7. **Are you aware that there is currently an array of solar panels on campus?** *
Mark only one oval.

- ◯ Yes
- ◯ No

8. **What is your opinion of the current array?** *
Mark only one oval.

- ◯ I am pleased with the current array.
- ◯ I don't know enough about it / I do not have an opinion.
- ◯ I am not pleased with the current array.

9. **Would you like to see more solar arrays on campus?** *
Mark only one oval.

- ◯ Yes
- ◯ No

10. **If proposed, would you support the installation of an array of solar panels on the Collins Admissions House parking lot [pictured below]?** *
Mark only one oval.

- ◯ I would like Occidental to have solar panels installed here.
- ◯ I am neutral regarding the installation of solar panels here.
- ◯ I would prefer Occidental not have solar panels installed here.

11. **If you have concerns about a project on the Admissions parking lot, how would you categorize them?** *
Mark only one oval.

- ◯ I do not have concerns.
- ◯ I don't like the aesthetic.
- ◯ I think initial expenses are too high.
- ◯ I think the outside community, or others, would disapprove.
- ◯ I think the panels would be inconvenient.
- ◯ Other: _____

12. **If proposed, would you support the installation of an array of solar panels on the Braun Hall parking lot [pictured below]?** *

Mark only one oval.

- ◯ I would like Occidental to have solar panels installed here.
- ◯ I am neutral regarding the installation of solar panels here.
- ◯ I would prefer Occidental not have solar panels installed here.

13. **If you have concerns about a project on the Braun Hall parking lot, how would you categorize them?** *

Mark only one oval.

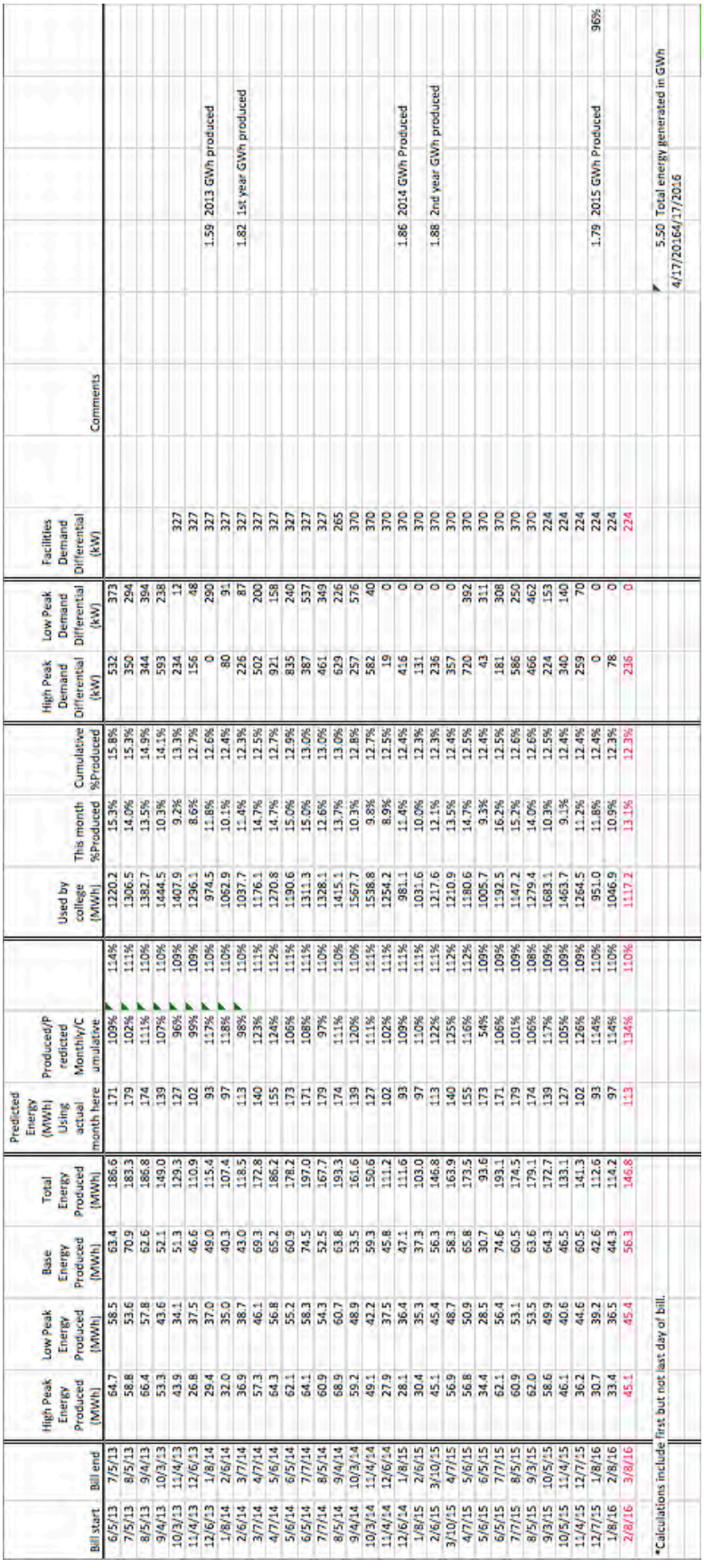
- ◯ I do not have concerns.
- ◯ I don't like the aesthetic.
- ◯ I think initial expenses are too high.
- ◯ I think the outside community, or others, would disapprove.
- ◯ I think the panels would be inconvenient.
- ◯ Other: _____

