note that emissions associated with the periodic lease of the Specific Plan area to the movie industry were not accounted for in this emissions estimate as such activities are intermittent, limited, and unpredictable. Additionally, the emissions estimate does not account for the minor existing structures within the Specific Plan area due to the lack of data for these accessory structures. Finally, the cattle grazing and ranching activities were not accounted for as the lease of the project site for such uses is minimal. Because the emissions estimate does not fully account for these existing emission sources, the estimate likely understates existing emission levels on the project site.

That said, ENVIRON estimated the emissions associated with existing site conditions, and particularly oil derricks and farmland, to be roughly 10,272 metric tonnes of CO_2e per year (Table B3).

Oil Derricks

Table B1 outlines ENVIRON's approach to calculating GHG emissions from the 59 oil derricks that currently operate on the project site. GHG emissions include methane released during pumping activities, and the indirect emissions associated with the electricity used during pumping. Because ENVIRON did not have site-specific data, ENVIRON used generic factors for oil pumping. ENVIRON then used appropriate emission factors to determine GHG emissions from methane releases and electricity use.

Farming/Agricultural Operations

Table B2 outlines ENVIRON's approach to calculating GHG emissions from farming operations that would be eliminated due to project buildout. GHG emissions include indirect emission associated with estimated water use, and direct emissions associated with fertilizer and equipment use. A variety of crops currently is grown on the site; however, because of limited data availability, ENVIRON relied upon general crop water use factors, general corn fertilizer factors, and general barley equipment-use factors. ENVIRON does not expect these assumptions to systematically over- or under-estimate actual emissions. ENVIRON then used appropriate emission factors to determine GHG emissions from water use, fertilizer emissions, and equipment fuel use.

Table B1 - Baseline Conditions
OIL PRODUCTION

Description	Activity Data	Units	Source(s)
Number of wells (pump jacks)	59	wells	Newhall Land
Average barrels of oil produced annually	10,950	barrels oil/year	National Public Radio. 2006. *California Oil Producers Revive Old Wells* . (Available online: http://www.npr.org/templates/story/story.php?storyId=5147602 Accessed April 9, 2010). Story indicates a range of 25-30 barrels per day - used 30 for upper estimate.
Methane produced from production activities	0.00023	tonnes methane/barrel	2004 API Compendium, Table 6-1, onshore oil production. This includes all production facility equipment. (Available from: www.api.org/ehs/climate/new/upload/2004_COMPENDIUM.pdf Accessed April 9 ,2010)
methane production from one well	2.56	tonnes methane	Calculations: Oil produced x methane per barrel
methane production from wells	151	tonnes methane	Calculations: # wells x methane per well
methane production from wells (CO2e)	3,177	tonnes CO2e	Calculations: methane production per well x methane global warming potential (21 is GWP of methane using IPCC Second Assessment Report references)
Electricity use for a well, in HP	35	HP	Various sources for horsepower of engines associated with pump jacks. The typical range of these sources was from 20 to 50 HP; an average of 35 HP was used for these calculations. These sources include: *Energy Cost Savings Opportunities for the Oil & Gas Industry in Saskatchewan* (Available from: http://www.ptac.org/eea/dl/eeaf0401p02.pdf Accessed April 10, 2010). Canadian GHG Registries. (Available from: http://www.ghgregistries.ca/registry/out/C0079-SHININGB-APP-03-PDF.PDF Accessed April 10, 2010). Arrow Engine Company (Available from: http://www.arrowengine.com/media/AO&GR%20article.pdf Accessed April 10, 2010).
Convert HP to kilowatt	0.746	kW	standard conversion
Electricity use per year per well	228,632	kWh	Calculations: Electricity use for a well, in HP x Convert HP to kilowatt * 24 per day * 365 days per year
Electricity use for wells	13,489,263	kWh/year	Calculations: # of wells * electricity use per well

Acronyms:
API - American Petroleum Institute
CO2e - carbon dioxide equivalents
GWP - global warming potential
hp - horsepower
IPCC - Intergovernmental Panel on Climate Change
kW - kilowatts
kWh - kilowatt-hour

