APPENDIX N-4:
VILLAGE AT PLAYA VISTA
PROJECT FACTOR DERIVATIONS

Village at Playa Vista Project Factor Derivations Appendix

ENERGY

Electricity

The following electricity consumption factors are from the South Coast Air Quality Management District's *CEQA Air Quality Handbook* (April 1993, as updated November 1993), Table A9-11-A:

Residential – ***5626.50 Kilowatt-hours (kWh)/dwelling unit (d.u.)/year (yr.)***
Office – ***12.95 kWh/square foot (s.f.)/yr.***
Retail – ***13.55 kWh/s.f./yr.***
Hotel – 9.95 kWh/s.f./yr. → 850 s.f./room (assumed) * 9.95 = ***8457.5 kWh/room/yr.***
Civic/Institutional – ***10.50 kWh/s.f./yr.*** (used Miscellaneous factor for this land use)
Marina – ***0.0 kWh/slip/yr.*** (electricity usage for Marina slips was considered negligible)
Warehouse – ***4.35 kWh/s.f./yr.***
Theater – 13.55 kWh/s.f./yr. → 23 s.f./seat (assumed) * 13.55 = ***311.65 kWh/seat/yr.***
Restaurant – ***47.45 kWh/s.f./yr.***
Industrial – ***10.50 kWh/s.f./yr.*** (used Miscellaneous factor for this land use)
Parking – 47.45 kWh/s.f./yr. (Retail factor) * (4.55% of total average commercial usage for outdoor lighting, Table A9-11-E of the Air Quality Handbook) = 2.2 kWh/s.f./yr. for outdoor lighting → 2.2 kWh/s.f./yr. * 154 s.f./parking space (assumed) = ***338.8 kWh/space/yr.*** → ***340.0 kWh/space/yr.*** (rounded up for simplicity)

Natural Gas

The following natural gas consumption factors are from the South Coast Air Quality Management District's *CEQA Air Quality Handbook* (April 1993, as updated November 1993), Table A9-12-A:

Residential – 6665.0 cubic feet (c.f.)/d.u./month (single-family units) ; 4011.5 c.f./d.u./month (multi-family units) → (6665.0 + 4011.5)/2 = 5338.25 c.f./d.u./month (average factor for single- and multi-family units) → ***5338.0 c.f./d.u./month*** (rounded for simplicity)
Office – ***2.0 c.f./s.f./month***
Retail – ***2.9 c.f./s.f./month***
Hotel – ***4.8 c.f./s.f./month***
Civic/Institutional – ***2.0 c.f./s.f./month*** (used Office factor for this land use)
Marina – ***0 c.f./slip/month*** (natural gas consumption for Marina slips was considered negligible)
Warehouse – ***2.0 c.f./s.f./month*** (used Office factor for this land use)
Theater – 2.9 c.f./s.f./month (Retail factor) → 2.9 * 23 s.f./seat (assumed) = ***66.7 c.f./seat/month***
Restaurant – ***4.8 c.f./s.f./month*** (used Hotel/Motel factor for this land use)
Industrial – 241,611 c.f./gas meter/month → assumed 1,000,000 s.f. per meter → ***0.241611 c.f./s.f./month***
Parking – ***0 c.f./space/month*** (natural gas consumption for parking lots was considered negligible)

Operational Fuel Consumption

The following natural gas consumption factors are derived from the South Coast Air Quality Management District's *CEQA Air Quality Handbook* (April 1993, as updated November 1993), Table A9-5-A-1, as well as average trip length from the *URBEMIS 7G Air Quality Model, Version 3.1*, which analyzes the South Coast Air Basin for urbanized areas within Los Angeles County:

The *URBEMIS* model reported an average trip length of 6.773 miles within urban Los Angeles County, and assumes a fuel economy of 25 miles per gallon on average (0.04 gallons per mile). To calculate fuel consumption, the average trip length divided by the fuel economy yields a product of fuel consumed per average trip:

6.773 miles (average) / 25 miles per gallon = 0.27092 gallons per day (gpd) per average trip

Consumption factors for land use take into account weekday, Saturday, and Sunday trips using a weighted average number of trips per day:

((Weekday trips * 5) + (Saturday trips * 1) + (Sunday trips * 1)) / 7 days per week = Weighted average

In the following fuel consumption factors, the weighted average number of daily trips (ADT = average daily trips) for each land use type are multiplied by 0.27092 (average fuel consumed per trip) to describe fuel consumed on average per square foot, dwelling unit, hotel room, or theater seat of land use:

Residential – 6.051 (ADT Weighted Average) * 0.27092 gallons per trip (gpt) = ***1.639 gpd/ d.u.***
Office – 16.58 (ADT Weighted Average) * 0.27092 gpt = ***0.004492 gpd/s.f.***
Retail – 66.613 (ADT Weighted Average) * 0.27092 gpt = ***0.01805 gpd/s.f.***
Hotel – 8.926 (ADT Weighted Average) * 0.27092 gpt = ***2.4182 gpd/room***
Civic/Institutional – 21.043 (ADT Weighted Average) * 0.27092 gpt = ***0.005701 gpd/s.f.***
Marina – 3.489 (ADT Weighted Average) * 0.27092 gpt = ***0.94524 gpd/slip***
Warehouse – 3.773 (ADT Weighted Average) * 0.27092 gpt = ***0.001022 gpd/s.f.***
Theater – 1.841 (ADT Weighted Average) * 0.27092 gpt = ***0.49877 gpd/seat***
Restaurant – 209.371 (ADT Weighted Average) * 0.27092 gpt = ***0.056723 gpd/s.f.***
Industrial – 5.264 (ADT Weighted Average) * 0.27092 gpt = ***0.001426 gpd/s.f.***
Parking – 0.0 (Trips associated with parking are considered negligible) * 0.027092 gpt = ***0.0 gpd/space***

