





DESIGN | BUILD | MAINTAIN

March 17, 2015

Occidental College
 1600 Campus Rd.
 Los Angeles, CA. 90041
 Attention: Michelle McFadden Hill and Daniel Snowden-Ifft

Reference: Ground Mount PV System

Thank you for the opportunity to provide you our price for the electrical work portion of the above referenced project. We are pleased to present the following scope for your consideration.

We confirm our budgetary pricing and scope as follows: \$650,010.00

Scope of Work

- As system integrator CSI will engineer, procure and construct fully functional Solar Power Systems (photovoltaic), installation to be rated at 228.0kw DC
- Furnish and install photovoltaic racking system for ground mounted arrays
- Furnish and install photovoltaic modules for ground mounted arrays
- Furnish and install 480v to 4800v step up transformer
- MV conduit run to be bored from array area to existing manhole tie in at inverter pad
- Complete all associated grounding and wiring of modules
- Includes mechanical grounding system associated with PV and electrical equipment
- Furnish and install all required electrical conduit and cabling systems
- Furnish and install inverter(s) of 96% efficiency or better
- Testing/Labeling
- Electrical and structural engineering
- Furnish and install AC Disconnect and Meter Installation for Utility Interconnection
- Furnish and install of DAS monitoring system
- LADWP coordination and inspection
- Secure all required certificates of inspection, testing or approval
- Equipment operation and maintenance manuals
- 10- year warranty
- System Start-up Commissioning
- System Training and Turnover

HEADQUARTERS: 10623 Fulton Wells Avenue, Santa Fe Springs, GA 90670
 P: 562-946-0700 F: 562-946-0701

PALMDALE OFFICE: 41769 111th Street West, Suite B, Palmdale, CA 93551
 P: 661-729-0869 F: 661-729-0261

SAN JOSE OFFICE: 1625 Romada Lane, San Jose, CA 95112
 P: 408-641-2500 F: 408-451-9462

AUBURN OFFICE: 1176R Alameda Road, Suite 252, Auburn, GA 30808
 P: 530-875-5758 F: 530-878-5756



Exclusions, Clarifications, and Assumptions

1. CSI has excluded design and installation changes required by the utility company for interconnection or upgrades to the grid upstream (Line side of AC switchgear at point of interconnection) from the site.
2. Changes to the design for convenience or aesthetic purposes which increase construction costs will be eligible for pricing adjustment.
3. CSI assumes existing manhole and feeder lines will support the additional PV load.
4. All work is to be done on straight time. Overtime and special shifts are excluded from the pricing submitted.
5. CSI excludes changes to the design or process by government or permitting authorities that require aesthetic or planning department-related changes.
6. CSI excludes removal, remediation and disposal of, or any liability related to, any existing hazardous waste materials including but not limited to asbestos, petroleum products, etc.
7. CSI excludes site de-grubbing, bush removal and grading.
8. CSI excludes temporary and permanent perimeter fencing or additional protective measures (bollards, curbs, etc.) around the site.
9. Due to irregularities in plan check and permitting fees associated with photovoltaic projects, fees for building plan check/permits will be passed through to the Customer.
10. CSI excludes upgrades to the Customer's electrical equipment to meet current code standards or system requirements.
11. CSI excludes any structural upgrades or improvements to existing buildings or roofs. CSI assumes that the photovoltaic system can be supported on the existing structures without such upgrades or improvements.
12. CSI excludes any trimming, removal, replanting, or relocating of trees, shrubs or other potential shading obstructions. Customer is to maintain and/or remove trees if needed for photovoltaic design.
13. CSI assumes that standard wind conditions (90 mph wind zone) exist at the installation location.
14. CSI assumes that standard seismic conditions exist at the installation location.
15. CSI will install the inverter and electrical equipment on strut racks
16. CSI assumes that work will be done in one phase.
17. CSI has excluded customer Data Acquisition System (DAS) displays, Kiosks etc. Customer will receive standard web-based monitoring with the system.
18. Customer is to provide adequate space on site for storage of materials, employee restrooms and material deliveries needed to work.
19. CSI will use EMT conduit where applicable and acceptable per NEC.
20. CSI has excluded any special insurance requirements by the Customer not previously mentioned. This includes but is not limited to OCIP's, earthquake Pollution, excess Umbrella etc.
21. We exclude replacement of PV modules or losses caused by theft or vandalism once installed.
22. We assume that neighboring trees will be trimmed/removed as required for peak solar production.