Table B2 - Baseline Conditions
FARMING

Description	Activity Data	Units	Source(s)
Area of disturbed farmland	2,176	acres	Newhall Climate Change Technical Report
US average amount of water used for irrigation, in 2003	1.65	acre-feet water/acre irrigated	USDA. *Farm and Ranch Irrigation Survey (2003).* Table E (PDF page 20). (available from: http://www.agcensus.usda.gov/Publications/2002/FRIS/fris03.pdf Accessed April 9, 2010).
Total acre-feet used	3,590	acre-feet	Calculations: Area of disturbed farmland * US average amount of water used for irrigation, in 2003
kWh/acre-foot	3,170	kWh/acre-foot	Chino estimate. Newhall Climate Change Technical Report
Electricity use for water	11,381,568	kWh/year	Calculations: Total acre-feet used x kWh/acre-foot
Crop grown on an acre, per year	3,421	kg	Source: US Life Cycle Inventory (via SimaPro). "Corn, at field/kg/US". Included processes: Initially derived from data on farming of corn on 1 planted acre for 1 year (**yield=3421kg**). The module includes: - seed production, - tillage, - fertilizer and pesticide application, - crop residue management, - irrigation, - harvesting. Remark: Agricultural Crop Production, Harvested acres represent 91% of the planted acres (1998-2000 US average). 1 bu (corn) = 56 lbs. The impacts of producing 1 kg of seed are assumed equal to those of producing 1kg of grain.
Nitrogen fertilizer required to produce 1 kg of crop	0.0169	kg	Ibid.
Nitrogen fertilizer required for one acre of crop production	57.7	kg	Calculations: Crop grown on an acre, per year x Nitrogen fertilizer required to produce 1 kg of crop
Nitrogen fertilizer required for acreage	125,649	kg	Calculations: Area of disturbed farmland x Nitrogen fertilizer required for one acre of crop production
N2O Emission Factor for emissions from N inputs	1%		UNFCCC Clean Development Mechanism. "Estimation of direct nitrous oxide emission from nitrogen fertilization" Page 3. (Available from: http://cdm.unfccc.int/methodologies/ARmethodologies/tools/ar-am-tool-07-v1.pdf Accessed April 10, 2010)
Total N2O Emissions	1,256	kg	Calculations: Nitrogen fertilizer required for acreage x N2O Emission Factor for emissions from N inputs
Total N2O Emissions (in CO2e)	389,512	kg	Calculations: Total N2O Emissions * GWP of N2O using IPCC Second Assessment Report references (310)
Tractor diesel fuel usage rate	6	gallons/acre	USDA estimates that the typical cropping and tillage system in the area requires six gallons of diesel per acre of barley.
Diesel fuel usage for acreage	13,056	gallons	Calculations: Area of disturbed farmland * Tractor diesel fuel usage rate

Acronyms:
bu - bushel
CO2e - carbon dioxide equivalents
GWP - global warming potential
hp - horsepower
IPCC - Intergovernmental Panel on Climate Change
kg - kilogram
kW - kilowatts
kWh - kilowatt-hour
lb - pound
N - nitrogen
N2O - nitrous oxide

UNFCCC - United Nations Framework
Convention on Climate Change
USDA - Unites States Department of Agriculture

Table B3 - Baseline Conditions
TOTAL EMISSIONS

Description	Emissions	Units	Source(s)
Methane from wells	3,177	tonnes CO2e	methane production from wells (CO2e) from above
Well electricity usage	3,565	tonnes CO2e	Calculations: 582.7 lbs per MWh/2,205 lbs per metric ton x Electricity use for wells / 1000 kWh per MWh. The Newhall Ranch 2010 RPS emission factor is 582.7 lbs CO2/MWh.
Energy use associated with water	3,008	tonnes CO2e	Calculations: 582.7 lbs per MWh/2,205 lbs per metric ton x Electricity use for water / 1000 kWh per MWh. The Newhall Ranch 2010 RPS emission factor is 582.7 lbs CO2/MWh.
N2O emissions associated with fertilizer use	390	tonnes CO2e	Calculations: Total N2O Emissions (in CO2e) / 1000 kg per metric ton
Diesel fuel usage	133	tonnes CO2e	Calculations: Diesel fuel usage * 10.15 kg CO2 per gallon / 1000 kg per metric ton. 10.15 kg CO2 is produced by combusting one gallon of diesel fuel. This data is from The Climate Registry's General Reporting Protocol, Table 13.1.
TOTAL EMISSIONS	10,272	tonnes CO2e	

Acronyms:
bu - bushel
CO2e - carbon dioxide equivalents
kg - kilogram
kWh - kilowatt-hour
lb - pound
MWh - megawatt-hour
RPS - renewable portfolio standard