



December 4, 2014

**Via Electronic Filing and FedEx**

Public Utility Commission  
Attn: Filing Center  
3930 Fairview Industrial Drive SE  
Salem, OR 97308

Re: Docket No. LC 62: Signatory Pages to Appendix B of Protective Order 14-416 of Sierra Club

Please find enclosed the original and two (2) copies of the Signatory Pages to Appendix B of Protective Order 14-416 of Sierra Club in the above-referenced docket. This document has been e-filed with the Commission and served on parties via email.

Please let me know if you have any questions. Thank you.

Respectfully submitted,

*/s/ Derek Nelson*

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Derek Nelson  
Legal Assistant  
Sierra Club Environmental Law Program  
85 Second St., 2nd Floor  
San Francisco, CA 94105  
(415) 977-5595  
derek.nelson@sierraclub.org


cc: Service List





SIGNATORY PAGE  
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III. Persons Qualified under Paragraph 3(e):

I have read the general protective order, agree to be bound by the terms of the order, and will provide the information identified in paragraph 10.

By: Signature:  Date: Dec 4 2014  
 Printed Name: Gloria D. Smith  
 Address: 85 2nd St, 2nd Floor, SF, CA, 94105  
 Employer: Sierra Club  
 Job Title: Managing Attorney  
 Paragraph 10(e) information also provided.

By: Signature:  Date: 12-4-14  
 Printed Name: Travis Ritchie  
 Address: 85 2nd St, 2nd Floor, SF, CA 94105  
 Employer: Sierra Club  
 Job Title: Staff Attorney  
 Paragraph 10(e) information also provided.

By: Signature:  Date: 12-4-14  
 Printed Name: Derek Nelson  
 Address: 85 2nd St, 2nd Floor, SF, CA 94105  
 Employer: Sierra Club  
 Job Title: Legal Assistant  
 Paragraph 10(e) information also provided.

By: Signature:  Date: 12-4-14  
 Printed Name: Andrea Issod  
 Address: 85 2nd St, 2nd Floor, SF, CA 94105  
 Employer: Sierra Club  
 Job Title: Staff Attorney  
 Paragraph 10(e) information also provided.

SIGNATORY PAGE  
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III. Persons Qualified under Paragraph 3(e):

I have read the general protective order, agree to be bound by the terms of the order, and will provide the information identified in paragraph 10.

By: Signature: Amy Hujrowski Date: 12/4/14  
Printed Name: Amy Hujrowski  
Address: 4015 N. Colonial Ave PDX OR 97227  
Employer: Sierra Club  
Job Title: Senior Campaign Representative

Paragraph 10(e) information also provided.

By: Signature: \_\_\_\_\_ Date: \_\_\_\_\_  
Printed Name: \_\_\_\_\_  
Address: \_\_\_\_\_  
Employer: \_\_\_\_\_  
Job Title: \_\_\_\_\_

Paragraph 10(e) information also provided.

By: Signature: \_\_\_\_\_ Date: \_\_\_\_\_  
Printed Name: \_\_\_\_\_  
Address: \_\_\_\_\_  
Employer: \_\_\_\_\_  
Job Title: \_\_\_\_\_

Paragraph 10(e) information also provided.

By: Signature: \_\_\_\_\_ Date: \_\_\_\_\_  
Printed Name: \_\_\_\_\_  
Address: \_\_\_\_\_  
Employer: \_\_\_\_\_  
Job Title: \_\_\_\_\_

Paragraph 10(e) information also provided.

SIGNATORY PAGE  
DOCKET NO. LC 62

## III. Persons Qualified under Paragraph 3(e):

I have read the general protective order, agree to be bound by the terms of the order, and will provide the information identified in paragraph 10.

By: Signature: [Signature] Date: 12/4/2014  
 Printed Name: JEREMY FISHER  
 Address: 485 MASS AVE, CAMBRIDGE MA 02139  
 Employer: SYNAPSE ENERGY ECONOMICS  
 Job Title: PRINCIPAL ~~SR~~ ASSOCIATE

Paragraph 10(e) information also provided.

By: Signature: [Signature] Date: 12/4/2014  
 Printed Name: Patrick Lockau  
 Address: 485 MASS AVE, Cambridge MA 02139  
 Employer: Synapse Energy Economics  
 Job Title: Associate

Paragraph 10(e) information also provided.

By: Signature: [Signature] Date: 12/4/14  
 Printed Name: Rachel Wilson  
 Address: 485 Mass Ave Cambridge MA 02139  
 Employer: Synapse Energy Economics  
 Job Title: Senior Associate

Paragraph 10(e) information also provided.

By: Signature: [Signature] Date: 12/4/14  
 Printed Name: Sarah Jackson  
 Address: 485 Mass Ave Cambridge MA 02139  
 Employer: Synapse Energy Economics  
 Job Title: Associate

Paragraph 10(e) information also provided.



**Jeremy Fisher, Ph.D., Principal Associate**

Synapse Energy Economics | 485 Massachusetts Avenue, Suite 2 | Cambridge, MA 02139 | 617-453-7045  
jfisher@synapse-energy.com

**PROFESSIONAL EXPERIENCE**

**Synapse Energy Economics, Cambridge MA. *Principal Associate, 2013 – present, Scientist, 2007 – 2013.***

Consulting on economic analysis of climate change and energy, carbon, and emissions policies. Quantitative evaluations of regional climate change impact, energy efficiency programs, long- and short-term electric industry planning, carbon reduction planning, and emissions compliance programs.

**Tulane University, New Orleans, LA. *Ecology and Evolutionary Biology Postdoctoral Research Scientist, 2006 –2007.***

Determining Hurricane Katrina’s impact on Gulf Coast ecosystems using satellite and field data.

**University of New Hampshire, Durham, NH. *Earth, Oceans, and Space Postdoctoral Research Scientist, 2006 –2007.***

Organizing team synthesis review of causes and rates of natural rainforest loss in the Amazon basin.