Academic Commons/Mary Norton Clapp Library 5
Admission Office (Collins House) 19
Anderson Field 104
Annenberg President's House (1852 Campus Road) 23
Arthur G. Coons Administrative Center (AGC) 1
Athletics/Alumni Gym Fitness Center 9
Bell Field 103
Bell-Young Hall 34
Berkus Hall 102
Berkus House (1601 Campus Road) 53
Bioscience Building 44
Bird Hillside Theater/Treehouse Building 22
Booth Music and Speech Center/Bird Studio 14
Braun Hall 29
Campus Safety/Facilities Management (Lower Level) 12L
Center for Gender Equity (Stewart-Cleland Hall Lower Lounge) 31
Central Quadrangle (Academic Quad) 126
Chilcott Hall 25
Child Development Center (1824 Campus Road) 20
Community Literacy Center (Thorne 9 – at rear) 13
Culey Athletic Facility 41
Emmons Student Wellness Center 27
Erdman Hall 24
Fowler Hall 3
Gilman Fountain 50
Haines Hall 26
Hameetman Science Center 39
Herrick Memorial Chapel and Interfaith Center 6
Intercultural Community Center (1501 Campus Road) 48
Johnson Hall/Mitchkinnon Center/Choi Auditorium 2
Johnson Student Center and Freeman College Union 15
Keck Theater 45
Kemp Stadium/Patterson Field/Henry Track 101
McKinnon Center for Global Affairs at Johnson Hall 2
McKinnon Tennis Center (Upper Level) 107
Moore Laboratory of Zoology 30
Mullin Entrance/Mullin Grove 127
Mullin Family Studio and Art Gallery 48
Newcomb Hall 18
Norris Hall, North & South 28
Norris Hall of Chemistry (Mosher Lecture Hall) 4
Pauley Hall 33
Psychology Laboratory 38
Rose Hills Foundation Student Activities Center 15
Rush Gymnasium 8
Samuelson Alumni Center 37A
Samuelson Campus Pavilion/Tiger Cooler 16
Soccer Fields (lower and upper) 105-106
Spencer Field House 32
Stearns Hall 40
Stewart-Cleland Hall 31
Swan Hall/Dunke Commons 7
Sycamore Glen 121
Taylor Pool/Field Building 10
Thorne Hall 13
Treehouse Building 22
Upward Bound (1737 Campus Road) 9K
Urban and Environmental Policy Institute (1862 Campus Road) 21
Wengerf Center for the Liberal Arts 17
Wylie Hall 36

