



## 1200 Vine Street

### CEQA SCPE Energy & Water Efficiency Compliance Memo

October 18, 2022

Prepared by:

### ZCS Sustainability

859 25th St.  
Santa Monica, CA 90403  
310-319-1131



## 1. Executive Summary

The purpose of this memo is to describe how the 1200 Vine Street project (Project), located in Los Angeles, CA 90038, will meet the Sustainable Communities Project CEQA Exemption (SCPE) criteria regarding energy and water efficiency (Public Resources Code Section 21155.1(a)(8)). The 1200 Vine Street project consists of 153 dwelling units in an eight-story building, including two floors of above ground parking, and approximately 7,000sf of future commercial/restaurant space.

*This memo uses Title 24-2022 part 6 to show the energy efficiency criteria is met.*

### All-Electric Design

The 1200 Vine Street is designed to be an all-electric building, eliminating all CO<sub>2</sub> emissions from onsite fossil fuel usage. In addition, State regulation require that all California electricity generation be 100% renewable by 2045, which would eliminate all CO<sub>2</sub> emissions from the project. Natural gas, in contrast, is not a renewable energy, burning natural gas results in greenhouse gas emissions.

*Note that future kitchen equipment in the commercial space is exempt from the all-electric design.*

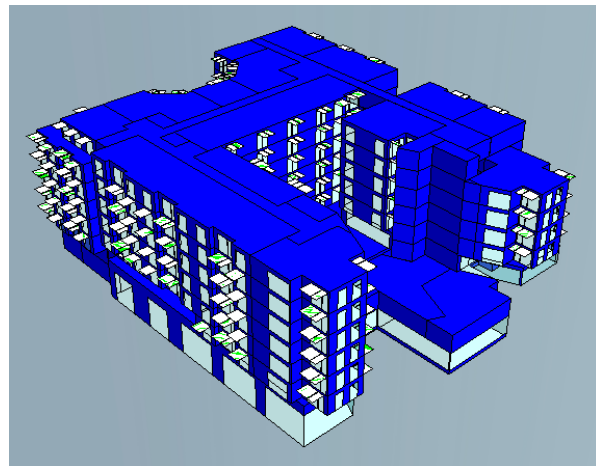
The Subsection (a) (8) requirements for Energy Efficiency and Water Usage Reduction are as follows:

*The buildings in the transit priority project are 15 percent more energy efficient than required by Chapter 6 of Title 24 of the California Code of Regulations and the buildings and landscaping are designed to achieve 25 percent less water usage than the average household use in the region.*

### Results Summary

The Proposed Design, utilizing the energy efficiency and water usage reduction strategies discussed in this memo, complies with both requirements. The analysis results are as follows:

- Energy Efficiency
  - **16.5%** more energy efficient than **Title 24-2022**, Part 6.
  - **20.0%** CO<sub>2</sub> Emissions Savings compared to Title 24-2022, Part 6.
- Water Usage
  - **68.8%** less water usage than the Metropolitan Water District (MWD) baseline.



*Energy model rendering*

## 2. Energy Efficiency

The project utilizes the Title 24-2022 Part 6 Whole Building Performance Approach to show compliance with the energy efficiency requirement.

1200 Vine Street is subject to the Title 24-2022 Energy Code. An energy model has been created using the latest version of the Title 24-2022 approved software, which is CBECC-Com multi-family buildings.

Since the project is currently in the Conceptual Design stage, all building features have not been fully designed. Assumptions based on experience with similar projects in this climate zone have been used when actual design information was not yet available.

*Note: This analysis and the listed design features will be used to inform the final design. Any modification of the listed design features impacting energy efficiency will be analyzed to ensure the required 15% threshold is met.*

### 2.1. Energy Efficiency Measures

The following Proposed Energy Efficiency Measures contribute to the reported energy savings:

- High-performance Low-e windows with very low Solar Heat Gain Coefficient (SHGC) and U-value.
- Overhangs & balconies shading the glazed patio doors and windows below.
- Wood framed walls with R-21 batt insulation.
- Wood framed roof with R-38 batt insulation.
- Cool Roof Rating Council (CRRC) certified high-reflectance cool roof.
- Central water heating system with high efficiency all-electric Heat-Pump Water Heaters (HPWH).
- High-efficiency HVAC systems serving residential units and common spaces.
- A Photovoltaic (PV) system will further reduce energy use.
- Reduced Lighting wattage from LED fixtures throughout the buildings, including Common Spaces and Amenities, with Daylight and Motion Sensor controls.
- Low-flow fixtures: although energy savings from low-flow fixtures are not captured in the Title 24 energy analysis, this strategy significantly reduces the hot water usage and associated heating energy requirements.
- Field verification of various efficiency measured by a certified HERS rater.