**Brown University Watson Institute for International Studies, Providence, RI. *Visiting Fellow, 2007 – 2008.***

Designing study to examine migratory bird response to climate variability in the Middle East.

**Brown University Department of Geological Sciences, Providence, RI. *Research Assistant, 2001 –2006.***

Tracking impact of climate change on New England forests from satellites. Working with West African communities to determine impact of climate change and practice on landscape. Modeling coastal power plant effluent from satellite data.

**EDUCATION**

**Brown University, Providence, RI**  
Doctor of Philosophy in Geological Sciences, 2006

**Brown University, Providence, RI**  
Master of Science in Geological Sciences, 2003

**University of Maryland, College Park, MD**  
Bachelor of Science in Geography and Geology, 2001

## FELLOWSHIPS & AWARDS

- *Visiting Fellow*, Watson Institute for International Studies, Brown University, 2007
- *Finalist*, Congressional Fellowship, American Institute of Physics and Geological Society of America, 2007
- *Fellow*, National Science Foundation East Asia Summer Institute (EASI), 2003
- *Fellow*, Henry Luce Foundation at the Watson Institute for International Studies, Brown University, 2003

## REPORTS

Vitolo, T., J. Fisher, K. Takahashi. 2014. *TVA's Use of Dispatchability Metrics in Its Scorecard*. Synapse Energy Economics for Sierra Club.

Luckow, P., E. A. Stanton, B. Biewald, S. Fields, S. Jackson, J. Fisher, F. Ackerman. 2014. *CO<sub>2</sub> Price Report, Spring 2014: Includes 2013 CO<sub>2</sub> Price Forecast*. Synapse Energy Economics.

Daniel, J., T. Comings, J. Fisher. 2014. *Comments on Preliminary Assumptions for Cleco's 2014/2015 Integrated Resource Plan*. Synapse Energy Economics for Sierra Club.

Fisher, J., T. Comings, and D. Schlissel. 2014. *Comments on Duke Energy Indiana's 2013 Integrated Resource Plan*. Synapse Energy Economics and Schlissel Consulting for Mullet & Associates, Citizens Action Coalition of Indiana, Earthjustice, and Sierra Club.

Fisher, J., P. Knight, E. A. Stanton, and B. Biewald. 2014. *Avoided Emissions and Generation Tool (AVERT): User Manual*. Version 1.0. Synapse Energy Economics for the U.S. Environmental Protection Agency.

Luckow, P., E. A. Stanton, B. Biewald, J. Fisher, F. Ackerman, E. Hausman. 2013. *2013 Carbon Dioxide Price Forecast*. Synapse Energy Economics.

Knight, P., E. A. Stanton, J. Fisher, B. Biewald. 2013. *Forecasting Coal Unit Competitiveness: Coal Retirement Assessment Using Synapse's Coal Asset Valuation Tool (CAVT)*. Synapse Energy Economics for Energy Foundation.

Takahashi, K., P. Knight, J. Fisher, D. White. 2013. *Economic and Environmental Analysis of Residential Heating and Cooling Systems: A Study of Heat Pump Performance in U.S. Cities*. Proceeding of the 7th International Conference on Energy Efficiency in Domestic Appliances and Lighting (EEDAL'13), September 12, 2013.

Fagan, R., J. Fisher, B. Biewald. 2013. *An Expanded Analysis of the Costs and Benefits of Base Case and Carbon Reduction Scenarios in the EIPC Process*. Synapse Energy Economics for the Sustainable FERC Project.

Fisher, J. *Sierra Club's Preliminary Comments on PacifiCorp 2013 Integrated Resource Plan*. Oregon Docket LC 57. Synapse Energy Economics for Sierra Club.

Fisher, J., T. Vitolo. 2012. *Assessing the Use of the 2011 TVA Integrated Resource Plan in the Retrofit Decision for Gallatin Fossil Plant*. Synapse Energy Economics for Sierra Club.

Fisher, J., K. Takahashi. 2012. *TVA Coal in Crisis: Using Energy Efficiency to Replace TVA's Highly Non-Economic Coal Units*. Synapse Energy Economics for Sierra Club.

Fisher J., S. Jackson, B. Biewald. 2012. *The Carbon Footprint of Electricity from Biomass: A Review of the Current State of Science and Policy*. Synapse Energy Economics.

Fisher, J., C. James, N. Hughes, D. White, R. Wilson, and B. Biewald. 2011. *Emissions Reductions from Renewable Energy and Energy Efficiency in California Air Quality Management Districts*. Synapse Energy Economics for California Energy Commission.

Fisher, J., F. Ackerman. 2011. *The Water-Energy Nexus in the Western States: Projections to 2100*. Synapse Energy Economics for Stockholm Environment Institute.

Averyt, K., J. Fisher, A. Huber-Lee, A. Lewis, J. Macknick, N. Madden, J. Rogers, S. Tellinghuisen. 2011. *Freshwater use by US power plants: Electricity's thirst for a precious resource*. Union of Concerned Scientists for the Energy and Water in a Warming World Initiative.

White, D. E., D. Hurley, J. Fisher. 2011. *Economic Analysis of Schiller Station Coal Units*. Synapse Energy Economics for Conservation Law Foundation.

Fisher, J., R. Wilson, N. Hughes, M. Wittenstein, B. Biewald. 2011. *Benefits of Beyond BAU: Human, Social, and Environmental Damages Avoided Through the Retirement of the US Coal Fleet*. Synapse Energy Economics for Civil Society Institute.

Fisher, J., B. Biewald. 2011. *Environmental Controls and the WECC Coal Fleet: Estimating the forward-going economic merit of coal-fired power plants in the West with new environmental controls*. Synapse Energy Economics for Energy Foundation and Western Grid Group.