14. **Do you have any additional comments about this project? (Skip if not)**

Document B: Daniel Snowden-Ifft's Solar Tracker

Energy Information



Bill start	Bill end	High Peak Energy Produced (MWh)	Low Peak Energy Produced (MWh)	Base Energy Produced (MWh)	Total Energy Produced (MWh)	Predicted Energy (MWh) Using actual month here	Produced/Predicted Monthly/Cumulative		Used by college (MWh)	This month %Produced	Cumulative %Produced	High Peak Demand Differential (kW)	Low Peak Demand Differential (kW)	Facilities Demand Differential (kW)	Comments		
6/5/13	7/5/13	64.7	58.5	63.4	186.6	171	109%	114%	1220.2	15.3%	15.8%	532	373				
7/5/13	8/5/13	58.8	53.6	70.9	183.3	179	102%	111%	1306.5	14.0%	15.3%	350	294				
8/5/13	9/4/13	66.4	57.8	62.6	186.8	174	111%	110%	1382.7	13.5%	14.9%	344	394				
9/4/13	10/3/13	53.3	43.6	52.1	149.0	139	107%	110%	1444.5	10.3%	14.1%	593	238				
10/3/13	11/4/13	43.9	34.1	51.3	129.3	127	96%	109%	1407.9	9.2%	13.3%	234	12	327			
11/4/13	12/6/13	26.8	37.5	46.6	110.9	102	99%	109%	1296.1	8.6%	12.7%	156	48	327			
12/6/13	1/8/14	29.4	37.0	49.0	115.4	93	117%	110%	974.5	11.8%	12.6%	0	290	327	1.59	2013 GWh produced	
1/8/14	2/6/14	32.0	35.0	40.3	107.4	97	1.8%	110%	1062.9	10.1%	12.4%	80	91	327			
2/6/14	3/7/14	36.9	38.7	43.0	118.5	113	98%	110%	1037.7	11.4%	12.3%	226	87	327	1.82	1st year GWh produced	
3/7/14	4/7/14	57.3	46.1	69.3	172.8	140	123%	111%	1176.1	14.7%	12.5%	502	200	327			
4/7/14	5/6/14	64.3	56.8	65.2	186.2	155	124%	112%	1270.8	14.7%	12.7%	921	158	327			
5/6/14	6/5/14	62.1	55.2	60.9	178.2	173	106%	111%	1190.6	15.0%	12.9%	835	240	327			
6/5/14	7/7/14	64.1	58.3	74.5	197.0	171	108%	111%	1311.3	15.0%	13.0%	387	537	327			
7/7/14	8/5/14	60.9	54.3	52.5	167.7	179	97%	110%	1328.1	12.6%	13.0%	461	349	327			
8/5/14	9/4/14	68.9	60.7	63.8	193.3	174	111%	110%	1415.1	13.7%	13.0%	629	226	265			
9/4/14	10/3/14	59.2	48.9	53.5	161.6	139	120%	110%	1567.7	10.3%	12.8%	257	576	370			
10/3/14	11/4/14	49.1	42.2	59.3	150.6	127	111%	111%	1538.8	9.8%	12.7%	582	40	370			
11/4/14	12/6/14	27.9	37.5	45.8	111.2	102	102%	111%	1254.2	8.9%	12.5%	19	0	370			
12/6/14	1/8/15	28.1	36.4	47.1	111.6	93	109%	111%	981.1	11.4%	12.4%	416	0	370	1.86	2014 GWh Produced	
1/8/15	2/6/15	30.4	35.3	37.3	103.0	97	110%	111%	1031.6	10.0%	12.3%	131	0	370			
2/6/15	3/10/15	45.1	45.4	56.3	146.8	113	122%	111%	1217.6	12.1%	12.3%	236	0	370	1.88	2nd year GWh produced	
3/10/15	4/7/15	56.9	48.7	58.3	163.9	140	125%	112%	1210.9	13.5%	12.4%	357	0	370			
4/7/15	5/6/15	56.8	50.9	65.8	173.5	155	116%	112%	1180.6	14.7%	12.5%	720	392	370			
5/6/15	6/5/15	34.4	28.5	30.7	93.6	173	54%	109%	1005.7	9.3%	12.4%	43	311	370			
6/5/15	7/7/15	62.1	56.4	74.6	193.1	171	106%	109%	1192.5	16.2%	12.5%	181	308	370			
7/7/15	8/5/15	60.9	53.1	60.5	174.5	179	101%	109%	1147.2	15.2%	12.6%	586	250	370			
8/5/15	9/3/15	62.0	53.5	63.6	179.1	174	106%	108%	1279.4	14.0%	12.6%	466	462	370			
9/3/15	10/5/15	58.6	49.9	64.3	172.7	139	117%	109%	1683.1	10.3%	12.5%	224	153	224			
10/5/15	11/4/15	46.1	40.6	46.5	133.1	127	105%	109%	1463.7	9.1%	12.4%	340	140	224			
11/4/15	12/7/15	36.2	44.6	60.5	141.3	102	126%	109%	1264.5	11.2%	12.4%	259	70	224			
12/7/15	1/8/16	30.7	39.2	42.6	112.6	93	114%	110%	951.0	11.8%	12.4%	0	0	224	1.79	2015 GWh Produced	96%
1/8/16	2/8/16	33.4	36.5	44.3	114.2	97	114%	110%	1046.9	10.9%	12.3%	78	0	224			
2/8/16	3/8/16	45.1	45.4	56.3	146.8	113	134%	110%	1117.2	13.1%	12.3%	236	0	224			
															5.50	Total energy generated in GWh	
																4/17/20164/17/2016	

*Calculations include first but not last day of bill.

Bill Information

Bill start	Bill end	Total energy (kWh)	Total charges	Days	High peak demand (kW)	High peak demand rate ($/kW)	High peak energy (kWh)	High peak energy charge ($/kWh)	High Peak Reactive Energy (kVARh)	High Peak Reactive rate ($/kVARh)	Low peak demand (kW)	Low peak demand rate ($/kW)	Low peak energy (kWh)	Low peak energy charge ($/kWh)	Low Peak Reactive Energy (kVARh)	Low Peak Reactive rate ($/kVARh)
1/8/15	2/6/15	928,637	$138,384.90	29	2070.4	$4.3000	124,350	$0.04258	19,546	0.004890			188,191	$0.04258	132,518	0.004890
2/6/15	3/10/15	1,070,853	$155,975.90	32	2075.5	$4.3000	131,964	$0.04258	99,334	0.008190			208,415	$0.04258	142,947	0.008190
3/10/15	4/7/15	1,046,991	$154,358.15	28	2321.9	$4.3000	128,303	$0.04258	99,504	0.008190			207,043	$0.04258	140,217	0.008190
4/7/15	5/6/15	1,007,050	$149,739.49	29	2025.0	$4.3000	128,854	$0.04258	100,173	0.008190			212,284	$0.04258	144,270	0.008190
5/6/15	6/5/15	912,137	$142,284.69	30	2441.6	$5.0200	128,905	$0.04343	96,450	0.005016	2124.8	$0.4400	195,330	$0.04240	139,349	0.004675
6/5/15	7/7/15	999,461	$171,086.52	32	2482.6	$9.7000	135,846	$0.04785	108,578	0.009310	2172.2	$3.3000	201,499	$0.04159	148,762	0.006330
7/7/15	8/5/15	972,666	$168,874.99	29	2370.6	$9.7000	148,413	$0.04785	111,912	0.009310	2617.0	$3.3000	214,640	$0.04159	149,936	0.006330
8/5/15	9/3/15	1,100,327	$187,179.35	29	2848.6	$9.7000	164,655	$0.04785	115,349	0.005560	2734.1	$3.3000	240,134	$0.04159	156,304	0.003760
9/3/15	10/5/15	1,510,400	$236,416.73	32	3201.3	$9.0300	197,600	$0.04746	125,832	0.005504	3182.0	$2.8900	302,579	$0.04167	174,751	0.003858
10/5/15	11/4/15	1,330,611	$170,885.22	30	2670.7	$4.3000	165,416	$0.04258	111,537	0.004890			271,654	$0.04258	163,521	0.004890
11/4/15	12/7/15	1,123,265	$149,002.11	33	2281.0	$4.3000	130,863	$0.04258	100,651	0.008190			207,472	$0.04258	146,037	0.008190
12/7/15	1/8/16	838,447	$129,346.03	32	2002.6	$4.3000	105,318	$0.04258	88,564	0.008190			128,768	$0.04258	128,768	0.008190
1/8/16	2/8/16	932,665	$132,832.00	31	1814.4	$4.3000	108,502	$0.04258	80,847	0.004890			170,349	$0.04258	115,671	0.004890
2/8/16	3/8/16	970,461	$148,420.82	29	2070.4	$4.3000	119,592	$0.04258	90,021	0.004890			188,876	$0.04258	129,546	0.004890

