



DOCKET

12-IEP-1D

DATE MAY 30 2012

RECD. MAY 31 2012

California Energy Commission
IEPR Lead Commissioner Workshop
Jobs and Renewable Energy in California
May 30, 2012 – 10:00 a.m.
AGENDA

Introduction

Suzanne Korosec, IEPR Lead

Opening Comments

Commissioner Carla Peterman, Lead Commissioner
Chair Robert Weisenmiller

Staff Presentation, Summarize Findings from Renewable Status and Issues Report

Suzanne Korosec, IEPR Lead

Special Guest Presentation

Patrick McGuire, Senior Business Development Specialist, Governor's Office of Business and Economic Development

Panel 1: Quantifying Jobs from Renewable Energy

The panel will discuss how many jobs have been created in California based on existing policies and programs, in which sectors and where, and how many jobs may be created by 2020? Also, what would generate more jobs in all aspects of the renewable energy "supply chain" from education & training; to product manufacturing, sales, installation, maintenance and operation; and to project development, generation, transmission and ancillary services?

Moderator: **Pierre duVair, Ph.D.**, Energy Commission staff

Panelists:

Richard Morgenstern, Ph.D., Senior Fellow, Resources for the Future

Carol Zabin, Ph.D., Research Director, Center for Labor Research and Education, Institute for Research on Labor and Employment, University of California, Berkeley; Co-Chair, Donald Vial Center on Employment in the Green Economy, University of California, Berkeley

Rhonda Mills, Southern California Program Director, Center for Energy Efficiency and Renewable Technologies

Lynn Billman, Senior Analyst II, Market & Policy Impact Group, NREL

Marshall Goldberg, Owner, MRG & Associates

William Dean, Ph.D., Office of the Secretary, CalEPA

Questions to consider:

1. *How do we define “jobs” and how do employment needs vary by technology?*
2. *How many, what types, and where have jobs been created in California by renewable energy businesses?*
3. *How many jobs, what types of jobs, and where do you expect jobs to be created by 2020?*
4. *What are the factors that would lead to an increase or decrease in job projections? (e.g., the health of the economy, out-of-state manufacturing incentives, global competition, and the effectiveness and coordination of California job training programs with local economic development)*
5. *How would you recommend job creation be modeled or measured?*
6. *How will rising energy costs affect jobs and economic development? Possible job loss impacts? Any particular sectors?*

Public Comment

Lunch (approximately at 12:30 p.m.)

Panel 2: Job Training and Economic Development Programs: The Connection

This panel will discuss the effectiveness of current training programs and the benefits of coordination with local economic development.

Moderator: **Chris Graillat**, Energy Commission staff

Panelists:

John Jaramillo, Dean, Applied Sciences and Business, College of the Desert

Javier Romero, Manager, California Workforce Investment Board

John Brauer, Executive Director, Workforce and Economic Development, California Labor Federation

Nicole Capretz, Green Energy/Good Jobs Campaign Director, Environmental Health Coalition/California Environmental Justice Alliance

Susan Wheeler, Coordinator of Education Relations, Sacramento Metropolitan Utility District

Lisa Paulo, Senior Analyst, California Public Utilities Commission

Evgeniya Lindstrom, Director, Center of Excellence at San Bernardino Community College District

Raya Zion, Workforce Development Manager, Solar City

Questions to consider:

7. What skills are important to clean energy employers? Are there skills gaps, and, if so, how can we address them?
8. Are workforce training program graduates finding jobs in renewable energy?
9. Are existing training programs preparing workers for the jobs of the future? What are the jobs of the future?
10. How has ARRA helped develop a clean energy workforce? What are lessons learned?

11. What do you recommend to advance California's job training in renewable energy? (e.g., What ingredients comprise a successful jobs program?) What strategies can be employed to be sure that training is matched to demand and local economic development?
12. The Energy Commission will be collaborating with the Public Utilities Commission on an investment plan for the Energy Program Investment Charge (EPIC). How can the Energy Commission help businesses, educators and the workforce community to build a well-qualified clean energy workforce?

Panel 3: Local Economic Development with Renewable Energy: Case Studies and Lessons Learned

This panel will discuss how businesses have created jobs in California, and what challenges they face in doing so. The panel also will identify effective strategies from other states.