Hausman, E., V. Sabodash, N. Hughes, J. Fisher. 2011. *Economic Impact Analysis of New Mexico's Greenhouse Gas Emissions Rule*. Synapse Energy Economics for New Energy Economy.

Fisher, J. 2011. *A Green Future for Los Angeles Department of Water and Power: Phasing out Coal in LA by 2020*. Synapse Energy Economics for Sierra Club.

Fisher, J., J. Levy, Y. Nishioka, P. Kirshen, R. Wilson, M. Chang, J. Kallay, C. James. 2010. *Co-Benefits of Energy Efficiency and Renewable Energy in Utah: Air Quality, Health and Water Benefits*. Synapse Energy Economics, Harvard School of Public Health, Tufts University for State of Utah Energy Office.

Biewald, B., D. White, J. Fisher, M. Chang, L. Johnston. 2009. *Incorporating Carbon Dioxide Emissions Reductions in Benefit Calculations for Energy Efficiency: Comments on the Department of Energy's Methodology for Analysis of the Proposed Lighting Standard*. Synapse Energy Economics for the New York Office of Attorney General.



Hausman, E., J. Fisher, L.A. Mancinelli, B. Biewald. 2009. *Productive and Unproductive Costs of CO<sub>2</sub> Cap-and-Trade: Impacts on Electricity Consumers and Producers*. Synapse Energy Economics for the National Association of Regulatory Utility Commissioners, The National Association of State Utility Consumer Advocates (NASUCA), The National Rural Electric Cooperative Association (NRECA), The American Public Power Association (APPA).

Biewald, B., J. Fisher, C. James, L. Johnston, D. Schlissel, R. Wilson. 2009. *Energy Future: A Green Energy Alternative for Michigan*. Synapse Energy Economics for Sierra Club.

James, C., J. Fisher, K. Takahashi. 2009. "Energy Supply and Demand Sectors." *Alaska Climate Change Strategy's Mitigation Advisory Group Final Report: Greenhouse Gas Inventory and Forecast and Policy Recommendations Addressing Greenhouse Gas Reduction in Alaska*. Submitted to the Alaska Climate Change Sub-Cabinet. Synapse Energy Economics for the Center of Climate Strategies.

James, C., J. Fisher, K. Takahashi, B. Warfield. 2009. *No Need to Wait: Using Energy Efficiency and Offsets to Meet Early Electric Sector Greenhouse Gas Targets*. Synapse Energy Economics for Environmental Defense Fund.

James, C., J. Fisher. 2008. *Reducing Emissions in Connecticut on High Electric Demand Days (HEDD)*. Synapse Energy Economics for the Connecticut Department of Environmental Protection and the US Environmental Protection Agency.

Napoleon, A., J. Fisher, W. Steinhurst, M. Wilson, F. Ackerman, M. Resnikoff. 2008. *The Real Costs of Cleaning up Nuclear Waste: A Full Cost Accounting of Cleanup Options for the West Valley Nuclear Waste Site*. Synapse Energy Economics et al.

James, C., F. Fisher. 2008. *Reducing Emissions in Connecticut on High Electric Demand Days (HEDD)*. Synapse Energy Economics for the CT Department of Environmental Protection and the U.S. Environmental Protection Agency.

Hausman, E., J. Fisher, B. Biewald. 2008. *Analysis of Indirect Emissions Benefits of Wind, Landfill Gas, and Municipal Solid Waste Generation*. Synapse Energy Economics for US. Environmental Protection Agency.

Schlissel, D., J. Fisher. 2008. *A preliminary analysis of the relationship between CO<sub>2</sub> emission allowance prices and the price of natural gas*. Synapse Energy Economics for Energy Foundation.

## PEER-REVIEWED ARTICLES

Buonocore, J., P. Luckow, G Norris, J.D. Spengler, B. Biewald, J.I. Fisher, J.I. Levy. 2014. "Public Health and Climate Benefits of Energy Efficiency and Renewable Energy Measures." *Science*, manuscript in review.

Ackerman, F., J.I. Fisher. 2013. "Is there a water–energy nexus in electricity generation? Long-term scenarios for the western United States." *Energy Policy*, August: 235–241.

Averyt, K., J. Macknick, J. Rogers, N. Madden, J. Fisher, J.R. Meldrum, and R. Newmark. 2012. "Water use for electricity in the United States: An analysis of reported and calculated water use information for 2008." *Environmental Research Letters*. In press (accepted Nov. 2012).

Morisette, J. T., A. D. Richardson, A. K. Knapp, J.I. Fisher, E. Graham, J. Abatzoglou, B.E. Wilson, D. D. Breshears, G. M. Henebry, J. M. Hanes, and L. Liang. 2009. "Tracking the rhythm of the seasons in the face of global change: Challenges and opportunities for phenological research in the 21st Century." *Frontiers in Ecology* 7 (5): 253–260.

Biewald, B., L. Johnston, J. Fisher. 2009. "Co-benefits: Experience and lessons from the US electric sector." *Pollution Atmosphérique*, April 2009: 113-120.

Fisher, J.I., G.C. Hurtt, J.Q. Chambers, Q. Thomas. 2008. "Clustered disturbances lead to bias in large-scale estimates based on forest sample plots." *Ecology Letters* 11 (6): 554–563.

Chambers, J.Q., J.I. Fisher, H. Zeng, E.L. Chapman, D.B. Baker, and G.C. Hurtt. 2007. "Hurricane Katrina's Carbon Footprint on US Gulf Coast Forests." *Science* 318 (5853): 1107. DOI: 10.1126/science.1148913.

Fisher, J.I., A.D. Richardson, and J.F. Mustard. 2007. "Phenology model from surface meteorology does not capture satellite-based greenup estimations." *Global Change Biology* 13:707–721.

Fisher, J.I., J.F. Mustard. 2007. "Cross-scalar satellite phenology from ground, Landsat, and MODIS data." *Remote Sensing of Environment* 109:261–273.