The red numbers are estimates in this spreadsheet.

Last 12 2015	14.01
Last 12 2014	14.45

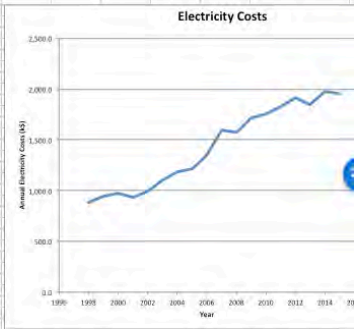
Base energy (kWh)	Base energy charge ($/kWh)	Base Reactive Energy (kVARh)	Base Reactive rate ($/kVARh)	ECA energy rate ($/kWh)	VEA charge ($/kWh)	CRPSEA charge ($/kWh)	VRPSEA charge ($/kWh)	City of Los Angeles Utility Tax	State of California Energy Surcharge ($/kWh)	Facility Charge ($/kW)	ESA charge ($/kW)	RCA charge ($/kW)	IRCA charge ($/kW)	High peak energy rate total ($/kWh)	Low peak energy rate total ($/kWh)	Base energy rate total ($/kWh)	Average Energy cost	Facilities charge total ($/kW)
457,809	$0.02592	457,809	0.002130	$0.056900	$0.008220	$0.008220	$0.001990	12.5%	$0.00029	$4.56	$0.46	$0.96	$0.70	$0.1329	$0.1329	$0.1142	$0.1218	$6.68
730,474	$0.02592	522,545	0.003550	$0.056900	$0.008220	$0.000810	$0.001990	12.5%	$0.00029	$4.56	$0.46	$0.96	$0.70	$0.1246	$0.1246	$0.1059	$0.1118	$6.68
711,645	$0.02592	471,758	0.003550	$0.056900	$0.008029	$0.000808	$0.002367	12.5%	$0.00029	$4.56	$0.46	$0.96	$0.70	$0.1248	$0.1248	$0.1061	$0.1121	$6.68
665,912	$0.02592	460,856	0.003550	$0.056900	$0.007330	$0.000800	$0.003750	12.5%	$0.00029	$4.56	$0.46	$0.96	$0.70	$0.1256	$0.1256	$0.1068	$0.1132	$6.68
587,902	$0.02541	438,083	0.002082	$0.056900	$0.007330	$0.000800	$0.003750	12.5%	$0.00029	$4.56	$0.46	$0.96	$0.70	$0.1265	$0.1254	$0.1063	$0.1132	$6.68
662,116	$0.02150	494,948	0.002830	$0.056900	$0.006914	$0.000779	$0.004099	12.5%	$0.00029	$4.56	$0.46	$0.96	$0.70	$0.1314	$0.1244	$0.1018	$0.1103	$6.68
609,613	$0.02150	429,279	0.002830	$0.056900	$0.005110	$0.000690	$0.005610	12.5%	$0.00029	$4.56	$0.46	$0.96	$0.70	$0.1310	$0.1239	$0.1013	$0.1108	$6.68
695,538	$0.02150	462,383	0.001700	$0.056900	$0.005110	$0.000690	$0.005610	12.5%	$0.00029	$4.56	$0.46	$0.96	$0.70	$0.1310	$0.1239	$0.1013	$0.1107	$6.68
1,010,221	$0.02207	597,392	0.001759	$0.056900	$0.004195	$0.001260	$0.006860	12.5%	$0.00029	$4.56	$0.46	$0.96	$0.70	$0.1316	$0.1250	$0.1030	$0.1111	$6.68
893,541	$0.02592	533,875	0.002130	$0.056900	$0.003280	$0.001830	$0.008110	0.0%	$0.00029	$4.56	$0.46	$0.96	$0.70	$0.1130	$0.1130	$0.0963	$0.1018	$6.68
784,930	$0.02592	527,595	0.003550	$0.056900	$0.003280	$0.001830	$0.008110	0.0%	$0.00029	$4.56	$0.46	$0.96	$0.70	$0.1130	$0.1130	$0.0963	$0.1013	$6.68
570,846	$0.02592	420,797	0.003550	$0.056900	$0.001880	$0.001983	$0.008211	10.0%	$0.00029	$4.56	$0.46	$0.96	$0.70	$0.1230	$0.1230	$0.1047	$0.1100	$6.68
653,814	$0.02592	448,974	0.002130	$0.056900	-$0.003120	$0.002530	$0.008570	10.0%	$0.00029	$4.56	$0.46	$0.96	$0.70	$0.1185	$0.1185	$0.1002	$0.1056	$6.68
661,992	$0.02592	473,556	0.002130	$0.056900	-$0.003120	$0.002530	$0.008570	10.0%	$0.00029	$4.56	$0.46	$0.96	$0.70	$0.1185	$0.1185	$0.1002	$0.1060	$6.68