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P: 530-878-8765 F: 530-878-8766

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Statement of Performance

All figures, prices, rebates, savings projections, and incentives are by no means conscionable and are to be considered merely a possibility. This document is a cursory assessment, drawing support from experience, publications, and standard practices, and is not intended as an obligation of performance on the part of CSI Electrical Contractors Inc.

Statement of confidentiality

The requirements of confidentiality and non-disclosure apply to this document and any communication with CSI Electrical Contractors Inc., This page is a statement to that effect and represents an agreement between CSI Electrical Contractors Inc., and all parties who make inquiries of, or with whom CSI Electrical Contractors Inc., is actively working.

We appreciate the opportunity to be of service to your organization and we hope the above scope accurately outlines the work required for a complete Photovoltaic System installation. If you disagree with our interpretation of the scope-of-work or have any comments or changes that you would like to add, please let us know so we can make the necessary adjustments.

Respectfully submitted,



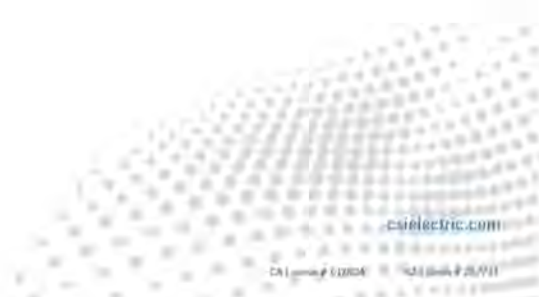
Peter Rael
Energy Solutions

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Document G: Engineering Club Estimates

Occidental Solar Research

Power loss:

The output (Watts) of a Photo-Voltaic Cell is subject to change based on various conditions within its environment. For instance, dust and other matter naturally accumulate on solar panels, decreasing the incident light upon the panels. Areas with high concentrations of pollution are especially effected by soilingⁱ. Shade from trees and tall buildings also reduces power output, though the effect of this factor will be miniscule due to the height at which we aim to build the system. Other natural phenomenon such as light-induced degradation, transferring between DC and AC systems, and Joule heating result in a percentage of power lossⁱⁱ. To approximate the percentage of power lost to external factors, I studied data collected and published by the National Renewable Energy Laboratory. Given the information at hand, I estimate a 11.87% loss in power^{iv}.

Calculate System Losses Breakdown

Modify the parameters below to change the overall System Losses percentage for your system.

Soiling (%):	<input type="text" value="3"/>	i	<div style="border: 1px solid gray; padding: 5px; margin-bottom: 10px;"> <p style="text-align: center; font-weight: bold;">Estimated System Losses:</p> <p style="font-size: 2em; color: #0056b3; text-align: center;">11.87%</p> </div> <div style="border: 1px solid gray; padding: 5px;"> <p>Light-Induced Degradation</p> <p style="font-size: x-small;">Effect of the reduction in the array's power during the first few months of its operation caused by light-induced degradation of photovoltaic cells. The default value is 1.5%.</p> </div>
Shading (%):	<input type="text" value="1"/>	i	
Snow (%):	<input type="text" value="0"/>	i	
Mismatch (%):	<input type="text" value="2"/>	i	
Wiring (%):	<input type="text" value=".5"/>	i	
Connections (%):	<input type="text" value="0.5"/>	i	
Light-Induced Degradation (%):	<input type="text" value="1.5"/>	i	
Nameplate Rating (%):	<input type="text" value="1"/>	i	
Age (%):	<input type="text" value="0"/>	i	
Availability (%):	<input type="text" value="3"/>	i	

Braun Parking Structure:

Braun's parking lot is awaiting a quote from a qualified professional. However, the National Renewable Energy Laboratory (NREL) has software that extends Google Maps, allowing users to specify the area where the solar panels will be constructing (See Appendix). Once the area is designated, an algorithm estimates the output of the PV system. The program allows the user to input parameters: the module of the solar panel, its angle relative to the ground, the inverter efficiency, etc. Each one of these conditions effects the power output of the Solar Array, as shown in the table below.