Fisher, J.I., J.F. Mustard, and M. Vadeboncoeur. 2006. "Green leaf phenology at Landsat resolution: Scaling from the field to the satellite." *Remote Sensing of Environment* 100 (2): 265–279.

Fisher, J.I., J.F. Mustard. 2004. "High spatial resolution sea surface climatology from Landsat thermal infrared data." *Remote Sensing of Environment* 90:293–307.

Fisher, J.I., J. F. Mustard, and P. Sanou. 2004. "Policy imprints in Sudanian forests: Trajectories of vegetation change under land management practices in West Africa." *Submitted, International Remote Sensing*.

Fisher, J.I., S.J. Goetz. 2001. "Considerations in the use of high spatial resolution imagery: an applications research assessment." Proceedings at the American Society for Photogrammetry and Remote Sensing (ASPRS) Conference in St. Louis, MO.

## SELECTED ABSTRACTS

Fisher, J.I., "Phenological indicators of forest composition in northern deciduous forests." *American Geophysical Union*. San Francisco, CA. December 2007.

Fisher, J.I., A.D. Richardson, and J.F. Mustard. "Phenology model from weather station meteorology does not predict satellite-based onset." *American Geophysical Union*. San Francisco, CA. December 2006.

Chambers, J., J.I. Fisher, G. Hurtt, T. Baker, P. Camargo, R. Campanella, *et al.*, "Charting the Impacts of Disturbance on Biomass Accumulation in Old-Growth Amazon Forests." *American Geophysical Union*. San Francisco, CA. December 2006.

Fisher, J.I., A.D. Richardson, and J.F. Mustard. "Phenology model from surface meteorology does not capture satellite-based greenup estimations." *American Geophysical Union. Eos Trans. 87(52)*. San Francisco, CA. December 2006.

Fisher, J.I., J.F. Mustard, and M. Vadeboncoeur. "Green leaf phenology at Landsat resolution: scaling from the plot to satellite." *American Geophysical Union. Eos Trans. 86(52)*. San Francisco, CA. December 2005.

Fisher, J.I., J.F. Mustard. "Riparian forest loss and landscape-scale change in Sudanian West Africa." *Ecological Association of America*. Portland, Oregon. August 2004.

Fisher, J.I., J.F. Mustard. "High spatial resolution sea surface climatology from Landsat thermal infrared data." *American Society for Photogrammetry and Remote Sensing (ASPRS) New England Region Technical Meeting*. Kingston, Rhode Island. November, 2004.

Fisher, J.I., J.F. Mustard, and P. Sanou. "Trajectories of vegetation change under controlled land-use in Sudanian West Africa." *American Geophysical Union. Eos Trans. 85(47)*. San Francisco, CA. December 2004.

Fisher, J.I., J.F. Mustard. "Constructing a climatology of Narragansett Bay surface temperature with satellite thermal imagery." *The Rhode Island Natural History Survey Conference*. Cranston, RI. March, 2003.

Fisher, J.I., J.F. Mustard. "Constructing a high resolution sea surface climatology of Southern New England using satellite thermal imagery." *New England Estuarine Research Society*. Fairhaven, MA. May, 2003.

Fisher, J.I., J.F. Mustard. "High spatial resolution sea surface climatology from Landsat thermal infrared data." *Ecological Society of America Conference*. Savannah, GA. August, 2003.

Fisher, J.I., S.J. Goetz. "Considerations in the use of high spatial resolution imagery: an applications research assessment." *American Society for Photogrammetry and Remote Sensing (ASPRS) Conference Proceedings*, St. Louis, MO. March, 2001.

## **SEMINARS AND PRESENTATIONS**

Fisher, J. 2014. "Planning in Vertically Integrated Utilities." Presentation to the U.S. Environmental Protection Agency in Washington, DC, May 22, 2014.

Fisher, J. 2013. "IRP Best Practices Stakeholder Perspectives." Presentation at Indiana Utility Regulatory Commission Emerging Issues in IRP conference. October 17, 2013.

Fisher, J., P. Knight. 2013. Avoided Emissions and Generation Tools (AVERT): An Introduction." Presentation for EPA and various state departments of environmental quality/protection.

Takahashi, K., J. Fisher. 2013. "Greening TVA: Leveraging Energy Efficiency to Replace TVA's Highly Uneconomic Coal Units." Presentation at the ACEEE National Conference on Energy Efficiency as a Resource, September 23, 2013.

Fisher, J. 2011. "Emissions Reductions from Renewable Energy and Energy Efficiency in California Air Districts." Presentation for EPA State Climate and Energy Program, June 14, 2011.

Fisher, J., B. Biewald. 2011. "WECC Coal Plant Retirement Based On Forward-Going Economic Merit." Presentation for Western Grid Group, January 10, 2011.

Fisher, J. 2010. "Protecting Electricity and Water Consumers in a Water-Constrained World." Presentation to the National Association of State Utility Consumer Advocates, November 16, 2010.

James, C., J. Fisher, D. White, and N. Hughes. 2010. "Quantifying Criteria Emissions Reductions in CA from Efficiency and Renewables." CEC / PIER Air Quality Webinar Series, October 12, 2010.

Fisher, J. 2008. "Climate Change, Water, and Risk in Electricity Planning." Presentation at National Association of Regulatory Utility Commissioners (NARUC) Conference in Portland, OR, July 22, 2008.

Fisher, J., E. Hausman, and C. James. 2008. "Emissions Behavior in the Northeast from the EPA Acid Rain Monitoring Dataset." Presentation at Northeast States for Coordinated Air Use Management (NESCAUM) conference in Boston, MA, January 30, 2008.

Fisher, J.I., J.F. Mustard, and M. Vadeboncoeur. 2006. "Climate and phenological variability from satellite data. Ecology and Evolutionary Biology," Presentation at Tulane University, March 24, 2006.