Savings Information

Bill start	Bill end	High peak savings	Low peak savings	Base savings	High peak demand savings	Low peak demand savings	Facilities charge savings	Energy savings	Reactive Energy Savings	Demand savings	Facilities charge savings	Solar Expenses		Total savings	Monthly Savings Compared to Last Year	Cumulative energy savings	Cumulative Reactive Energy Savings	Cumulative demand savings	Cumulative facilities charge savings	Cumulative Expenses	Cumulative savings	Comments
8/5/15	9/3/15	$8,125.59	$6,626.90	$6,443.89	$4,524.70	$1,525.39	$2,474.27	$21,196.38	$444.40	$6,050.09	$2,474.27	$375	Weeds at 5*	$29,345.74	97%	$529,590.93	$21,806.70	$93,112.53	$53,277.11	$26,195.92	$671,591.36	
9/3/15	10/5/15	$7,704.65	$6,237.49	$6,620.81	$2,020.99	$440.85	$1,495.04	$20,562.95	$383.28	$2,461.84	$1,495.04			$24,519.83	86%	$550,153.88	$22,189.98	$95,574.37	$54,772.15	$26,195.92	$696,494.46	
10/5/15	11/4/15	$5,204.94	$4,584.56	$4,478.02	$1,460.21	$0.00	$1,495.04	$14,267.52	$330.48	$1,460.21	$1,495.04	$375	Weeds at 5*	$16,847.77	77%	$564,421.41	$22,520.46	$97,034.58	$56,267.19	$26,570.92	$713,672.72	
11/4/15	12/7/15	$4,089.34	$5,033.84	$5,829.38	$1,113.60	$0.00	$1,495.04	$14,952.55	$629.21	$1,113.60	$1,495.04			$17,561.18	109%	$579,371.96	$23,149.67	$98,148.17	$57,762.23	$26,570.92	$731,863.11	
12/7/15	1/8/16	$3,779.39	$4,824.79	$4,463.32	$0.00	$0.00	$1,495.04	$13,067.51	$644.47	$0.00	$1,495.04	$4,788	CSI Maintenc	$9,775.05	57%	$592,441.47	$23,794.14	$98,148.17	$59,257.26	$31,358.42	$742,282.63	$237,018.90
1/8/16	2/8/16	$3,957.04	$4,328.77	$4,438.24	$333.27	$0.00	$1,495.04	$12,724.04	$307.78	$333.27	$1,495.04			$14,552.35	85%	$605,165.51	$24,101.92	$98,481.44	$60,752.30	$31,358.42	$757,142.75	$235,627.47
2/8/16	3/8/16	$5,338.78	$5,382.86	$5,638.06	$1,014.80	$0.00	$1,495.04	$16,359.71	$403.96	$1,014.80	$1,495.04			$18,869.54	100%	$621,525.22	$24,505.88	$99,496.24	$62,247.34	$31,358.42	$776,416.26	$233,502.17
																	83%		21%		4%	
34	months old																				0.32%	maintenance costs per year of total costs
											May loss			-$23,261.60							