Moderator: **Larry Rillera**, Energy Commission staff

Panelists:

Ben Foster, Vice President Operations, Optony, Inc. and Board Member, Joint Venture Silicon Valley

Glenn Reynolds, President, Gossamer Innovations

Bill Gallegos, Executive Director, Communities for a Better Environment

Lew Milford, President, Clean Energy Group, and Founder, Clean Energy States Alliance

Melinda Brown, Director of Business Development, Kern Economic Development Corporation

Mark Tholke, Vice President Origination - Southwest Region, enXco

Kim Carr, Sustainable Initiative Coordinator, Sierra Nevada Conservancy

Dorothy Korber, Principal Consultant, Senate Office of Oversight and Outcomes

Questions to consider:

13. What are California's competitive advantages and disadvantages in the creation of permanent jobs related to renewable energy development?
14. How do project developers/manufacturers make choices about their supply chains?
 - a. From where are renewable energy equipment suppliers buying components and why?
 - b. What roles do California companies play in existing supply chains related to renewable development, and where are opportunities for expansion?
15. What noteworthy policies, strategies and programs are other states employing to facilitate growth of renewable energy supply chains that may have merit for California?
16. What opportunities are there to leverage renewable energy development as an economic development tool in disadvantaged and/or environmental justice communities?

Public Comments

Adjourn (approximately at 5:00 p.m.)

Links for Discussion at May 30, 2012 IEPR Workshop on Jobs and Renewable Energy in California

Renewable Power in California: Status and Issues. California Energy Commission, December 2011, Publication No. CEC-150-2100-002-LCF-REV1

Quantifying Jobs

Brown, Jerry, Governor, June 2010, *Brown announces Clean Energy Jobs Plan*.
http://www.jerrybrown.org/Clean_Energy

California's Clean Energy Future, Preliminary Estimates of Job Creation, March 2012,
<http://www.cacleanenergyfuture.org/Expected-Jobs.html>

Centers of Excellence, *Green Industries & Jobs in California: A Special Preview Report*. January 2009.
http://www.coeccc.net/green/documents/Emerging_Green_09.pdf

Clean Edge, *Clean Tech Job Trends 2010*, <http://cleanedge.com/sites/default/files/JobTrends2010.pdf>

Environmental and Energy Study Institute, June 2011, *Jobs in Renewable Energy and Energy Efficiency*.
http://www.eesi.org/jobs_reee_060111

Ferrier, Grant, Environmental Business International Inc., February 2011, *The Clean Energy Industry in California: An Economic Analysis Assessing the Current Market in the Global Economy*.
<http://www.arb.ca.gov/research/apr/past/07-315.pdf>

Friedman, Barry, P. Jordan, and J. Carresse, National Renewable Energy Laboratory, December 2011, *Solar Installation Labor Market Analysis*. <http://www.nrel.gov/docs/fy12osti/49339.pdf>

Graybill, Bonnie, Employment Development Department, Labor Market Information Division, July 9, 2010, *California's Green Economy, California Green Workforce Coalition*.
<http://www.labormarketinfo.edd.ca.gov/contentpub/GreenDigest/CaliforniaGreenEconomy-070910.pdf>

Green For All, *ASES Green Collar Jobs Report Forecasts 37 Million Jobs From Renewable Energy and Energy Efficiency in U.S. by 2030* (Press Release). Boulder, CO: ASES, 2009.
<http://www.greenforall.org/resources/ases-green-collar-jobs-report-forecasts-37-million-jobs-from-renewable-energy-and-energy-efficiency-in-u.s.-by-2030>

Lantz, Eric and G. Mosey, National Renewable Energy Laboratory, July 29, 2009, *How to Estimate Economic Impacts from Renewable Energy*.
http://www.nrel.gov/applying_technologies/state_local_activities/pdfs/tap_webinar_20090729_jedi.pdf

Livermore, Michael A., Elizabeth Piennar and Jason A. Schwartz, Institute for Policy Integrity, New York University School of Law. *The Regulatory Red Herring: The Role of Job Impact Analyses in Environmental Policy Debates*. April 2012. http://policyintegrity.org/files/publications/Regulatory_Red_Herring.pdf

MacGillis, Brandon and A. McDonald, The Pew Charitable Trusts, June 10, 2009, *Pew Finds Clean Energy Economy Generates Significant Job Growth*. http://www.pewtrusts.org/news_room_detail.aspx?id=53254

Muro, Mark, J. Rothwell and D. Saha, The Brookings Institution, 2011, *Sizing the Clean Economy: A National and Regional Green Jobs Assessment*.
http://www.brookings.edu/~media/Files/Programs/Metro/clean_economy/0713_clean_economy.pdf

Next 10, February 8, 2012, 2012 *Many Shades of Green: California's Shift to a Cleaner, More Productive Economy*. <http://next10.org/2012-many-shades-green-california%E2%80%99s-shift-cleaner-more-productive-economy>