*The preliminary Title 24-2022 Report, showing the Percentage Better than Standard (i.e., the Title 24-2022 Baseline Design), is shown on the next page.*

### 3. Title 24-2022 Energy Performance Results

Following are the energy performance summary results from the Title 24-2022 Report.

Certificate of Compliance - Nonresidential Performance Compliance Method					
Nonresidential Performance Compliance Method			(Page 1 of 10)		
Project Name:		1200 Vine Street		Date Prepared:	
A. General Information					
1.	Project Location (city)	Los Angeles	8.	Standards Version	Compliance 2022
2.	CA Zip code	90038	9.	Compliance Software (version)	CBECC 2022.1.0 (1250)
3.	Climate Zone	9	10.	Weather File	CTZ09S22A.epw
4.	Total Conditioned Floor Area in Scope	116454	11.	Building Orientation (deg)	North
5.	Total Unconditioned Floor Area	48193.8	12.	Permitted Scope of Work	NewEnvelopeAndLightingAndPartialMechanical
6.	Total # of Stories (Habitable Above Grade)	8	13.	Building Type(s)	High-Rise Residential
7.	Total # of Dwelling Units	153	14.	Gas Type	None

CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD			
Nonresidential Performance Compliance Method		(Page 3 of 10)	
C2. TDV ENERGY COMPLIANCE RESULTS FOR PERFORMANCE COMPONENTS (Annual TDV Energy Use, kBtu/ft² - yr)			
COMPLIES²			
Energy Component	Standard Design (TDV)¹	Proposed Design (TDV)	Compliance Margin (TDV)¹
Space Heating	5.66	4.87	0.79
Space Cooling	30.95	24.45	6.5
Indoor Fans	16.9	12.35	4.55
Heat Rejection	0.64	0.45	0.19
Pumps & Misc.	2.69	1.93	0.76
Domestic Hot Water	31.87	30.38	1.49
Indoor Lighting	7.78	6.17	1.61
Flexibility	---	---	---
EFFICIENCY COMPLIANCE TOTAL	96.49	80.6	15.89 (16.5%)
Photovoltaics	-21.56	-23.2	1.64
Batteries	---	---	---
TOTAL COMPLIANCE	74.93	57.4	17.53 (23.4%)

¹ Notes: This number in parenthesis following the Compliance Margin in column 4, represents the Percent Better than Standard.

² Building complies when efficiency and total compliance margins are greater than or equal to zero and unmet load hour limits are not exceeded

The Title 24-2022 TDV Energy Use reduction is from 96.49 (Title 24 Standard Design) to 80.6 (Proposed Design). **The Proposed Design is 16.5% more energy efficient than Title 24-2022, Part 6.**

#### 3.1. Greenhouse Gas Emissions

Following are the Greenhouse Gas Emission Results calculated by CBECC-Com 2022. Note that the results are based on CA Energy Commission's electricity generation emissions factors for the local climate zone<sup>2</sup>.

The Title 24-2022 Total Compliance Emissions reduction is from 47.03 Tonne (Title 24 Standard Design) to 37.64 Tonne (Proposed Design). The Proposed Design's Total Compliance Emissions are 20.0% lower than Title 24-2022, Part 6.

<sup>2</sup> <https://www.energycodeace.com/site/custom/public/reference-ace-2019/index.html#!Documents/c9emissionsreductionbenefits.htm>

## 4. Water Usage

The Subsection (a) (8) water efficiency requirement is that each project must achieve a 25 percent water use reduction from the regional average household water use.

For residential and mixed-use, residential/commercial buildings, the baseline is the average regional water use in Gallons Per Capita Per Day of 127 gallons as indicated in the Metropolitan Water District (MWD) “One Water” Annual Report to the California State Legislature, Covering Fiscal Year 20/21, p. 3. The report is available at:

<https://docplayer.net/227471058-Achievements-in-conservation-recycling-and-groundwater-recharge-february-2022-covering-fiscal-year-2020-21.html>

This is multiplied by 2.25, the assumed residential occupancy factor per multifamily unit per the City of Los Angeles-adopted Vehicle Miles Traveled (VMT) calculator, to determine the average daily water use per residential unit.

The assumed water use fixture flow rates are specified below. All maximum flow rates required by both Title 24 Part 11 (CALGreen) and the City of Los Angeles Green Code are labeled CALGreen. The fixtures that must have a lower maximum flow rate per the Los Angeles Green Code are labeled LA Green Code. Clothes washers and dishwashers and other water uses are calculated using accepted industry practice.