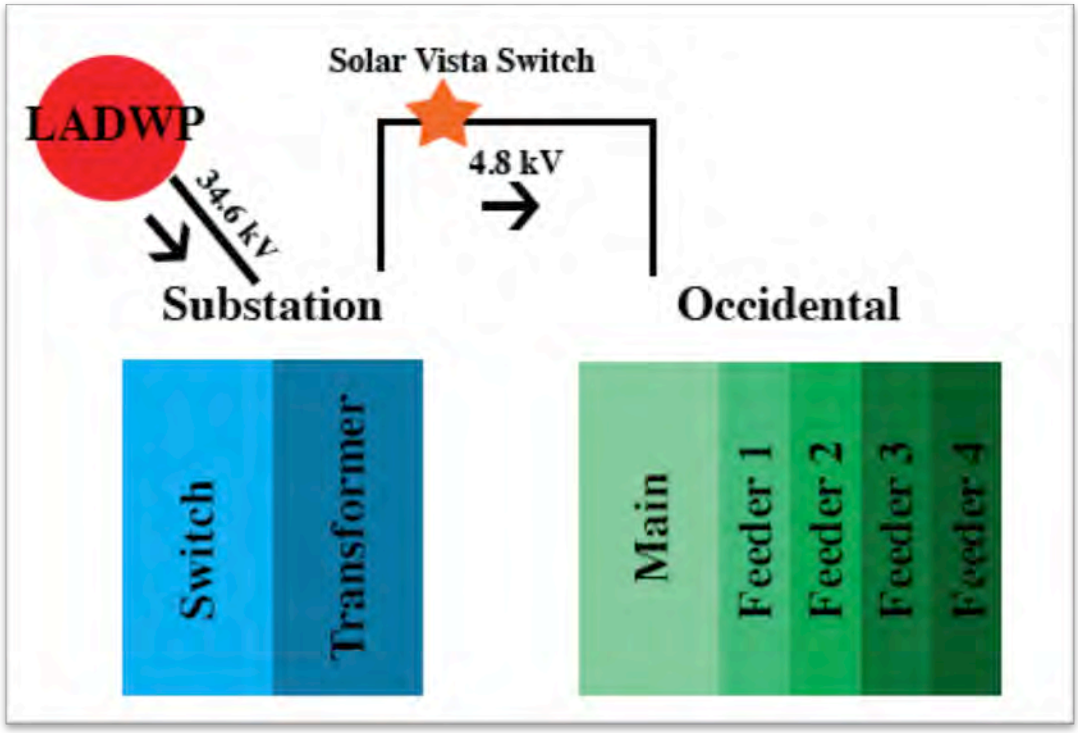
18-Year Plot

Calendar Year Numbers					
Year	Billed	Billed + Solar	kS	kS/GWh	
2015	12.84	14.63	1,953.5	$152.13	2.0%
2014	13.28	15.13	1,980.3	$149.13	6.6%
2013	13.19	14.78	1,845.01	$139.88	10.6%
2012	15.13	15.13	1,914.26	$126.50	-0.8%
2011	14.29	14.29	1,822.13	$127.53	3.1%
2010	14.23	14.23	1,759.71	$123.69	6.8%
2009	14.85	14.85	1,719.38	$115.80	9.6%
2008	14.91	14.91	1,575.90	$105.68	-7.5%
2007	13.94	13.94	1,592.49	$114.25	17.0%
2006	13.81	13.81	1,348.8	$97.67	7.6%
2005	13.38	13.38	1,214.0	$90.76	1.7%
2004	13.29	13.29	1,185.5	$89.22	14.1%
2003	14.07	14.07	1,100.9	$78.22	-12.7%
2002	11.10	11.10	994.2	$89.56	-6.0%
2001	9.85	9.85	937.8	$95.24	7.1%
2000	10.89	10.89	968.3	$88.92	-1.7%
1999	10.37	10.37	938.5	$90.47	-6.8%
1998	9.10	9.10	883.7	$97.11	



Document C: Occidental Substation Diagram

Document C: Occidental Substation Diagram (Includes Expected Location of Solar Vista Switch)



Document D: Estimated Air Conditioning Energy Usage

Daniel Snowden-Ifft
HVAC Energy Use & Carbob Equivalency Estimates

Chilcott ft^2 =	10,295
E. Norris ft^2 =	15,628
Haines ft^2 =	11,369
Pauley ft^2 =	11,494
Stearns ft^2 =	10,802
Other ft^2 ~	5,959
Total ft^2 ~	65,547
HVAC kWh/ft^2/year	5
Occupancy	92%
Total kWh/year	300,424
Current Oxy total kWh/year	14,630,000
% increase	2.1%
Rough DC solar array size equivalent (kW)	166

Document E: Co-Gen Calculations

Analysis of Customer Generation Rate Structure for Occidental College

Dan Snowden-Ifft

December 2015

Introduction

According to an email sent to us by the LADWP on December 9, 2015 if we were to exceed our current 1 MW of customer generation on campus we would have to switch from our current rate structure, A-3A, to a customer generation rate structure, CG-3(A). A side-by-side comparison is shown in Appendix A. Changes are highlighted in red for convenience. As can be seen the changes are in 3 different areas, Service Charges, Demand Charges and Backup Energy. I consider each separately below.

Service Charge

The monthly service charge would increase from $75 to $150 for a total yearly increase of $900. This is shown in the 3rd column in Table 1 – Summary of Changes below.