UTILITIES

Water Consumption

The following water consumption factors are from the City of Los Angeles *Draft L.A. CEQA Thresholds Guide* (May, 1998), for sewerage generation rates (Exhibit K.2-11). This assumes that all potable water becomes wastewater, and therefore, all sewerage generated was once an equal volume of potable water. Marina consumption factor is from Camp Dresser & McKee Inc., *Conceptual Pre-Design: Water Reclamation and Solid Waste Processing Facilities*, June 1990.

Residential – Studio – ***80.0 gallons per day (gpd) / d.u.***
Residential – One Bedroom – ***120.0 gpd/d.u.***
Residential – Two Bedroom – ***160.0 gpd/d.u.***
Residential – Three Bedroom – ***200.0 gpd/d.u.***
Residential – Four Bedroom – ***240.0 gpd/d.u.***
Office – ***150.0 gpd/1000 s.f. (k.s.f.)***
Retail – ***80.0 gpd/k.s.f.***
Hotel – ***130.0 gpd/room***
Civic/Institutional – ***80.0 gpd/k.s.f.***
Marina – ***13 gpd/slip***

Note: For the cumulative projects analysis, a composite Residential consumption factors was derived (in order to have a single residential factor, as related projects are not differentiated by housing type) for simplicity of analysis. It is the average consumption of each housing type, which is equal to 160.0 gpd/d.u.

Wastewater Generation

The following wastewater generation factors are from the City of Los Angeles *Draft L.A. CEQA Thresholds Guide* (May, 1998), for sewerage generation rates (Exhibit K.2-11). These generation rates are identical to the consumption factors above for potable water, with the exception of office uses, where reclaimed water is used for toilet flushing and in cooling towers. This results in a difference of 30 gpd/k.s.f. for *office uses* between the water consumption and wastewater generation factors.
Residential – ***160.0 gpd/d.u.***

Office – ***180.0 gpd/1000 k.s.f.***
Retail – ***80.0 gpd/k.s.f.***
Hotel – ***130.0 gpd/room***
Civic/Institutional – ***80.0 gpd/k.s.f.***
Marina – ***13 gpd/slip***

Solid Waste Generation

The following solid waste generation factors are from the California Integrated Waste Management Board's website, Waste Characterization database: *http://www.ciwmb.ca.gov/WasteChar/WasteGenRates.* The solid waste generation factor for Marina slips is from *Master Plan for Playa Vista, Draft Program EIR*, September 28, 1992, which used the actual solid waste generation rate per slip from King's Harbor Marina. The solid waste generation factor for Restaurant uses is from *Master Plan for Playa Vista, Draft Program EIR*, September 28, 1992, from which a composite factor was derived from the "sit down" and "fast food" restaurant factors.

Residential – (12.23 lbs./household/day [Residential factor]) / (2000 lbs./ton) = ***0.006115 tons per day (t.p.d.)/d.u.*** → ***0.00612 t.p.d./d.u.***
Office – (0.006 lbs./s.f./day [Office factor]) / (2000 lbs./ton) = ***0.000003 t.p.d./s.f.***
Retail – (3.12 lbs./100 s.f./day [Supermarket factor]) / (2000 lbs./ton) = 0.00156 tpd/100 s.f./day → ***0.0000156 t.p.d./s.f./day***
Hotel – (4.0 lbs./room/day [Hotel/Motel factor, assuming 750 s.f./room]) / (2000 lbs./ton) = 0.002 t.p.d./room → (0.002 t.p.d./room) / (750 s.f./room) = 0.0000026 t.p.d./s.f. * 850 s.f./room (assumed for Playa Vista Second Phase Project) = ***0.00221 t.p.d./room***
Civic/Institutional – (0.007 lbs./s.f./day [Public/Institutional factor]) / (2000 lbs./ton) = ***0.0000035 t.p.d./s.f.***
Marina – ***0.002 t.p.d./slip***
Warehouse – (0.0108 tons/s.f./yr. [Warehouse factor]) / (365 days/yr.) = ***0.0000295 t.p.d./s.f.***
Theater – (3.12 lbs./100 s.f./day [Other Services factor]) / (2000 lbs./ton) = 0.00156 t.p.d./100 s.f. → (0.00156 t.p.d.) / (100 s.f.) = 0.00000156 t.p.d./s.f. → (0.00000156 t.p.d./s.f.) * (23 s.f./theater seat [assumed]) = ***0.000359 t.p.d./seat***
Restaurant – (0.00000696 t.p.d./s.f. ["sit down" restaurant factor] + 0.00000607 t.p.d./s.f. ["fast food" restaurant factor]) = 0.00001303 / 2 = 0.000006515 → ***0.0000065 t.p.d./s.f.***
Industrial – (62.5 lbs./k.s.f./day [Industrial factor]) / (2000 lbs./ton) = 0.03125 t.p.d./k.s.f. → (0.03125 t.p.d./k.s.f.) / (1000 s.f./k.s.f.) = 0.00003125 → ***0.0000312 t.p.d./s.f.***
Parking – 0.0 lbs./space/day (solid waste generation for parking is considered negligible) → ***0.0 t.p.d./space***