Table 1: Example of variance in output: efficiencies of different photovoltaic cells^{vi}

Type	Approximate Efficiency	Module Cover	Temperature Coefficient of Power
Standard (crystalline Silicon)	16%	Glass	-0.47 %/°C
Premium (crystalline Silicon)	19%	Anti-reflective	-0.35 %/°C
Thin film	11%	Glass	-0.20 %/°C

The table above shows a 9% range in efficiency- which is dramatically high given the order of magnitude of power. Thus, there is a high degree of uncertainty in these results. Further investigation, or the work of a professional is needed before a truly accurate.

The initial cost of the Braun Parking Lot was calculated using NREL's guidelines "The installation cost is in dollars per DC Watt of photovoltaic array size at standard test conditions. The default value of \$3.70/Wdc for a 4 kW system is equivalent to an installed cost of \$3.70/W × 4 kW × 1,000 W/kW = \$14,800^{vii}. Again, this number is unconfirmed, adding to the uncertainty of the values associated with the Braun Parking Lot.

Results:

The table below shows the calculations for both the Step-8 Incentive level (\$0.40/W) and the Non-Profit Organization Incentive level (\$1.15), as I do not know which category Occidental falls under. The Step-8 Incentive level was arbitrarily placed first in the table.

Table 2: Estimated Final Costs of Proposed Sites^{vii}

Site	\$/W	\$/W (w/Rebate)	Initial Sum (\$)	Watts	Rebate (\$)	Sum(\$)	\$/W (w/Rebate2)	R2(\$)	S2(\$)
Philcott	3.5	3.1	96075	27450	10980	85095	2.35	31568	64507.5
Admissions	4	3.6	722240	180560	72224	650016	2.85	207644	514596
Library	3.5	3.1	128100	36600	14640	113460	2.35	42090	86010
Straun*	3.7	3.3	727420	196600	290968	436452	2.55	226090	290968
Site 50	2.85	2.45	650,010	228000	91200	558810	1.7	262200	387,810

ⁱ Kukreja, Rinkesh. "Pros and Cons of Solar Energy - Conserve Energy Future." Conserve Energy Future, 2015. Web. 20 Mar. 2016.

ⁱⁱ Pingel, S., et al. "Potential induced degradation of solar cells and panels." *Photovoltaic Specialists Conference (PVSC), 2010 35th IEEE*. IEEE, 2010.

ⁱⁱⁱ Tipler, Paul Allen, and Gene Mosca. *Physics for Scientists and Engineers*. New York: W.H. Freeman, 2008. Print.

^{iv} MacAlpine, S., and Deline, C. *Modeling Microinverters and DC Power Optimizers in PVWatts* (2015). Web

^v United States. Department of Energy. *Energy Efficiency & Renewable Energy. PVWATTS Manual*. By Aron P. Dobos. Vol. 5. NREL. Print.

^{vi} Feldman, D.; Margolis, R.; James, T.; Goodrich, A.; Barbose, G.; Dargouth, N.; Weaver, S.; Wiser, R. (2013). *Photovoltaic System Pricing Trends: Historical, Recent, and Near-Term Projections 2013 Edition* (Presentation). SunShot, U.S. Department of Energy (DOE). 29 pp.

^{vii} LADWP. "Incentive Levels." *Solar Incentive Program*. LADWP, 22 Mar. 2016. Web. 22 Mar. 2016.

Appendix: PVWATT Areas for Braun Estimation



Document H: Participant Observation Details

Participant Observation Details

Individual Stakeholder Meetings:

First Meeting w/Dan

October 22, 2016: Potential for Solar Expansion & Financing, Facilities Offices

November 4, 2016: Current Array Data & Potential For Expansion,
Hameetman Science Center

November 2, 2016: Sustainable Project Financing & Current Array
Financing Information, Arthur G. Coons Administrative Center

February 4, 2016: Sustainable Project Financing and Board of Trustees
Information, Arthur G. Coons Administrative Center

Group Stakeholder Meetings:

February 1, 2016: Additional Solar Discussion, Facilities Meeting
Room

February 24, 2016: Potential Site Analysis, Hameetman Science Center

March 15, 2016: Additional Solar Proposal Planning, Facilities Meeting
Room

*Minutes were taken at each of these meetings; with permission, the February 4th meeting with Amos Himmelstein was recorded.