Table 1 – Summary of Changes

Month	Year	Service Fee	Demand High	Demand Low	Backup Energy High	Backup Energy Low	Net
December	2014	$75.00	$2,102.72				$2,027.72
January	2015	$75.00	$3,118.14				$3,043.14
February	2015	$75.00	$3,102.91				$3,027.91
March	2015	$75.00	$3,082.50				$3,007.50
April	2015	$75.00	$1,617.79				$1,542.79
May	2015	$75.00	$4,290.37				$4,215.37
June	2015	$75.00	$14,740.51	$2,544.77	$12,974.57	$4,779.64	$543.93
July	2015	$75.00	$11,693.30	$2,679.84	$12,384.82	$4,562.38	$2,649.06
August	2015	$75.00	$14,586.34	$2,110.94	$12,384.82	$4,562.38	$324.92
September	2015	$75.00	$17,141.73	$3,103.30	$12,974.57	$4,779.64	$2,415.82
October	2015	$75.00	$3,006.53				$2,931.53
November	2015	$75.00	$3,115.65				$3,040.65
Total		$900.00	$81,598.49	$10,438.85	$50,718.78	$18,684.04	$19,706.80

Demand Charges

As can be see in Appendix A there are substantial changes to the demand (power) charges. First the rates for CG-3(A) are about half of A3A. Second rates for CG-3(A) are based on Supplemental Demand instead of regular Demand. Supplemental Demand is important to understand for this document. The LADWP defines Supplemental Demand in the following way.

Definition of Supplemental Demand - "Supplemental Demand is the Maximum Coincident Demand per Rating Period, less the maximum measured customer generation demand in the respective Rating Period, but never less than zero."

The Maximum Coincident Demand is defined in the following way,

"The Maximum Coincidental Demand is the maximum of the coincident sum of the demand output at the generator or Rated Generation Capacity (RGC), and the Department-delivered demand at the Service Point. RGC will be used in determining Maximum Coincident Demand only in the event the customer does not have a unit meter."

Since the LADWP installed a meter on our solar array I am going to interpret this statement in the following way.

Definition of Maximum Coincidental Demand - "The Maximum Coincidental Demand is the maximum of the coincident sum of the demand output at the generator..., and the Department-delivered demand at the Service Point..."

The LADWP also has a meter for the campus as a whole. Both monitor the energy generated or used every 15 minutes. Thus the Coincidental Demand is just the sum of these two meters.

Now going back to the definition of the Supplemental Demand we need to understand what a Rating Period is. A Rating Period is one of a set of times, High Peak, Low Peak and Base, during a particular month. The definitions of these periods are shown in Appendix B but basically High Peak times are weekday afternoons, Low Peak times are weekday mornings and evenings and Base times are nights and weekends. So, for instance, the High Peak Rating Period is all weekday afternoons during a month.

Note that rates also depend on Season.

Definition of Season – "High season = June – September and Low season = October – May"

Getting back to the task at hand, changes in demand charges, we see, looking at Appendix A, that there are no demand charges during Base Periods for any Season. Figure 1, below, shows the demand for the High Peak Rating

Period for the month of July 2015[1]. To get the demand I took the energy either consumed, by the college's main meter, or generated by the solar array meter in each 15 minute interval and divided that by ¼ of an hour, to get the demand in kW. The brown points are for the college's main meter. The green points are for the solar array. The orange points are the sum of the two. The horizontal red line labeled Maximum Demand is the basis for the normal demand charge we pay every month. The horizontal red line labeled Maximum Generation Demand is the maximum power generated by the solar array in the month of July during the High Peak Period. The maximum rated power of the array is 1012 kW = 1.012 MW according to the LADWP and is shown with a horizontal pink line. The red horizontal line labeled Maximum Coincident Demand is the max of the orange points. For each of these curves you should see a dot, of the appropriate color, right on the line. The Supplemental Demand is the Maximum Coincident Demand minus the Maximum Generation Demand and is shown with a 4th horizontal red line.

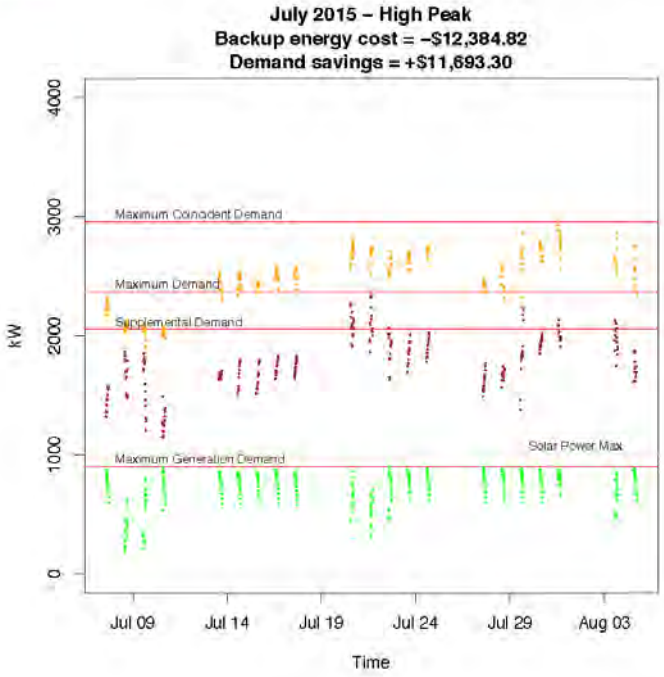


Figure 1 – This plot shows demand during High Peak Period during the billed month of July 2015.