Fisher, J.I., J.F. Mustard, and M. Vadeboncoeur. 2005. "Anthropogenic and climatic influences on green leaf phenology: new observations from Landsat data." Seminar presentation at the Ecosystems Center at the Marine Biological Laboratory in Woods Hole, MA, September 27, 2005.

Fisher, J.I., J.F. Mustard, "High resolution phenological modeling in Southern New England." Seminar at the Woods Hole Research Center in Woods Hole, MA, March 16, 2005.

## TESTIMONY

**Wyoming Public Service Commission (Docket No. 20000-446-ER-14):** Direct testimony in the matter of the application of Rocky Mountain Power for authority to increase its retail electric utility service rates in Wyoming approximately \$36.1 million per year or 5.3 percent. On behalf of Sierra Club. July 25, 2014.

**Utah Public Service Commission (Docket No. 13-035-184):** Direct testimony in the matter of the application of Rocky Mountain Power for authority to increase its retail electric utility service rates in Utah and for approval of its proposed electric service schedules and electric service regulations. On behalf of Sierra Club. May 1, 2014.

**Louisiana Public Service Commission (Docket No. U-32507):** Direct testimony regarding the application of Cleco Power LLC for: (i) authorization to install emissions control equipment at certain of its generating facilities in order to comply with the federal national emissions standards for hazardous air pollutants from coal and oil-fired electric utility steam generating units rule; and (ii) authorization to recover the costs associated with the emissions control equipment in LPSC jurisdictional rates. ON behalf of Sierra Club. November 8, 2013.

**Nevada Public Utilities Commission (Docket No. 13-07021):** Direct testimony regarding a joint application of Nevada Power Company d/b/a NV Energy, Sierra Pacific Power Company d/b/a NV Energy (referenced together as "NV Energy, Inc.") and MidAmerican Energy Holdings Company ("MidAmerican") for approval of a merger of NV Energy, Inc. with MidAmerican. On behalf of Sierra Club. October 24, 2013.

**Indiana Utility Regulatory Commission (Cause No. 44339):** Direct testimony in the matter of Indianapolis Power & Light Company's application for a Certificate of Public Convenience and Necessity for the construction of a combined cycle gas turbine generation facility. On behalf of Citizens Action Coalition of Indiana. August 22, 2013.

**Indiana Utility Regulatory Commission (Cause No. 44242):** Direct and surrebuttal testimony regarding Indianapolis Power & Light Company's petition for approval of clean energy projects and qualified pollution control property. On behalf of Sierra Club. January 28, 2013; April 3, 2013.

**Wyoming Public Service Commission (Docket 2000-418-EA-12):** Direct testimony regarding the application of PacifiCorp for approval of a certificate of public convenience and necessity to construct selective catalytic reduction systems on the Jim Bridger Units 3 and 4. On behalf of Sierra Club. February 1, 2013.

**Public Service Commission of Wisconsin (Docket No. 6690-CE-197):** Direct, rebuttal, and surrebuttal testimony regarding Wisconsin Public Service Corporation's application for authority to construct and place in operation a new multi-pollutant control technology system for Unit 3 of Weston Generating Station. On behalf of Clean Wisconsin. Direct testimony submitted November 15, 2012, rebuttal testimony submitted December 14, 2012, surrebuttal testimony submitted January 7, 2013.

**Utah Public Service Commission (Docket 12-035-92):** Direct, surrebuttal, and cross-answering testimony regarding Rocky Mountain Power's request for approval to construct Selective Catalytic Reduction systems at Jim Bridger units 3 and 4. On behalf of Sierra Club. November 30, 2012.

**Oregon Public Utility Commission (Docket UE 246):** Direct testimony in the matter of PacifiCorp's filing of revised tariff schedules for electric service in Oregon. On behalf of Sierra Club. June 20, 2012.

**Kentucky Public Service Commission (Docket 2011-00401):** Direct testimony regarding the application of Kentucky Power Company for approval of its 2011 environmental compliance plan, for approval of its amended environmental cost recovery surcharge tariff, and for the granting of a certificate of public

convenience and necessity for the construction and acquisition of related facilities. On behalf of Sierra Club. March 12, 2012.

**Kentucky Public Service Commission (Dockets 2011-00161/2011-00162):** Direct testimony regarding the application of Kentucky Utilities/Louisville Gas and Electric Company for certificates of public convenience and necessity and approval of its 2011 compliance plan for recovery by environmental surcharge. On behalf of Sierra Club and Natural Resources Defense Council (NRDC). September 16, 2011.

**Kansas Corporation Commission (Docket 11-KCPE-581-PRE):** Direct testimony in the matter of the petition of Kansas City Power & Light (KCP&L) for determination of the ratemaking principles and treatment that will apply to the recovery in rates of the cost to be incurred by KCP&L for certain electric generating facilities under K.S.A. 66-1239. On behalf of Sierra Club. June 3, 2011.

**Utah Public Service Commission (Docket 10-035-124):** Direct testimony in the matter of the application of Rocky Mountain Power for authority to increase its retail electric utility service rates in Utah and approval of its proposal electric service schedules and electric service regulations. On behalf of Sierra Club. May 26, 2011.

**Wyoming Public Service Commission (Docket 20000-384-ER-10):** Direct testimony in the matter of the application of Rocky Mountain Power for authority to increase its retail electric utility rates in Wyoming approximately \$97.9 million per year or an average overall increase of 17.3 percent. On behalf of Powder River Basin Resource Council. April 11, 2011.

*Resume dated August 2014*





## **Patrick Luckow, Associate**

Synapse Energy Economics | 485 Massachusetts Avenue, Suite 2 | Cambridge, MA 02139 | 617-4537052  
pluckow@synapse-energy.com

### **PROFESSIONAL EXPERIENCE**

**Synapse Energy Economics Inc., Cambridge, MA. Associate, May 2012 – present.**

Provides consulting services, conducts research, and performs analysis of energy investments. Calibrates, runs, and modifies industry-standard economic models to evaluate long-term energy plans, and the environmental and economic impacts of policy/regulatory initiatives.

