ATTACHMENT 2
(2 0F 2)

SUPPORTING DOCUMENTATION FOR WATER AND ENERGY SAVINGS AND GHG CALCULATIONS

Supplement to Attachment 2

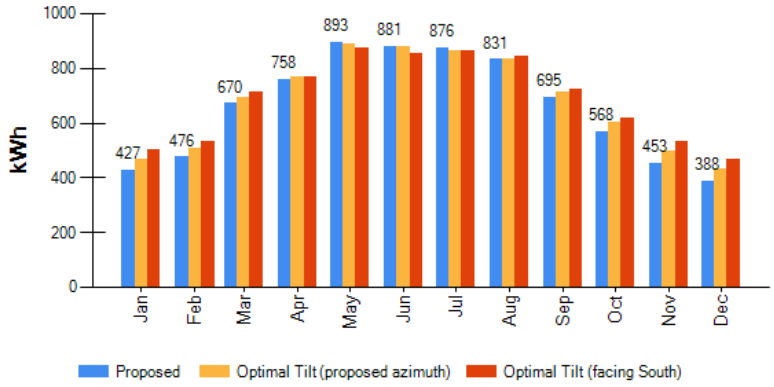
STEP	Unit	Assumptions
Step 1	32.85 MG/Year Import; 49.27MG/year other potable	• SMURRF produces 500KG/day (182.5 MG/year) • That water is comprised of 45% potable make-up water, of which 40% is from imported sources or 32.85 MG/year of import sources (Project 1 Calculations), and 60% (49.27 MG/year) is treated local groundwater (Project 2 Calculations).
Step 2	0	Project will reduce/eliminate consumption of this water
Step 5	30 Years	Useful life of installed equipment
Step 6	100%	See Step 1
Step 7	2982 kWh/MG	• Arcadia Treatment Plant produces an average of 9 MGD • 2013 CY energy use = 9,795,440 kWh; thus EI - 2982 kWh/MG
Step 8	0.3691 kg CO2e/kWh	An average of 1,940 kWh/AF is equivalent to 0.79 tons CO2e/AF; thus 1,940 kWh = 0.79 tons CO2e; thus 0.3691 kg/kWh See Table 9.7: LADWP Profile 2009 of Chapter 9 of "Water Supply Scarcity in Southern California: Assessing Water District Level Strategies" (Blanco, H. P.I., Co-PIs: J. Newell (U. Michigan); L. Stott (USC); M. Alberti (UW). 2012. Los Angeles, CA: Center for Sustainable Cities, Price School of Public Policy, University of Southern California.)
Step 9	691 kWh/MG	MWD EI - 2,470 kWh/AF which is equivalent to 691 kWh/MG MWD EI provided by jlambeck@mwdh2o.com 11/03/14.
Step 10	52,811 kWh/year	• Site A: 7,916 kWh/year • Site A-1: 12,560 kWh/year • Site B: 32,335 kWh/year

Incentive Calculator - CSI Standard PV

The CSI-EPBB calculator is a tool available to participants of the CSI Program to determine the EPBB Design Factor and calculate an appropriate incentive level based on a reasonable expectation of performance for an individual system. The CSI-EPBB Calculator has also been created for consumer's to educate themselves on the differences of solar system design and how changes to the PV system's specifications will produce different kilowatt hour results over the course of a year. Please be aware that actual performance of an installed PV system is based on numerous factors, including some factors that may not be considered in the CSI-EPBB Calculator. While this calculator relies on industry-standard assumptions, and is driven by NREL's PV Watts v. 2 calculator, there may be other factors that affect the output of your PV System.

	Proposed	Reference
Site Specifications:		
Project Name	SMURRF Site A	
ZIP Code	90401	92867
City	Santa Monica	Orange
Utility	SCE	
Customer Type	Government/Non-Profit	
Incentive Type	EPBB	
PV System Specifications:		
PV Module	SunPower:SPR-X20-327 327.0W STC, 308.1W PTC, 311.1W PTC_{adj} [1]	
Number of Modules	16	
Mounting Method	>6" average standoff	
DC Rating (kW STC)	5.2320	
DC Rating (kW PTC)	4.9296	
Inverter	Power-One:PVI-5000-OUTD-US (240V)	
Number of Inverters	1	
Inverter Efficiency (%)	96.50 %	
Shading	Minimal Shading	Minimal Shading
Array Tilt (degrees)	10	
Array Azimuth (degrees)	225 **True North 0°**	
Optimal Tilt (proposed azimuth)	18	
Optimal Tilt (facing South)	17	17