[1] Note that I'm fudging here a little bit. When I talk in this memo about particular months what I mean is the billed month. So when I say July 2015 I actually mean July 7, 2015 to August 4, 2015, the month we were billed for. This fudge wouldn't affect the July bill but it might affect the "edge" months slightly. Fortunately Occidental's billing cycle nearly matches the actual months.

Note that the Supplemental Demand is lower than the normal Demand. Figure 2, below, shows the demand for the Low Peak Rating Period for the month of July 2015.

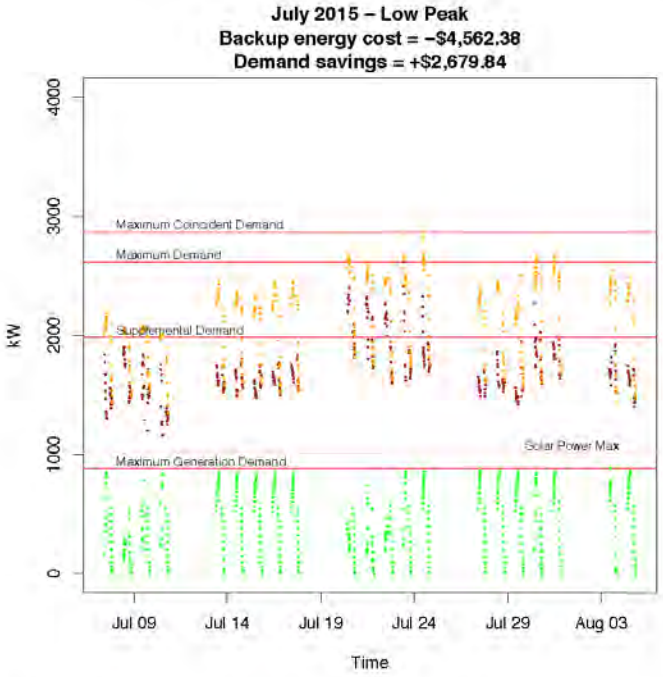


Figure 2 – Same as Figure 1 except this plot shows the demand during Low Peak Periods. Note that the Low Peak is morning and evenings so each day has two curves. Weekends are excluded. Hence the gaps.

Note that, again, the Supplemental Demand is lower than the regular Demand. In fact for all of the past 12 months the Supplemental Demand has been lower than the regular Demand so we win two ways. First the basis for the demand charge is lower in CG-3(A). Second the rates are lower for CG-3(A). The demand savings for each month in the High Peak and Low Peak periods are shown in Table 1. In total, demand savings for moving to the CG-3(A) rate exceed $90k for the past year.

Backup Energy

In CG-3(A) we are charged for Backup Energy. The LADWP defines Backup Energy this way.

Definition of Backup Energy – "For each billing period, Backup Energy is the energy that would have been generated by the customer's generator(s) if operated at maximum output in each Rating Period (High Peak, Low Peak, Base). Backup Energy is applicable when both of the following conditions exist:

• Delivered energy as measured by the billing meter over a fifteen minute interval at the Service Point is greater than Supplemental Demand during any Rating Period within the billing month.

• Demand at the output point of the customer's generator as measured by the unit meter over a fifteen minute interval must be less than the Maximum Generation Demand during any Rating Period within the billing month."

Note that there are no Backup Energy charges during Base Rating Periods. Nor are there any Backup Energy charges during the Low Season. So all we need to worry about are Backup Energy charges during the High Peak and Low Peak Rating Periods of the High Season. Still I'm confused by 3 things.

Confusion #1 – I don't understand the 2nd condition above. How could the demand at the output point of the customer's generator ever be greater than the Maximum Generation Demand? It doesn't seem mathematically possible. Bill Glauz suggested a way out. If the Demand at the output of the customer's generator is equal to the Maximum Generation Demand then this condition can never be met. In other words if the customer's generator were operating at constant output for the entire Rating Period the 2nd condition could not be met. I suppose that could happen for a very steady generator and a meter with finite resolution. This would suggest that a DC generator would not have to face Backup Energy charges.

Confusion #2 – For the 1st condition delivered energy and Supplemental Demand have different units. Energy has units of kWh while demand has units of kW. I assume this means take the delivered energy and divide by ¼ h to get kW and then compare.

Confusion #3 – Originally I interpreted the 1st condition to mean that Oxy would only be charged for those 15 minute intervals in which the Demand was above the Supplemental Demand. A more careful reading, and talking to Bill Glauz, suggests that if even one point is above the Supplemental Demand *every* 15 minute period for the whole month is charged. For each month in the High Season our Demand was above our Supplemental Demand for at least one 15 minute time period. So for High Peak and Low Peak Rating Periods in the High Season I counted the number of 15 minute intervals, multiplied by ¼ hours and then multiplied by the maximum output of the solar array 1,012 kW to get the Backup Energy. This was then multiplied by the appropriate Backup Energy rate ($/kWh) to get our Backup Energy charges.

Using the above interpretations I added the Backup Energy charges to Table 1 gives a total of a little less than $70k of charges for the entire past year.