Engineering Professor Daniel Snowden Ifft and Vice President of Finance and Planning Amos Himmelstein gave explicit permission for their names and identifying information to be used in this research paper.

Bibliography

- “440 ppm.” 2015. *350.org*. <<http://400.350.org/>>
- Anaya, Karim L., and Michael G. Pollitt. 2014. “Experience with Smarter Commercial Arrangements for Distributed Wind Generation.” *Energy Policy* 71 (August): 52–62. doi:10.1016/j.enpol.2014.04.009.
- “Assembly Bill 32 - California Global Warming Solutions Act.” 2016. Accessed April 11. <http://www.arb.ca.gov/cc/ab32/ab32.htm>.
- Attaran, Sharmin and Bilge Gokhan Celik. 2015. "Students' Environmental Responsibility and their Willingness to Pay for Green Buildings." *International Journal of Sustainability in Higher Education* 16 (3): 327. <http://0-search.proquest.com.oasys.lib.oxy.edu/docview/1676074069?accountid=12935>.
- Byrne, John, Lado Kurdgelashvili, Manu V. Mathai, Ashok Kumar, Jung-Min Yu, Xilin Zhang, Jun Tian, and Wilson Rockerson. “World Solar Energy Review: Technology, Markets and Policies.” 2010. *Center for Environmental Policy, University of Delaware*. 1-126. Accessed 12 November. http://ceep.udel.edu/wp-content/uploads/2013/08/2010_World_Solar_Energy_Review_Technology_Markets_and_Policies1.pdf
- “Carbon Offsets.” 2015. *Dictionary.com*. <http://www.dictionary.com/browse/carbon--offset>
- Chambers, Andrea et al. “Report of the Renewable Energy Committee.” 2011. *Energy Law Journal* 32 (1): 205–431.
- Clean Energy and Pollution Reduction Act of 2015, S. 350, 2015 Leg. (Cal.).
- Corcoran, Peter Blaze, and Arjen E. J. Wals. 2004. *Higher Education and the Challenge of Sustainability*. Dordrecht: Kluwer Academic Publishers. <http://link.springer.com/10.1007/0-306-48515-X>.
- Davis, Florence et al. “Report of the Renewable Energy Committee.” 2015. *Energy Law Journal* 36 (1): 1–32.
- Deru, Michael, Jim Kelsey, and Dick Pearson. 2011. *Procedures for Commercial Building Energy Audits*. Second. Atlanta, GA: ASHRAE. Print.
- “Facts and Figures.” 2012. *LADWP*. https://www.ladwp.com/ladwp/faces/ladwp/aboutus/a-power/a-p-factandfigures?_adf.ctrl-state=jkkkfwzuj_4&_afLoop=92604164659611&_afWindowMode=0&_afWindowId=null#%40%3F_afWindowId%3Dnull%26_afLoop%3D92604164659611%26_afWindowMode%3D0%26_adf.ctrl-state%3Dngmmflky_29
- Feldbaum, Mindy, and Hollyce States. 2008. “Going Green: The Vital Role of Community Colleges in Building a Sustainable Green Workforce.” FHI 350, National Council for Workforce Education, The Academy for Educational Development. http://www.fhi360.org/sites/default/files/media/documents/Going%20Green_The-vital-role-of-community-colleges.pdf
- Feldman, David, Galen Barbose, Robert Margolis, Ryan Wiser, Naim Darghouth, and Alan Goodrich. 2012. “Photovoltaic (PV) Pricing Trends: Historical, Recent, and Near-Term Projections.” Denver, CO & Berkeley, CA: US DOE National Renewable Energy Laboratory & Lawrence Berkeley National Library. <http://www.nrel.gov/docs/fy13osti/56776.pdf>.
- “Greenhouse Gas Equivalencies Calculator.” 2014. United States Environmental Protection Agency. Accessed April 12, 2016. <https://www.epa.gov/energy/greenhouse-gas->