Estimated Monthly Production



	Proposed	Reference
Results		
Annual kWh	7,916 (a)	
at optimal tilt	8,148 (b)	
facing south at optimal tilt	8,290 (c)	8,217 (d)
Summer Months	May-October	May-October
Summer kWh	4,744 (e)	
at optimal tilt	4,781 (f)	
facing south at optimal tilt	4,775 (g)	4,775 (h)
CEC-AC Rating	**4.757 kW**	
Design Correction[2]	99.226%	
Geographic Correction[3]	100.000%	
Installation Correction[4]	100.000%	
Design Factor[5]	**99.226%**	
CSI Rating[6]	**4.720 kW**	
Incentive Rate	**$0.70/Watt**	
Incentive[7]	**$3,304**	
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Notes:

1. **PTC_{adj}**: The adjusted PTC rating is calculated based on the installation method and panel specifications. See the User Guide Appendix A for details on the adjusted PTC calculation.
2. **Design Correction**: This is the ratio of the summer output of the proposed system (e) and the summer output of the summer optimal system at the proposed location (f).
3. **Geographic Correction**: This is the ratio of the annual output of the summer optimal south facing system at the proposed location (c) and the annual output of the summer optimal south facing system at the reference location (d).
4. **Installation Correction**: This is the ratio of the adjusted PTC rating and the unadjusted PTC rating.
5. **Design Factor**: This is the product of the Design Correction, Geographic Correction, and Installation Correction.
6. **CSI Rating**: This is the product of the Design Factor and the CEC-AC Rating.
7. **Incentive**: This is the total incentive for the proposed system. It is the product of the CSI Rating and the Incentive Rate.
   Please be aware that the final CSI incentive rate that is reserved for you will be determined by your CSI Program Administrator at the time your reservation request (RR) application is approved, and may be lower than the current incentive rate shown in the CSI Statewide Trigger Point Tracker. Please note that final incentive amounts are subject to change based upon the configuration of the as-built system. (Per the CSI Handbook, no projects or applications are reserved CSI funding until all required information has been submitted and approved in writing by the Program Administrator.)
8. As of 6/20/08, the CSI-EPBB calculator performs rounding as follows:
   - Estimated kWh production is rounded to the kWh
   - CEC-AC rating is rounded to the watt
   - CSI rating is rounded to the watt
   - Design factor is rounded to 5 significant digits
   - Incentive is rounded to the dollar

E-mail csi-epbb@aesc-inc.com with questions or comments.

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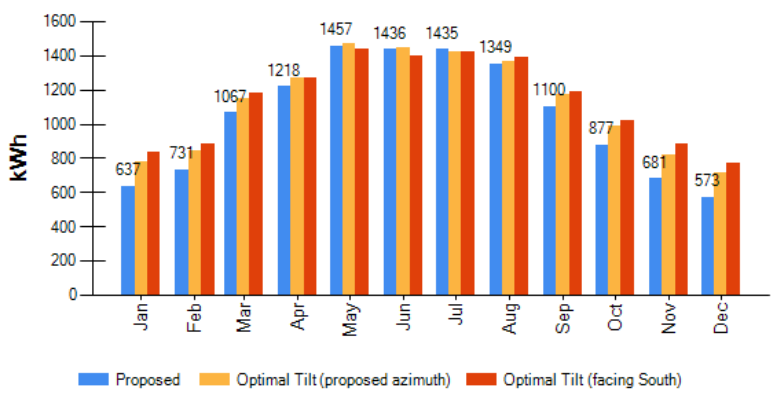
	Proposed	Reference
Site Specifications:		
Project Name	Site A1	
ZIP Code	90401	92867
City	Santa Monica	Orange
Utility	SCE	
Customer Type	Government/Non-Profit	
Incentive Type	EPBB	
PV System Specifications:		
PV Module	SunPower:SPR-E20-327 327.0W STC, 301.4W PTC, 305.1W PTC_{adj} [1]	
Number of Modules	27	
Mounting Method	>6" average standoff	
DC Rating (kW STC)	8.8290	
DC Rating (kW PTC)	8.1378	
Inverter	SunPower:SPR-5000m (240V)	
Number of Inverters	2	
Inverter Efficiency (%)	95.50 %	
Shading	Minimal Shading	Minimal Shading
Array Tilt (degrees)	3	
Array Azimuth (degrees)	225 **True North 0°**	
Optimal Tilt (proposed azimuth)	18	
Optimal Tilt (facing South)	17	17

Estimated Monthly Production



	Proposed	Reference
Results		
Annual kWh	12,560 (a)	
at optimal tilt	13,443 (b)	
facing south at optimal tilt	13,673 (c)	13,541 (d)
Summer Months	May-October	May-October
Summer kWh	7,654 (e)	
at optimal tilt	7,869 (f)	
facing south at optimal tilt	7,856 (g)	7,850 (h)
CEC-AC Rating	**7.772 kW**	
Design Correction[2]	97.268%	
Geographic Correction[3]	100.000%	
Installation Correction[4]	100.000%	
Design Factor[5]	**97.268%**	
CSI Rating[6]	**7.560 kW**	
Incentive Rate	**$0.70/Watt**	
Incentive[7]	**$5,292**	
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Notes:

