

Attachment D

Energy Modeling Summary and Water Use Analysis



D-1 Energy Modeling Summary

ENERGY MODELING SUMMARY

5600 HOLLYWOOD

7/1/2020

Project Summary

As part of the energy goals for this project, preliminary modeling was conducted in CBECC Com 2019 in order to determine the projects ability to achieve 15% better energy performance than Title-24 standard model and chapter 6. Modeling methodology and inputs can be found below.

Analysis Description

- Located in Los Angeles in Climate Zone 9
- 17 Floor Highrise with residential, garage and amenity spaces
- CBECC-Com 2019.1.2
- Prescriptive Lighting
- Performance Water source VRF for Heating and Cooling
- Envelope Compliance is performance
- Domestic Hot Water Compliance is performance

The primary objective of this study was to identify a performance path compliance in which the project achieves 15% more efficient than T24 2019. The energy measures used to achieve this goal are described below.

Building Envelope

- Exterior walls comply with prescriptive requirements with an U value of 0.069 (R-14.5)
- Roofs with an U value of 0.033 (R-30)
- Overhanging balconies that act as a solar shade for windows reducing cooling load
- High performance windows with U value of 0.36 and SHGC of 0.25

Lighting

- Currently assuming lighting follows prescriptive values of T24 2019 which is a LED basis

HVAC

- High Efficiency water source VRFs connected to gas boilers and fluid cooler loops
- Ventilation requirements following new guidelines of T24 2019
- Variable speed fans on systems
- Variable speed pumps on water loop

Domestic Water Heating

- 96% efficiency gas water heating system for the whole building

Energy Model Results

The energy model showed a savings of 15% compared to Title 24-2019. T24 uses metrics of Time Dependent Valuation (TDV) to determine energy compliance. TDV is in units of kBTU and is used in order to incorporate societal and environmental impacts on the grid and energy cost. The table below breaks down the TDV comparison between the Standard building and Proposed design.

TDV	Standard	Proposed	Difference
Heating	2.82	3.03	-0.21
Cooling	19.44	27.15	-7.71
Fans	19.9	16.43	3.47
Heat Rejection	3.27	1.19	2.08
Pumps	10.13	0.68	9.45
DHW	15.63	10.96	4.67
Lighting	6.57	6.57	0
Sum	77.76	66.01	11.75
Savings			15.10%

Disclaimer

Estimates of cost or energy savings represent Henderson's professional opinion. Energy savings and costs may be affected by factors outside of Henderson's control and Henderson does not guarantee or represent that the actual cost or energy consumption will not vary from any such estimates.

The modeling approach taken does not guarantee compliance with code or that all credits submitted will be achieved. It will be a collaborative effort to ensure that the project as a whole achieves its energy related goals. All savings and cost estimates in the report are for informational purposes and are not to be construed as a design document or as guarantees.

D-2 Water Use Analysis



Water Use Analysis

July 1, 2020

5600 Hollywood

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WATER EFFICIENCY COMPLIANCE FOR 5600 HOLLYWOOD

DATE: FRIDAY, MAY 1, 2020
SB 275 WATER SAVINGS

WATER EFFICIENCY

1. CHAPTER 6 OF TITLE 24 OF THE CALIFORNIA CODE OF REGULATIONS REQUIRE BUILDINGS AND LANDSCAPE TO BE DESIGNED TO USE 25 PERCENT LESS WATER THAN THE AVERAGE HOUSEHOLD IN THE REGION.

A. Water efficiency strategy is as described below.

1. Water Use: 49% below the SCAG baseline.

B. Water Efficiency

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

For residential buildings, the baseline is the average regional water use in Gallons Per Capita Per Day of 131 gallons as stated in the Metropolitan Water District Water Tomorrow Integrated Water Resources Plan Annual Report to the California State Legislature, Covering Fiscal Year 2019 (pg. 8). Available at: http://www.mwdwatertomorrow.com/IRP/documents/10072019_WPS_7c-IRP_Report.pdf

The baseline is multiplied by 2.15 occupants per residential unit per the City of Los Angeles Community Planning to determine the average daily water use per residential unit of 311.8 gallons per day.

The following are the maximum water fixture flow rates are taken from the City of Los Angeles Green Building Code for residential use. The appliance flow rates are calculated using accepted industry standards.