**Joint Global Change Research Institute, College Park, MD. Scientist, 2009 – 2011.**

Evaluated the long-term implications of potential climate policies, both internationally and in the US, across a range of energy and electricity models. Modeled large-scale biomass use in the global energy system. Led a team studying global wind energy resources and their interaction in the Institute's integrated assessment model. Utilized updated global wind supply curves to help understand both onshore and offshore wind deployment, and issues associated with transmission requirements, intermittency, and technology costs.

**DaimlerChrysler, Auburn Hills, MI. Stress Lab & Durability Development Intern, 2007.**

Completed load and vibration data acquisition and analysis on various Chrysler vehicles, and contributed to the development of an improved generic body vibration profile.

**Northrop Grumman, Rolling Meadows, IL. Defensive Systems Division Co-op, 2005 – 2007.**

Designed new enclosures and mounting structures for electronic components, silenced existing enclosures, and conducted thermal testing of complete systems.

### **EDUCATION**

**University of Maryland, College Park, MD**  
Master of Science in Mechanical Engineering, 2009.

**Northwestern University, Evanston, IL**  
Bachelor of Science in Mechanical Engineering, 2007.

### **PUBLICATIONS**

Nystrom, S., P. Luckow. 2014. *The Economic, Climate, Fiscal, Power, and Demographic Impact of a National Fee-and-Dividend Carbon Tax*. Regional Economic Models, Inc. and Synapse Energy Economics for Citizens' Climate Lobby.



- Luckow, P., J. Daniel, S. Fields, E. A. Stanton, B. Biewald. 2014. "CO<sub>2</sub> Price Forecast: Planning for Future Environmental Regulations." *EM Magazine*, June 2014, 57-59.
- Luckow, P., E. A. Stanton, B. Biewald, S. Fields, S. Jackson, J. Fisher, F. Ackerman. 2014. *CO<sub>2</sub> Price Report, Spring 2014: Includes 2013 CO<sub>2</sub> Price Forecast*. Synapse Energy Economics.
- Rudkevich, A., R. Hornby, P. Luckow. 2014. *Audit of Port Hawkesbury Paper Load Retention Tariff*. Newton Energy Group and Synapse Energy Economics for the Nova Scotia Utility and Review Board.
- Luckow, P., E. A. Stanton, B. Biewald, J. Fisher, F. Ackerman, E. Hausman. 2013. *2013 Carbon Dioxide Price Forecast*. Synapse Energy Economics.
- Hornby, R., P. Chernick, D. White, J. Rosenkranz, R. Denhardt, E. A. Stanton, J. Gifford, B. Grace, M. Chang, P. Luckow, T. Vitolo, P. Knight, B. Griffiths, B. Biewald. 2013. *Avoided Energy Supply Costs in New England: 2013 Report*. Synapse Energy Economics for Avoided-Energy-Supply-Component (AESC) Study Group.
- Ackerman, F., T. Comings, P. Luckow. 2013. *A Review of Consumer Benefits from a Corporate Average Fuel Economy (CAFE) Standards*. Synapse Energy Economics for Consumers Union.
- Fagan, R., P. Luckow, D. White, R. Wilson. 2013. *The Net Benefits of Increased Wind Power in PJM*. Synapse Energy Economics for Energy Future Coalition.
- Wilson, R., P. Luckow, B. Biewald, F. Ackerman, E. Hausman. 2012. *2012 Carbon Dioxide Price Forecast*. Synapse Energy Economics.
- Biewald, B., T. Vitolo, P. Luckow. 2012. *Comments Regarding KCP&L's 2012 IRP Filing*. Sierra Club and Synapse Energy Economics.
- Zhou, Y., P. Luckow, S.J. Smith, and L.E. Clarke. 2012. "Evaluation of Global Onshore Wind Energy Potential and Generation Costs." *Environmental Science & Technology* 46 (14):7857–7864, doi:10.1021/es204706m.
- Dooley, J., P. Luckow, M.A. Wise. 2012. *Algal Biodiesel Production in GCAM: Initial Parameterization and Discussion of Potential Model Development Areas*. College Park, MD: Joint Global Change Research Institute and Pacific Northwest National Laboratory.
- Edmonds, J., P. Luckow, K. Calvin, M.A. Wise, J.J. Dooley, P. Kyle, S. Kim, P. Patel, and L.E. Clarke. 2013. "Can radiative forcing be limited to 2.6 Wm<sup>-2</sup> without negative emissions from bioenergy AND CO<sub>2</sub> capture and storage?" *Climatic Change* 118 (1): 29–43, doi:10.1007/s10584-012-0678-z.
- Luckow, P., M.A. Wise, J.J. Dooley, S.H. Kim. 2010. "Large-scale utilization of biomass energy and carbon dioxide capture and storage in the transport and electricity sectors under stringent CO<sub>2</sub> concentration limit scenarios." *International Journal of Greenhouse Gas Control* 4 (5): 865–877, doi:10.1016/j.ijggc.2010.06.002.

Luckow, P., M.A. Wise, J.J. Dooley. 2013. "Deployment of CCS Technologies across the Load Curve for a Competitive Electricity Market as a Function of CO2 Emissions Permit Prices." Paper presentation at the 10th International Conference on Greenhouse Gas Control Technologies in Amsterdam, September 19 – 23, 2010.

Luckow, P., A. Bar-Cohen, P. Rodgers, and J. Cevallos. 2010. "Energy Efficient Polymers for Gas-Liquid Heat Exchangers" *Journal of Energy Resources Technology* 132 (2): 021001, doi:10.1115/1.4001568.

Luckow, P., A. Bar-Cohen, and P. Rodgers. 2009. "Minimum Mass Polymer Seawater Heat Exchanger for LNG Applications." *Journal of Thermal Science and Engineering Applications* 1 (3): 031009, doi:10.1115/1.4001239.