Pennsylvania Department of Labor and Industry, January 2010. *Pennsylvania Green Jobs Report: Part 1*. <http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&ved=0CGoQFjAA&url=http%3A%2F%2Fwww.portal.state.pa.us%2Fportal%2Fserver.pt%3Fopen%3D18%26objID%3D806057%26mode%3D2&ei=bnatT4zRE9CA6QHEs8WWDQ&usq=AFQjCNHa96cMGUoU8UhlkL97D53lus5l1Q&sig2=3JGYbMmx8RnVXycw mXC2Tw>

Pollins, Robert, Heintz, James, Garrett-Peltier, Heidi, Political Economy Research Institute, June 2009, *Clean Energy Job Investments Create Jobs in California*. http://images2.americanprogress.org/CAP/2009/06/factsheets/peri_ca.pdf

Roland-Holst, David, California Climate Change Center, February 10, 2006, *Managing Greenhouse Gas Emissions in California*. http://are.berkeley.edu/~dwrh/Slides/BEAR_DRH.pdf

Sinclair, Karin, National Renewable Energy Laboratory, March 2004, *Job and Economic Development Impact (JEDI) Model: A User-Friendly Tool to Calculate Economic Impacts from Wind Projects*. http://www.windpoweringamerica.gov/pdfs/35872_jedi_brochure.pdf

Sklar, Scott, the Stella Group, September 16, 2011, *Pure Fantasy on Green Manufacturing, Solar Jobs, and The Mainstream Media*. <http://www.renewableenergyworld.com/rea/news/article/2011/09/pure-fantasy-on-green-manufacturing-solar-jobs-and-the-mainstream-media#>

State of California Employment Development Department Labor Market Information Division, October 2010, *California Green Economy: Summary of Results*. http://www.energy.ca.gov/cleanenergyjobs/GrSurveyRpt_1115.pdf

The Howard H. Baker Jr. Center for Public Policy, University of Tennessee, May 1, 2012, *Assessment of Incentives and Employment Impacts of Solar Industry Deployment*. http://bakercenter.utk.edu/wp-content/uploads/2012/04/Solar-incentives-and-benefits-complete-report_May-1-2012-21.pdf

The Solar Foundation, *National Solar Jobs Census 2010*. Washington, DC, 2010. http://thesolarfoundation.org/sites/thesolarfoundation.org/files/TSF_JobsCensus2011_Final_Compressed.pdf

U.S. EPA, *Assessing the Multiple Benefits of Clean Energy – A Resource for States*. February 2010. <http://www.epa.gov/statelocalclimate/resources/benefits.html>

Vogel, Nancy and D. Korber, California Senate Office of Oversight and Outcomes, 2012, *Finding the Sweet Spot Green Energy Incentives and Job Creations*. <http://sooo.senate.ca.gov/sites/sooo.senate.ca.gov/files/Finding%20the%20Sweet%20Spot.pdf>

Wald, Matthew L., New York Times, October 25, 2011, *Solar Power Industry Falls Short of Hopes in Jobs Creation*. http://www.nytimes.com/2011/10/26/business/energy-environment/in-terms-of-jobs-solar-energy-lacks-power.html?_r=2&pagewanted=all

Wei, Max, S. Patadia and D. Kammen, Energy and Resource Group, Haas School of Business U.C. Berkeley, November 14, 2009, *Putting renewables and energy efficiency to work: How many jobs can the clean industry generate in the US*. http://rael.berkeley.edu/sites/default/files/WeiPatadiaKammen_CleanEnergyJobs_EPolicy2010.pdf

World Watch Institute, May 11, 2012, *Jobs in Renewable Energy Expanding*.
<http://www.worldwatch.org/node/5821>

Zabin, Carol and L. Hoyos, U.C. Berkeley Center for Research on Labor and Employment, [*Setting The Record Straight On AB32 And Jobs*](#), with Lisa Hoyos, Opinion Editorial, San Francisco Chronicle, October 6, 2010

Zabin, Carol and D. Graham-Squire, U.C. Berkeley Center for Research on Labor and Employment, [*A Green Jobs Generator: AB 32 Won't Cost The State 3 Million Jobs, Despite Claims By Opponents*](#), Opinion Editorial, Los Angeles Times, April 21, 2010

Zabin, Carol and A. Buffa, U.C. Berkeley Center for Research on Labor and Employment, [*Addressing the Employment Impacts of AB 32, California's Global Warming Solutions Act*](#), February 2009.