1. Showerheads: 1.8 GPM (gallons per minute, CALGreen)
2. Residential lavatory faucets: 1.2 GPM (CALGreen)
3. Nonresidential lavatory faucets: 0.4 GPM (LA Green Code)
4. Kitchen faucets: 1.5 GPM (LA Green Code)
5. Water closets (toilets): 1.28 GPF (gallons per flush, CALGreen)
6. Urinals: 0.125 GPF (LA Green Code)
7. Commercial clothes washers: Energy Star certified, 3.5 IWF (Integrated Water Factor)
8. Dishwashers: Energy Star certified, 3.5 GPC (Gallons per Cycle)

### 4.1. Projected Water Savings

The *Whole Building Water Use Analyses* for this project, included in Appendix B, calculates both the baseline and projected water use, followed by the percentage savings. The projected water use for 1200 Vine Street is substantially more efficient than the MWD regional water use baseline using code-required fixtures. Therefore, the fixture flow rates listed above would sufficiently reduce water use so that no additional water reduction measures would be necessary.

The regional baseline per residential unit is 285.8 Gallons per Day (GPD). The 1200 Vine Street Whole Building Water Use Analysis indicates that the project’s water use per unit will be 89.1 GPD.

**Therefore, the projected water use savings is 68.8%.**

## Appendix A: Energy Analysis Design Features

The following table lists the building's design features and assumptions used in the energy analysis. These assumptions are based on the Current Design and on experience with similar projects in this climate zone when design information was not available at the time of this memo.

Feature	Design
<b>Project Description</b>	
Location	Los Angeles, CA 90038
CA Climate Zone	CZ-9
Number of units	153
Stories above grade	8
Covered Parking	2 floors of above ground parking
Energy Code	Title 24–2022, Part 6
Compliance Path	Whole Building Performance Approach
Software	CBECC 2022.1.0
<b>Envelope</b>	
Exterior Walls	Wood framed, 2x6, 16" OC + R-21 batt insulation
Underground floor/slab	Uninsulated Slab on Grade
Floor above Parking	Uninsulated Concrete Slab
Exterior Floors at Overhangs	Wood framed, 2x10, 16" OC + R-30 batt
Floors between conditioned spaces <sup>1</sup>	Wood framed, 16" OC, + R-19 batt insulation
Top Roof	Wood framed, 16" OC + R-38 batt insulation
Roof Deck	Wood framed, 16" OC + R-38 batt insulation
Cool Roof (Top Roof)	CRRC certified, 3-yr aged Reflectance = 0.70 & Emittance = 0.75
Doors	Solid Wood Door, U = 0.50
<sup>1</sup> Walls and floor between conditioned spaces have no impact on energy performance	
<b>Windows</b>	
Residential units	Dual pane, Low-e, in Vinyl Frame, U = 0.32 & SHGC = 0.23 (NFRC Rated Values)
Amenities & Commercial	Dual pane, Low-e, in non-thermally broken metal frame U = 0.47 & SHGC = 0.27 (NFRC Rated Values)

<b>Ventilation</b>	
Residential Units <sup>1</sup>	Continuously operating (bathroom) exhaust fans Outside Air (OSA) cfm per Title 24 requirements
Other Spaces	HVAC provides OSA, cfm per Title 24
Unconditioned occupied/transition spaces	Exhaust fans provide OSA, cfm per Title 24
<sup>1</sup> Note that HVAC is not allowed to supply outside air in residential units	
<b>HVAC Residential Units</b>	
System Type	Split System Heat-Pumps, 1 HP per Unit
Cooling Efficiency	16 SEER
Heating Efficiency	9.0 HSPF
Supply fan	Constant Volume
Supply fan power	0.354 Watt/cfm
Filters	MERV-13
Duct Location	In ceiling (within the conditioned envelope)
<b>HVAC Corridors</b>	
System Type	N/A – Corridors are open to exterior
<b>HVAC Amenities</b>	
System Type	Split System Heat-Pumps
Cooling Efficiency	17 SEER
Heating Efficiency	9.0 HSPF
Supply fan	Constant Volume
Supply fan power	0.5" External Static Pressure (ESP)
Filters	MERV-13
Capacities	Per ASHRAE Fundamentals: 25% heating and 15% cooling oversized
Controls	Occupancy Sensor Control in required spaces
<b>HVAC Commercial/Retail</b>	
System Type	Part of future TI build-out, not included in analysis per Title 24 requirements
<b>Service Water Heating</b>	
System Type	Central Water Heating System