- equivalencies-calculator
- Hankey, Ronald et al. 2015. "Electric Power Monthly Report." U.S. Department of Energy — U.S. Energy Information Administration. <http://www.eia.gov/electricity/monthly/pdf/epm.pdf>.
- Heiman, Michael K., and Barry D. Solomon. 2004. "Power to the People: Electric Utility Restructuring and the Commitment to Renewable Energy". *Annals of the Association of American Geographers* 94 (1). Taylor & Francis, Ltd.: 94–116. <http://0-www.jstor.org.oasys.lib.oxy.edu/stable/3694070>
- Humblett, Emmanuelle M. VHB, Rebecca VHB Owens, and Leo VHB Roy. 2010. "Roadmap to a Green Campus." U.S. Green Building Council, Inc. http://www.centerforgreenschools.org/sites/default/files/resource-files/RoadmaptoaGreenCampus_online_121611.pdf.
- Imhoff, Sarah. "A Streamlined Approach to Renewable Energy Development: Bringing the United States into a Greener Energy Future." *Georgetown Environmental Law Review* 26: 69 – 98. <http://0-www.lexisnexis.com.oasys.lib.oxy.edu/lnacui2api/api/version1/getDocCui?lni=5BK6-X650-00CV-90PH&csi=168972&hl=t&hv=t&hnsd=f&hns=t&hgn=t&oc=00240&perma=true>.
- "Incentive Levels." 2016. LADWP Solar Incentive Program. Accessed March 22, 2016.
- Jacobe, Dennis. 2013. "Americans Want More Emphasis on Solar, Wind, Natural Gas." *Gallup.com*. Accessed November 9, 2015. <http://www.gallup.com/poll/161519/americans-emphasis-solar-wind-natural-gas.aspx>.
- Jakob, Martin, Stephanie Bade, Walter Ott and Heike Berleth. 2015. "Analysis of generic and energy-efficient building retrofit and motivation of office building owners." *IEECB 14*.
- Karp, Aaron, Mark Orlowski, and Jaime Silverstein. 2014. "College Endowment Investment Trends & Best Practices: An Analysis of Sustainability Tracking, Assessment & Rating System™ (STARS) Data." A Sustainable Endowments Institute Report. <http://www.endowmentinstitute.org/app/uploads/2014/09/SEI-College-Endowment-Investment-Trends-and-Best-Practices.pdf>.
- Keoleian, Gregory A. and Geoffrey McD. Lewis. 1997. *Progress in Photovoltaics: Research and Applications* 5: 287-300.
- "The Keeling Curve." 2015. *The Keeling Curve: Scripps Institute of Oceanography at UCSD*. Accessed November 9. <https://scripps.ucsd.edu/programs/keelingcurve/>.
- Kunzig, Robert. 2013. "Climate Milestone: Earth's CO2 Level Nears 400 Ppm." *National Geographic News*. Accessed November 3. <http://news.nationalgeographic.com/news/energy/2013/05/130510-earth-co2-milestone-400-ppm/>.
- "LADWP Solar Incentive Program (SIP) Dashboard." 2015. *Los Angeles Department of Water and Power*. Accessed November 12.
- Lipka, Sara. 2006. "Students Call for Action on Campuses." *Chronicle of Higher Education* 53 (9): 11.
- Longstreth, Bevis. 2014. "The Financial Case for Divestment of Fossil Fuel Companies by Endowment Fiduciaries." *Huffington Post: Politics*.
- Martinaitis V., A. Ragusa, and I. Bikmaniene. 2004. "Criterion to Evaluate the 'Twofold Benefit' of the Renovation of Buildings and Their Elements." *Energy and Buildings, Elsevier* 36 (January): 3–8.