Luckow, P., A. Bar-Cohen, P. Rodgers, and J. Cevallos. 2008. "Energy Efficient Polymers for Gas-Liquid Heat Exchangers." Presentation at the ASME 2nd International Conference on Energy Sustainability in Jacksonville, FL, August 10 – 14, 2008.

## **TESTIMONY**

**Hawaii Public Utilities Commission (Docket No. 2012-0185):** Direct testimony and exhibits regarding the proposed Aina Koa Pono Biofuel Project. On behalf of the State of Hawaii Division of Consumer Advocacy. March 2013.

*Resume dated September 2014*





## **Rachel Wilson, Senior Associate**

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### **PROFESSIONAL EXPERIENCE**

**Synapse Energy Economics Inc.**, Cambridge, MA. *Senior Associate*, 2013 – present, *Associate*, 2010 – June 2013, *Research Associate*, 2008 – 2010.

- Performs consulting, conducts research, and assists in writing testimony and reports on a wide range of issues relating to electric utilities, including: federal and state clean air policies; emissions from electricity generation; environmental compliance technologies, strategies, and costs; integrated resource planning; valuation of environmental externalities from power plants; and the nexus between water and energy.
- Uses optimization and electricity dispatch models, including Strategist, PROMOD, PROSYM/Market Analytics, and PLEXOS to conduct analyses of utility service territories and regional energy markets.

**Analysis Group, Inc.**, Boston, MA.

*Associate*, Energy Practice, 2007 – 2008.

- Supported an expert witness asked to opine on various topics in the electric industry as they applied to merchant generators and provided incentives for their behavior in the late 1990s and early 2000s.
- Analyzed data related to coal production on Indian land and contractual royalties paid to the tribe over a 25 year period to determine if discrepancies exist between these values for the purposes of potential litigation.
- Examined Canadian policies relating to carbon dioxide, and assisted with research on linkage of international tradable permit systems.
- Managed analysts' work processes and evaluated work products.

*Senior Analyst Intern*, Energy Practice, 2006 – 2007.

- Supported an expert witness in litigation involving whether a defendant power company could financially absorb a greater investment in pollution control under its debt structure while still offering competitive rates. Analyzed impacts of federal and state clean air laws on energy generators and providers. Built a quantitative model showing the costs of these clean air policies to the defendant over a 30 year period. Built a financial model calculating impacts of various pollution control investment requirements.

- Researched the economics of art; assisted in damage calculations in arbitration between an artist and his publisher.

**Yale Center for Environmental Law and Policy**, New Haven, CT. *Research Assistant*, 2005 – 2007.

- Gathered and managed data for the Environmental Performance Index, presented at the 2006 World Economic Forum. Interpreted statistical output, wrote critical analyses of results, and edited report drafts.
- Part of the team that produced *Green to Gold*, an award-winning book on corporate environmental management and strategy. Managed data, conducted research, and implemented marketing strategy.

**CERES**, Boston, MA. *Student Consultant*, Spring 2006.

- As part of a four-person team, made strategic recommendations on all aspects of messaging and engagement to encourage corporate directors to act on the issue of climate change. First strategic recommendation was sustainable governance forums, which were profiled in New York Times article “Global Warming Subject for Directors at Big Companies” on September 21, 2006.

**Marsh Risk and Insurance Services, Inc.**, Los Angeles, CA. *Risk Analyst*, Casualty Department, 2003 – 2005.

- Evaluated Fortune 500 clients’ risk management programs/requirements and formulated strategic plans and recommendations for customized risk solutions.
- Supported the placement of \$2 million in insurance premiums in the first year and \$3 million in the second year.
- Utilized quantitative models to create loss forecasts, cash flow analyses and benchmarking reports.

Completed a year-long Graduate Training Program in risk management; ranked #1 in the western region of the US and shared #1 national ranking in a class of 200 young professionals.

## **EDUCATION**

**Yale School of Forestry & Environmental Studies**, New Haven, CT

Masters of Environmental Management, concentration in Law, Economics, and Policy with a focus on energy issues and markets, 2007

**Claremont McKenna College**, Claremont, California

Bachelor of Arts in Environment, Economics, Politics (EEP), 2003. *Cum laude* and EEP departmental honors.

**School for International Training**, Quito, Ecuador

Rachel Wilson page 2 of 5

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Semester abroad studying Comparative Ecology. Microfinance Intern – Viviendas del Hogar de Cristo in Guayaquil, Ecuador, Spring 2002.

## **ADDITIONAL SKILLS AND ACCOMPLISHMENTS**

- Microsoft Office Suite, Lexis-Nexis, Platts Energy Database, Strategist, PROMOD, PROSYM/Market Analytics, and PLEXOS, some SAS and STATA.
- Competent in oral and written Spanish.
- Hold the Associate in Risk Management (ARM) professional designation.

## **PUBLICATIONS**

Wilson, R., B. Biewald. 2013. *Best Practices in Electric Utility Integrated Resource Planning: Examples of State Regulations and Recent Utility Plans*. Synapse Energy Economics for Regulatory Assistance Project.

Fagan, R., P. Luckow, D. White, R. Wilson. 2013. *The Net Benefits of Increased Wind Power in PJM*. Synapse Energy Economics for Energy Future Coalition.

Hornby, R., R. Wilson. 2013. *Evaluation of Merger Application filed by APCo and WPCo*. Synapse Energy Economics for West Virginia Consumer Advocate Division.

Johnston, L., R. Wilson. 2012. *Strategies for Decarbonizing Electric Power Supply*. Synapse Energy Economics for Regulatory Assistance Project, Global Power Best Practice Series, Paper #6.

Wilson, R., P. Luckow, B. Biewald, F. Ackerman, E. Hausman. 2012. *2012 Carbon Dioxide Price Forecast*. Synapse Energy Economics.