1. **PTC_{adj}**: The adjusted PTC rating is calculated based on the installation method and panel specifications. See the User Guide Appendix A for details on the adjusted PTC calculation.
2. **Design Correction**: This is the ratio of the summer output of the proposed system (e) and the summer output of the summer optimal system at the proposed location (f).
3. **Geographic Correction**: This is the ratio of the annual output of the summer optimal south facing system at the proposed location (c) and the annual output of the summer optimal south facing system at the reference location (d).
4. **Installation Correction**: This is the ratio of the adjusted PTC rating and the unadjusted PTC rating.
5. **Design Factor**: This is the product of the Design Correction, Geographic Correction, and Installation Correction.
6. **CSI Rating**: This is the product of the Design Factor and the CEC-AC Rating.
7. **Incentive**: This is the total incentive for the proposed system. It is the product of the CSI Rating and the Incentive Rate.
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8. As of 6/20/08, the CSI-EPBB calculator performs rounding as follows:
   - Estimated kWh production is rounded to the kWh
   - CEC-AC rating is rounded to the watt
   - CSI rating is rounded to the watt
   - Design factor is rounded to 5 significant digits
   - Incentive is rounded to the dollar

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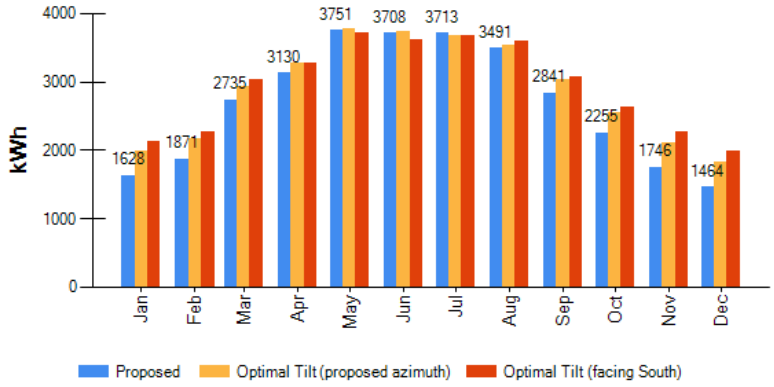
	Proposed	Reference
Site Specifications:		
Project Name	SMURRF Site B	
ZIP Code	90401	92867
City	Santa Monica	Orange
Utility	SCE	
Customer Type	Government/Non-Profit	
Incentive Type	EPBB	
PV System Specifications:		
PV Module	SunPower:SPR-X20-327 327.0W STC, 308.1W PTC, 311.1W PTC_{adj} [1]	
Number of Modules	68	
Mounting Method	>6" average standoff	
DC Rating (kW STC)	22.2360	
DC Rating (kW PTC)	20.9508	
Inverter	Power-One:PVI-6000-OUTD-US-Z-A (240V)	
Number of Inverters	4	
Inverter Efficiency (%)	96.50 %	
Shading	Minimal Shading	Minimal Shading
Array Tilt (degrees)	3	
Array Azimuth (degrees)	225 **True North 0°**	
Optimal Tilt (proposed azimuth)	18	
Optimal Tilt (facing South)	17	17

Estimated Monthly Production



	Proposed	Reference
Results		
Annual kWh	32,335 (a)	
at optimal tilt	34,627 (b)	
facing south at optimal tilt	35,231 (c)	34,923 (d)
Summer Months	May-October	May-October
Summer kWh	19,760 (e)	
at optimal tilt	20,321 (f)	
facing south at optimal tilt	20,295 (g)	20,295 (h)
CEC-AC Rating	**20.218 kW**	
Design Correction[2]	97.239%	
Geographic Correction[3]	100.000%	
Installation Correction[4]	100.000%	
Design Factor[5]	**97.239%**	
CSI Rating[6]	**19.660 kW**	
Incentive Rate	**$0.70/Watt**	
Incentive[7]	**$13,762**	
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Notes:

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2. **Design Correction**: This is the ratio of the summer output of the proposed system (e) and the summer output of the summer optimal system at the proposed location (f).
3. **Geographic Correction**: This is the ratio of the annual output of the summer optimal south facing system at the proposed location (c) and the annual output of the summer optimal south facing system at the reference location (d).
4. **Installation Correction**: This is the ratio of the adjusted PTC rating and the unadjusted PTC rating.
5. **Design Factor**: This is the product of the Design Correction, Geographic Correction, and Installation Correction.
6. **CSI Rating**: This is the product of the Design Factor and the CEC-AC Rating.
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