- Megerian, Chris and Javier Panzar. "Gov. Brown Signs Climate Change Bill to Spur Renewable Energy, Efficiency Standards." 2015. *Latimes.com*. Accessed October 26.
<http://www.latimes.com/politics/la-pol-sac-jerry-brown-climate-change-renewable-energy-20151007-story.html>.
- Milman, Oliver. 2015. "Zuckerberg, Gates and other tech titans form clean energy investment coalition." *The Guardian*. <http://www.theguardian.com/environment/2015/nov/30/bill-gates-breakthrough-energy-coalition-mark-zuckerberg-facebook-microsoft-amazon>
- Moe, Moria. 2015. E-mail message to author.
- Monroe, Rob. 2015. "Measurement Note: An Adjustment to the Record." *The Keeling Curve*. Accessed November 9.
<https://scripps.ucsd.edu/programs/keelingcurve/2015/11/09/measurement-note-an-adjustment-to-the-record/>.
- Muylaert, Maria Silvia, Claude Cohen, Luiz Pinguelli Rosa, and André Santos Pereira. 2004. "Equity, responsibility and climate change." *Climate Research* 28, no. 1: 89-92. *GreenFILE*, EBSCOhost (accessed November 9, 2015).
- Myers, William A. "Sustainability in Higher Education: Best Practices, Trends and Obstacles Impacting Champions of Sustainability on College Campuses." 2012. Ph.D., United States -- Arizona: Prescott College. <http://search.proquest.com/oasys.lib.oxy.edu/socialsciences/docview/1018403498/abstract/4F50356EB8E6422EPQ/7?>
- "Nearby Petitions | Fossil Free." 2015. Accessed December 3.
https://campaigns.gofossilfree.org/petitions/near?category=fossil-fuel-divestment-colleges-universities&location%5Bquery%5D=Los+Angeles%2C+CA%2C+United+States&location%5Blatitude%5D=34.0522342&location%5Blongitude%5D=-118.2436849&location%5Bstreet_number%5D=&location%5Bstreet%5D=&location%5Blocality%5D=LA&location%5Bpostal_code%5D=&location%5Bregion%5D=CA&location%5Bcountry%5D=US&location%5Bvenue%5D=Los+Angeles.
- Nelson, James H. PhD., and Laura M. Wisland. 2015. "Achieving 50 Percent Renewable Electricity in California: The Role of Non-Fossil Flexibility in a Cleaner Electricity Grid." Union of Concerned Scientists (UCS) Climate and Energy Program. <http://www.ucsusa.org/sites/default/files/attach/2015/08/Achieving-50-Percent-Renewable-Electricity-In-California.pdf>.
- Orr, D.W. 1994. "What Is Education For?" In *Earth in Mind: On Education, Environment and the Human Prospect*, 10th Anniversary Edition. Washington: Island Press. http://ecomunities.tafensw.edu.au/pluginfile.php/12139/mod_page/content/147/David%20Orr%20-%20What%20is%20Education%20for2.pdf.
- IPCC, 2014. *Climate Change 2014: Synthesis Report*. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, R.K. Pachauri and L.A. Meyer (eds.)]. IPCC. Geneva, Switzerland. 151 pp. *IPCC 5th Assessment Synthesis Report*. Accessed December 2. <http://ar5-syr.ipcc.ch/>.
- Pittman, J. 2004. "Living Sustainably Through Higher Education: A Whole Systems Design Approach to Organizational Change." *Higher Education and the Challenge of Sustainability: Problematics, Promise and Practice* 199-212. Netherlands: Kluwer Academic Publishers.
- "The President's Climate Action Plan." 2013. *The White House*. Accessed