Water Heater type	(2) Heat-Pump Water Heaters (HPWHs)
Heating Efficiency	4.2 COP ( <i>Colmac CxA-10, or equal</i> ) – no electric resistance backup heater
Hot water loop control	Temperature modulation and monitoring
Hot Water Storage Tanks	Required for HPWHs
Solar Hot Water	Not recommended when using HPWHs
<b>Indoor Lighting</b>	
Residential Units <sup>1</sup>	High Efficacy Fixtures (LED)
Amenities Spaces	Average ~30% Lighting Power Density (LPD, W/sf) savings compared to Title 24-2022 Prescriptive allowances per occupancy type
Controls	Title 24 Mandatory Daylight and Occupancy Sensor controls
<b>Renewable Energy</b>	
Photovoltaic (PV)	(172) PV panels are planned to be installed on the roof Assumed are 410-Watt Standard Efficiency PV panels, sloped facing South
<b>HERS Field Verifications</b>	
Quality Insulation (QII)	Yes
Dwelling Unit Air Leakage	Yes ( <i>Mandatory</i> )
Verified AC Charge	Yes
Duct Leakage Testing	Yes ( <i>Mandatory</i> )
Ducts in conditioned space	Yes
Hot water piping insulation	Yes



## Appendix B: Whole Building Water Usage Analysis

1200 Vine									
Whole Building Water Use Analysis									
Fixture Type	Flow Rate <sup>2</sup> (gpm or gpf)		Duration (min or # flush)		Daily Uses		Occupants	=	Gallons Per Day
Residential Water Use <sup>1</sup>									
Showerheads residential	1.8	x	8	x	1	x	345	=	4,968.0
Lavatory faucets residential	1.2	x	0.25	x	5	x	345	=	517.5
Kitchen faucets	1.5	x	4	x	1	x	345	=	2,070.0
Tank water closets (M)	1.28	x	1	x	5	x	173	=	1,107.2
Tank water closets (F)	1.28	x	1	x	5	x	173	=	1,107.2
Clotheswashers (gal/person-day) <sup>3</sup>	6.3						345	=	2,173.5
Dishwashers (gal/person-day) <sup>4</sup>	0.7						345	=	241.5
Nonresidential Water Use <sup>5</sup>									
Lavatory faucets nonresidential	0.4	x	0.25	x	3	x	234	=	70.2
Water closets - nonresidential (F)	1.28	x	1	x	3	x	117	=	449.3
Water closets - nonresidential (M)	1.28	x	1	x	1	x	59	=	75.5
Urinals	0.125	x	1	x	2	x	59	=	14.8
Restaurant kitchen(s) <sup>6</sup>									234.4
Common showerhead for cyclists	1.8	x	8	x	1	x	2	=	28.8
Potable Water Irrigation (gpd (gallons per day)) <sup>7</sup>								=	519.9
Pool Evaporation <sup>8</sup>								=	51.5
Total Daily Baseline Water Use (BWU) in Gallons Per Day								=	13,629.3
Average Water Use per Household per Day = 13,629.3 gpd/153 units								=	89.1
Current Water Use per Multi-Family Household (MWD 2020/21 "One Water Annual Report to California State Legislature gallons per capita (GPC) per day of 127 x City of Los Angeles adopted estimate of 2.25 occupants per multi-family residential unit, as shown in the City's Vehicle Miles Traveled (VMT) calculator)									
								=	285.8
Water Use per Unit per Day (inc. appliances & landscape)									89.1
Percent Reduction from MWD Baseline									68.8
Assumptions									
1. 153 residential units x 2.25 occupants/unit (per City of LA, based on census) = 345 occupants.									
2. Flow rates are the maximum allowed under City of Los Angeles Green Building Code (Form GRN 17).									
3. Clothes washers (baseline per LEED for Homes v4, 15.1 gal per person per day, IWF (Integrated Water Factor)									
4. Dishwashers assumed in each unit (baseline per Homes v4, 0.7 gal per person per day, 6.5 GPC). High efficiency dishwashers can be 4 GPC, therefore 61% of baseline, or 0.43 gal per person per day.									
5. Nonresidential occupants (per Table A, Chapter 4, California Plumbing Code occupant load factor of 1 person/200 SF retail & office, 1 person/30 SF restaurant). Total commercial space = 7,000 sf, assumed to be all restaurant = 234 restaurant occupants (7,000 sf/30)									
6. Restaurant kitchen water use based on 1) assume kitchen = 50% of restaurant space, and 2) US EPA Savings Calculator for ENERGY STAR Certified Commercial Kitchen Equipment. Sample calculated result for 2,935 sf kitchen = 418,586 gpy/365 days = 1,146.8 gpd									
7. Landscaping potable water use calculated using LEED v4 Outdoor Water Use Reduction Calculator v02. Assumes efficient irrigation system and drought tolerant plants. Estimated irrigated landscape area is 5,961 SF.									
8. Pool surface 413 SF. Avg 0.25 inch/0.021 ft loss per day, or 51.5 gallons to be made up per day.									