- (a) Showerheads: 1.8 GPM (gallon per minute)
- (b) Lavatory faucets; 1.2 GPM
- (c) Kitchen Faucets: 1.5 GPM
- (d) Water Closets (toilets): 1.28 GPF (gallon per flush)
- (e) Clothes washers: Energy Star certified, 3.2 WF (water factor)
- (f) Dishwashers: Energy Star certified, 4 GPC (gallon per cycle)

C. Projected Savings

The 5600 Hollywood Water Use Analysis, included in Appendix A, calculated both the baseline and projected water use and the percentage saving.

The projected overall water savings is 49%

D. Appendix B Water Calculations.

5600 Hollywood Water Use Analysis

Fixture Type	Flow Rate* (gpm or gpf)		Duration (min. or # flush)		Daily Uses	Occupants		Gallons per Day		
Showerheads	1.8	x	8	x	1	430	=	6,192		
Lavatory Faucets	1.2	x	0.25	x	3	430	=	387		
Kitchen Faucets	1.5	x	4	x	1	430	=	2,580		
Tank Type Water Closets (Male)	1.28	x	1	x	3	215	=	825.6		
Tank Type Water Closets (Female)	1.28	x	1	x	3	215	=	825.6		
					Subtotal		=	1,0810.2		
**Clothes washers (gal/person-day)	5.1					430	=	2193		
***Dishwashers (gal/person-day)	0.43					430	=	184.9		
****Irrigation (ETWU, Annual Gallons Required)			58,457	/	365	days/yr.	=	160		
Total Daily Baseline Water Use (BWU) in Gallons per Day								13,348.26		
Average use per Household per Day			13,348.256	/	200		=	66.7		
Current Water Use per Multi-Family Household (MWD 2018/2019 Annual Report) Gallons per Capita per Day of 131 x 2.15 estimated occupants per Multi-Family residential unit)			131	x	2.15		=	281.7		
Water Use per Unit per Day (including appliances and irrigation)							=	66.7		
Percent Reduction from MWD Baseline			66.7	/	131		=	0.51		
								=	49	%

Assumptions

200 units = 420 estimated occupants, based on 2.15 residents/unit

* Flow rates are the maximum allowed per City of Los Angeles Green Build. Code form GRN 16 for residential Occupancies

** Clothes Washers. Per City of Los Angeles Green Build. Code units shall be Energy Star certified. Typical Energy star unit = 3.2 Water Factor = 5.08 gal. per person per day

*** Dishwashers. Per City of Los Angeles Green Build. Code units shall be Energy Star certified. Typical Energy star unit = 4 Gal per Cycle = 0.43 gal. per person per day

**** Irrigation water use per Landscape Architects estimate.

Board Report (Report on IRP Implementation)

WATER USE

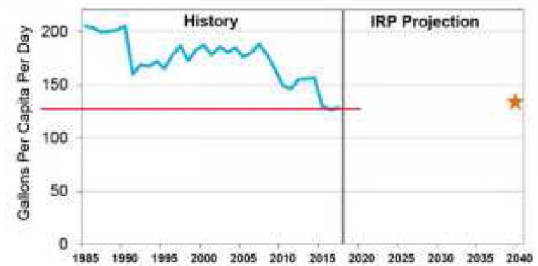
2018 Water Use: 131 Gallons Per Capita Per Day

Historical water use can be examined on a per capita basis that also captures consumer behavior. This figure illustrates the impact of conservation savings and recycled water on the potable use within Metropolitan's service area. Recent per capita use remains low as residents continue outdoor conservation practices and in some cities, outdoor water use ordinances have not been lifted since mandatory drought restrictions began in 2015.

The per capita use graphic includes all water use in Metropolitan's service area, including residential, agricultural, commercial, industrial, and institutional use. The graphic shows that continued per capita water use trends as seen in recent years would meet the IRP target for 2040.

Potable Per Capita Water Use*

Metropolitan's Service Area



* 2018 GPCD based on best available data as of July 2019 and is subject to reconciliation.