Job Training and Economic Development Programs: The Connection

Centers of Excellence, Energy Efficiency Study, 2009, *Energy Efficiency Study: Environmental Scans*.
<http://www.coeccc.net/energy/>

Centers of Excellence, April 2012, *Doing What matters for Jobs and the Economy, Sector Profile: Energy & Utilities*. http://www.coeccc.net/documents/dwm_engutil_sector_CA_12.pdf

Centers of Excellence, June 2009. *Understanding the Green Economy in California: A Community College Perspective*. http://www.coeccc.net/Environmental_Scans/GreenEcon_Scan_SW_09.pdf

Collaborative Economics for the California Workforce Investment Board, 2011, *Regional Industries Clusters of Opportunity*.
<http://www.coecon.com/rico.html>

Department of Energy, National Renewable Energy Laboratory, August 2011, *Solar Photovoltaic Economic Development: Building and Growing a local PV Industry*. <http://www.nrel.gov/docs/fy11osti/51190.pdf>

Donald Vial Center on Employment in the Green Economy, March 17, 2011, *California Workforce Education & Training needs Assessment: For Energy Efficiency, Distributed Generation, and Demand Response*.
http://www.energy.ca.gov/cleanenergyjobs/WE&T_NeedsAssessment_ExecutiveSummary.pdf

Fazzino, Gary, January 29, 2010, *Renewable Energy Can Drive Economic Growth*.
<http://blog.appliedmaterials.com/renewable-energy-can-drive-economic-growth>

Goldman, Charles A., J. Peters, N. Albers, E. Stuart and M. Fuller, Lawrence Berkley National Laboratory and Research Into Action Inc., March 2010, *Energy Efficiency Services Sector: Workforce Education and Training Needs*. <http://eetd.lbl.gov/EA/EMP/reports/lbnl-3163e.pdf>

Hull, Dana, MercuryNews.com, March 19, 2012, *Local Workers Get Training for Green Jobs and Placement*.
http://www.mercurynews.com/business/ci_20427731/solartech-nova-jobs-training-silicon-valley-green-swic-solar-work

Mills, Rhonda and A. Kravetz, Center for Energy Efficiency and Renewable Technologies, July 12, 2011, *Workforce Needs for Distributed Solar Projects*. http://www.ceert.org/PDFs/reports/110712_DG-Jobs_CEERT_InterSolar-NA.pdf

Mills, Rhonda, A. Kravetz and R. Drobek, Center for Energy Efficiency and Renewable Technologies, July 12, 2011, *Workforce Needs for Renewable Energy Power Plants in Southern California*.
http://www.ceert.org/PDFs/reports/110712_workforce-needs-for-renewable-energy-powerplants.pdf

Pinderhughes, Raquel, 2007, *Green Collar Jobs: An Analysis of the Capacity of Green Businesses to Provide High Quality Jobs for Men and Women with Barriers to Entry*.
<http://online.sfsu.edu/~raquelrp/documents/v13FullReport.pdf>

White, V. John, R. Mills and A. Kravetz, Center for Energy Efficiency and Renewable Technologies, September 15, 2010, *Workforce Needs for Large Scale Solar Projects*. http://www.ceert.org/PDFs/SOLAR-WORKFORCE-NEEDS-PPT_091710.pdf

Zabin, Carol, A. Buffa, C. Brown and D. Graham-Squire, [California's Global Warming Solutions Act of 2006: A Background Paper for Labor Unions](#), August 2008.

Local Economic Development with Renewable Energy: Case Studies

Ball, J. and K. Yanosek, Stanford University, Science Daily, May 1, 2012, *Use of Public and Private Dollars for Scaling Up Clean Energy Needs a Reality Check Say Scholars*.
<http://www.sciencedaily.com/releases/2012/05/120501162706.htm>

California Economic Summit, May 11, 2012
<http://www.caeconomy.org/resources>

Center on Globalization, Governance and Competitiveness, Duke University, 2008. *Manufacturing Climate Solutions: Carbon-Reducing Technologies and U.S. Jobs*.
http://www.cggc.duke.edu/environment/climatesolutions/greeneconomy_Fullreport.pdf

Collaborative Economics, March 2008, *Clean Technology and the Green Economy: Growing Products, Services, Businesses, and Jobs in California's Value Network*.
http://www.coecon.com/Reports/GREEN/FINAL_Green_Economy_March_2008.pdf

Goodrich, Alan, T. James, M. Woodhouse, National Renewable Energy Laboratory and Stanford University Precourt Institute for Energy, October 10, 2011, *Solar PV Manufacturing Cost Analysis: US Competiveness in a Global Industry*. <http://www.nrel.gov/docs/fy12osti/53938.pdf>

Bezdek, Roger, Management Information Services, Inc., 2007, *Renewable Energy and Energy Efficiency: Economic Drivers for the 21st Century*.
<http://www.greenforall.org/resources/renewable-energy-and-energy-efficiency-economic>