- November 9. <https://www.whitehouse.gov/sites/default/files/image/president27sclimateactionplan.pdf>.
- “The Princeton Review 2015 College Hopes & Worries Survey Report.” 2015. *The Princeton Review*. Accessed November 12.
https://az589735.vo.msecnd.net/pdf/cohowosurvprt_mar182015.pdf
- “College Students Lead Carbon Neutrality Effort with Massive Solar Installation.” 2013. *Buildings* 107 (1): 13–13.
- Rabe, Barry. 2006. “Race to the Top: The Expanding Role of U.S. State Renewable Portfolio Standards.” *Sustainable Development Law & Policy* 7: 10.
- Rauch, Jason N., and Julie Newman. 2009. “Institutionalizing a Greenhouse Gas Emission Reduction Target at Yale.” *International Journal of Sustainability in Higher Education* 10 (4): 390–400. doi:<http://0-dx.doi.org.oasys.lib.oxy.edu/10.1108/14676370910990738>.
- “Second Nature 2014 Annual Report.” 2016. Accessed March 13.
<http://annualreport.secondnature.org/2014/>.
- Sirianni, Philip, and Michael O’hara. 2014. “Do Actions Speak as Loud as Words? Commitments to ‘Going Green’ on Campus.” *Contemporary Economic Policy* 32 (2): 503–19. doi:10.1111/coep.12047.
- “Assembly Bill 32 - California Global Warming Solutions Act.” 2016. Accessed April 11.
<http://www.arb.ca.gov/cc/ab32/ab32.htm>.
- “College Students Lead Carbon Neutrality Effort with Massive Solar Installation.” 2013. *Buildings* 107 (1): 13–13.
- Rabe, Barry. 2006. “Race to the Top: The Expanding Role of U.S. State Renewable Portfolio Standards.” *Sustainable Development Law & Policy* 7: 10.
- Rauch, Jason N., and Julie Newman. 2009. “Institutionalizing a Greenhouse Gas Emission Reduction Target at Yale.” *International Journal of Sustainability in Higher Education* 10 (4): 390–400. doi:<http://0-dx.doi.org.oasys.lib.oxy.edu/10.1108/14676370910990738>.
- “Second Nature 2014 Annual Report.” 2016. Accessed March 13.
<http://annualreport.secondnature.org/2014/>.
- Sirianni, Philip, and Michael O’hara. 2014. “Do Actions Speak as Loud as Words? Commitments to ‘Going Green’ on Campus.” *Contemporary Economic Policy* 32 (2): 503–19. doi:10.1111/coep.12047.
- “Reinventing LADWP.” 2012, January – February 2012: 12-17. *Public Power Media*.
- Ritchie, Justin and Hadi Dowlatabadi. 2015. “Fossil Fuel Divestment: Reviewing Arguments, Implications & Policy Opportunities.” University of British Columbia. Pacific Institute for Climate Solutions.
- Renehan, Stewart. 2015. “Analysis for New Solar at Oxy.”
- The Solar Foundation. 2014. “Brighter Future: A Study on Solar in U.S. Schools.” Accessed November 9. schools.tsfcensus.org
- Schaffhauser, Dian. 2015. “Energy Efficiency Cost Savings Trump Environmental Concerns at Nation’s Colleges.” *Campus Technology*.
<https://campustechnology.com/articles/2015/08/05/energy-efficiency-cost-savings-trump-environmental-concerns-at-nations-colleges.aspx>
- Singer-Berk, Lila and Grace Bender. 2013. “Summer 2013 Research and Recommendations for Improving Environmental Sustainability at Occidental College.”
- Smith, Bradley F. 2000. “The Role of Higher Education in Sustainable Development

- Education.” *Education for a Sustainable Future*: 83-89. New York, NY: Kluwer Academic/Plenum Publishers.
- “Solar Array.” 2015. <http://www.oxy.edu/life-oxy/sustainability/solar-array>
- “Solar Incentive Program.” 2015. *Los Angeles Department of Water and Power*. https://www.ladwp.com/ladwp/faces/ladwp/residential/r-gogreen/r-gg-installsolar;jsessionid=hG0IWGGTvG3X7tXvcHS31VCbmhQhFxDVYr1XcT9vT01m2gtGQj1d!-1788481546?_afLoop=94639868332493&_afWindowMode=0&_afWindowId=null#%40%3F_afWindowId%3Dnull%26_afLoop%3D94639868332493%26_afWindowMode%3D0%26_adf.ctrl-state%3Dtulkp5tli_4.
- Sovacool, Benjamin K. 2009. “The intermittency of wind, solar, and renewable electricity generators: Technical barrier or rhetorical excuse?” *Utilities Policy* 17: 288-296. http://www.researchgate.net/profile/Benjamin_Sovacool/publication/46495038_The_intermittency_of_wind_solar_and_renewable_electricity_generators_Technical_barrier_or_rhetorical_excuse/links/00b7d526620ca159ea000000.pdf
- “Sustainability Fund.” 2015. *Occidental College*. Accessed December 7. <http://www.oxy.edu/asoc/environmental-stewardship/sustainability-fund>
- “Sustainability Initiative.” 2015. *Occidental College*. Accessed November 12. <http://www.oxy.edu/sustainability-initiative>
- Taylor, Margaret. 2008. “Beyond Technology-Push and Demand-Pull: Lessons from California’s Solar Policy.” *Energy Economics* (30) 2829-2954. *Richard and Rhoda Goldman School of Public Policy. University of California, Berkeley*. Berkeley, CA.
- Timilsina, Govinda R., Lado Kurdgelashvili, and Patrick A. Narbel. 2012. “Solar Energy: Markets, Economics and Policies.” *Renewable and Sustainable Energy Reviews* 16 (1): 449–65. doi:10.1016/j.rser.2011.08.009.
- Tranquada, Jim. “Green Investing.” *Occidental College*. Accessed November 12. <http://www.oxy.edu/news/green-investing>