PLUMBING FIXTURE FLOW RATES

Residential Occupancies
2017 Los Angeles Green Building Code
(Incorporate this form into the plans)

FORM GRN 16

SECTION 4.303.1 WATER REDUCTION FIXTURE FLOW RATES

FIXTURE TYPE	MAXIMUM ALLOWABLE FLOW RATE
Showerheads	1.8 gpm @ 80 psi
Lavatory faucets, residential	1.2 gpm @ 60 psi ^{1,3}
Lavatory faucets, nonresidential	0.4 gpm @ 60 psi ^{1,3}
Kitchen faucets	1.5 gpm @ 60 psi ^{2,4}
Metering Faucets	0.2 gallons/cycle
Gravity tank type water closets	1.28 gallons/flush ⁵
Flushometer tank water closets	1.28 gallons/flush ⁵
Flushometer valve water closets	1.28 gallons/flush ⁵
Urinals	0.125 gallons/flush
Clothes Washers	ENERGY-STAR certified
Dishwashers	ENERGY-STAR certified

Cal Green Baseline differs from Green form 16, used for daily uses and durations

WORKSHEET (WS-1)
BASELINE WATER USE

BASELINE WATER USE CALCULATION TABLE									
FIXTURE TYPE	FLOW RATE		DURATION		DAILY USES		OCCUPANTS		GALLONS PER DAY
Showerheads, residential	2.0 gpm @ 80 psi	x	8 min.	x	1	x	Note 1a	=	
Showerheads, nonresidential	2.0 gpm @ 80 psi	x	5 min.	x	1	x		=	
Lavatory faucets, residential	1.2 gpm @ 60 psi	x	0.25 min.	x	3	x		=	
Lavatory Faucets nonresidential/ public uses	0.5 gpm @ 60 psi	x	0.25 min	x	3	x		=	
Kitchen faucets	1.8 gpm @ 60psi	x	4 min.	x	1	x	Note 1b	=	
Wash fountains	1.8 gpm/20 [rim space(in) @ 60 psi]	x		x	3	x		=	
Metering faucets, residential	0.25 gallons/cycle	x	0.25 min.	x	3	x		=	
Metering faucets, non-residential	0.20 gallons/cycle	x	0.25 min.	x	3	x		=	
Metering faucets for wash fountains	0.20 gal/cycle/20 [rim space (in.) @ 60 psi]	x	0.25 min.	x	3	x		=	
Water Closets	1.28 gallons/flush	x	1 flush	x	1 male ² 3 females	x		=	
Urinals	0.125 gal/flush	x	1 flush	x	2 males	x		=	
Total daily baseline water use (BWU)									=

IRRIGATION LEGEND AND CALCULATIONS

Reference Evapotranspiration (ETo) 50.1

Hydrozone # /Planting Description ^a	Plant Factor (PF)	Irrigation Method ^b	Irrigation Efficiency (IE) ^c	ETAF (PF/IE)	Landscape Area (sq. ft.)	ETAF x Area	Estimated Total Water Use (ETWU) ^d
Regular Landscape Areas							
1-LW/MW MIX	0.4	DRIP	0.81	0.49	1107	542	16,835
2-LW PLANTS	0.2	DRIP	0.81	0.25	2464	616	19,134
4-POOL	1	-	1	1	724	724	22,488
				Totals	4295	1882	58,457
Special Landscape Areas							
				1			
				1			
				1			
				Totals	0 (C)	0 (D)	
						ETWU Total	58,457
						Maximum Allowed Water Allowance (MAWA)*	60,035

^aHydrozone #/Planting Description

E.g.

1) front lawn

2) low water use plantings

3) medium water use planting

^bIrrigation Method
overhead spray
or drip

^cIrrigation Efficiency
0.75 for spray head
0.81 for drip

^dETWU (Annual Gallons Required) =
ETo x 0.62 x ETAF x Area
where 0.62 is a conversion
factor that converts acre-
inches per acre per year to
gallons per square foot per
year.

^eMAWA (Annual Gallons Allowed) = (ETo) (0.62) { (ETAF x LA)
+ ((1-ETAF) x SLA)}
where 0.62 is a conversion factor that converts acre-
inches per acre per year to gallons per square foot per
year. LA is the total landscape area in square feet. SLA
is the total special landscape area in square feet,
and ETAF is .55 for residential areas and 0.45 for non-
residential areas.