Hendricks, Kevin B. and V. R. Singhal, Management Science Vol. 51, May 2005, *Association between Supply Chain Glitches and Operating Performance*. <http://www.jstor.org/stable/20110367>

Khan, Matthew and E. Mansur, Energy Institute at Haas, Research Review, Spring 2011, *Regulation and Employment Decisions: Where do Manufacturing Firms Locate?*
<http://ei.haas.berkeley.edu/pdf/newsletter/2011Spring.pdf>

Leistikow, Dan, Department of Energy, April 6, 2012, *NREL reports Highlights Positive Economic Impact and Job Creation from 1603 Renewable Energy Grant Program*. <http://energy.gov/articles/nrel-report-highlights-positive-economic-impact-and-job-creation-1603-renewable-energy>

Mulkern, Anne C., NY Times, December 9th, 2010, *Renewable Energy Jobs argument is Potent in Tax Debate, but some say it's off point*. <http://www.nytimes.com/gwire/2010/12/09/09greenwire-renewable-energy-jobs-argument-is-potent-in-tax-1154.html?pagewanted=all>

Natural Resources Defense Council & Environmental Entrepreneurs, September 2004, *Creating the California Cleantech Cluster*. <http://www.nrdc.org/air/energy/cleantech/cleantech.pdf>

NRG Energy Inc, Global Energy World, April 26, 2012, *NRG Energy, MidAmerican Solar, and First Solar Celebrate 100 MW Milestone for 290MW Agua Caliente Solar Project*. [http://www.globalenergyworld.com/news/4585/NRG Energy, MidAmerican Solar and First Solar Celebrate 100 MW Milestone for 290 MW Agua C.htm](http://www.globalenergyworld.com/news/4585/NRG_Energy_MidAmerican_Solar_and_First_Solar_Celebrate_100_MW_Milestone_for_290_MW_Agua_C.htm)

Ritchie, B. and C. Brindley, The Journal of Operational Research Society, November 2007, *An Emergent Framework for Supply Chain Risk Management and Performance Measurement*. <http://www.jstor.org/stable/4622835>

Roca, Marc, and J. Doom, Bloomberg, April 30, 2012, *LDK Solar Cuts 5554 Workers Amid Clean-Energy Shakeout*. <http://www.bloomberg.com/news/2012-04-30/ldk-solar-cuts-5-554-workers-amid-clean-energy-shakeout.html>

Roland-Holst, David and F. Kahrl, U.C. Berkeley, June 2009, *Energy Pathways for the California Economy*. http://are.berkeley.edu/~dwrh/CERES_Web/Docs/energy%20pathways%20final%20report.pdf

Sheehy, Dick and N. Monosoff, CH2M Hill, March 2011, *Renewable Energy Economic Development*. http://www.pnnl.gov/TCRDSpeakers/media/ch2mhill_presentation.pdf

Steinburg, Daniel and G. Porro, National Renewable Energy Laboratory, April, 2012, *Preliminary Analysis of the Jobs and Economic Impacts of Renewable Energy Projects Supported by the Section 1603 Treasury Grant Program*. <http://www.nrel.gov/docs/fy12osti/52739.pdf>

The Pew Charitable Trusts, June 2009, *The Clean Energy Economy: Repowering Jobs, Businesses and Investments Across America*. <http://www.pewenvironment.org/uploadedFiles/PEG/Publications/Report/Clean%20Energy%20Economy.pdf>

Trabish, Herman, Green Tech Media, March 5, 2012, *Antelope Valley Solar Ranch One: The Solar Power Plant That Could*. <http://www.greentechmedia.com/articles/read/Antelope-Valley-Solar-Ranch-One-the-Solar-Power-Plant-That-Could/>

Wiser, Ryan and M. Bolinger, Lawrence Berkley Laboratory, June 2011, *2010 Wind Technologies Market Report*. <http://eetd.lbl.gov/ea/ems/reports/lbnl-4820e.pdf>

Wiser, Ryan, M. Bolinger and N. Darghouth, Lawrence Berkley Laboratory, April 2010, *Preliminary Evaluation of the Impact of the Section 1603 Treasury Grant Program on Renewable Energy Deployment in 2009*. <http://eetd.lbl.gov/ea/ems/reports/lbnl-3188e.pdf>

Wiser, Ryan and J. Lewis, Lawrence Berkley Laboratory, November 2005, *Fostering a Renewable Energy Technology Industry: An International Comparison of Wind Industry Policy Support Mechanisms*. <http://eetd.lbl.gov/ea/ems/reports/59116.pdf>