Hornby, R., R. Fagan, D. White, J. Rosenkranz, P. Knight, R. Wilson. 2012. *Potential Impacts of Replacing Retiring Coal Capacity in the Midwest Independent System Operator (MISO) Region with Natural Gas or Wind Capacity*. Synapse Energy Economics for Iowa Utilities Board.

Fagan, R., M. Chang, P. Knight, M. Schultz, T. Comings, E. Hausman, R. Wilson. 2012. *The Potential Rate Effects of Wind Energy and Transmission in the Midwest ISO Region*. Synapse Energy Economics for Energy Future Coalition.

Fisher, J., C. James, N. Hughes, D. White, R. Wilson, and B. Biewald. 2011. *Emissions Reductions from Renewable Energy and Energy Efficiency in California Air Quality Management Districts*. Synapse Energy Economics for California Energy Commission.

Wilson, R. 2011. *Comments Regarding MidAmerican Energy Company Filing on Coal-Fired Generation in Iowa*. Synapse Energy Economics for the Iowa Office of the Consumer Advocate.

Hausman, E., T. Comings, R. Wilson, and D. White. 2011. *Electricity Scenario Analysis for the Vermont Comprehensive Energy Plan 2011*. Synapse Energy Economics for Vermont Department of Public Service.

Hornby, R., P. Chernick, C. Swanson, D. White, J. Gifford, M. Chang, N. Hughes, M. Wittenstein, R. Wilson, B. Biewald. 2011. *Avoided Energy Supply Costs in New England: 2011 Report*. Synapse Energy Economics for Avoided-Energy-Supply-Component (AESC) Study Group.

Wilson, R., P. Peterson. 2011. *A Brief Survey of State Integrated Resource Planning Rules and Requirements*. Synapse Energy Economics for American Clean Skies Foundation.

Johnston, L., E. Hausman., B. Biewald, R. Wilson, D. White. 2011. *2011 Carbon Dioxide Price Forecast*. Synapse Energy Economics.

Fisher, J., R. Wilson, N. Hughes, M. Wittenstein, B. Biewald. 2011. *Benefits of Beyond BAU: Human, Social, and Environmental Damages Avoided Through the Retirement of the US Coal Fleet*. Synapse Energy Economics for Civil Society Institute.

Peterson, P., V. Sabodash, R. Wilson, D. Hurley. 2010. *Public Policy Impacts on Transmission Planning*. Synapse Energy Economics for Earthjustice.

Fisher, J., J. Levy, Y. Nishioka, P. Kirshen, R. Wilson, M. Chang, J. Kallay, C. James. 2010. *Co-Benefits of Energy Efficiency and Renewable Energy in Utah: Air Quality, Health and Water Benefits*. Synapse Energy Economics, Harvard School of Public Health, Tufts University for State of Utah Energy Office.

Wilson, R. 2009. "The Energy-Water Nexus: Interactions, Challenges, and Policy Solutions." Presentation at the National Drinking Water Symposium 2009, October 2009.

Fisher, J., C. James, L. Johnston, D. Schlissel, R. Wilson. 2009. *Energy Future: A Green Alternative for Michigan*. Synapse Energy Economics for Natural Resources Defense Council (NRDC) and Energy Foundation.

Schlissel, D., R. Wilson, L. Johnston, D. White. 2009. *An Assessment of Santee Cooper's 2008 Resource Planning*. Synapse Energy Economics for Rockefeller Family Fund.

Schlissel, D., A. Smith, R. Wilson. 2008. *Coal-Fired Power Plant Construction Costs*. Synapse Energy Economics.

## TESTIMONY

**Indiana Utility Regulatory Commission (Cause No. 44217):** Direct testimony before the Commission discussing PROSYM/Market Analytics modeling relating to the application of Duke Energy Indiana for Certificates of Public Convenience and Necessity. On behalf of Citizens Action Coalition, Sierra Club, Save the Valley, and Valley Watch. November 29, 2012.

**Kentucky Public Service Commission (Case No. 2012-00063):** Direct testimony before the Commission discussing upcoming environmental regulations and electric system modeling relating to the application of Big Rivers Electric Corporation for a Certificate of Public Convenience and Necessity and for approval of its 2012 environmental compliance plan. On behalf of Sierra Club. July 23, 2012.

**Kentucky Public Service Commission (Case No. 2011-00401):** Direct testimony before the Commission discussing STRATEGIST modeling relating to the application of Kentucky Power Company for a Certificate of Public Convenience and Necessity, and for approval of its 2011 environmental compliance plan and amended environmental cost recovery surcharge. On behalf of Sierra Club. March 12, 2012.

**Kentucky Public Service Commission (Case No. 2011-00161 and Case No. 2011-00162):** Direct testimony before the Commission discussing STRATEGIST modeling relating to the applications of Kentucky Utilities Company, and Louisville Gas and Electric Company for Certificates of Public Convenience and Necessity, and approval of its 2011 compliance plan for recovery by environmental surcharge. On behalf of Sierra Club and Natural Resources Defense Council (NRDC). September 16, 2011.

**Minnesota Public Utilities Commission (OAH Docket No. 8-2500-22094-2 and MPUC Docket No. E-017/M-10-1082):** Rebuttal testimony before the Commission describing STRATEGIST modeling performed in the docket considering Otter Tail Power's application for an Advanced Determination of Prudence for BART retrofits at its Big Stone plant. On behalf of Izaak Walton League of America, Fresh Energy, Sierra Club, and Minnesota Center for Environmental Advocacy. September 7, 2011.

*Resume dated August 2013*







**Sarah E. Jackson, Associate**

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**PROFESSIONAL EXPERIENCE**

**Synapse Energy Economics Inc, Cambridge, MA. Associate, September 2011 – present.**

Analyze economic and environmental implications of renewable portfolio standards and clean energy policy scenarios. Investigate electricity market price trends and fluctuations. Maintain our end user and alternative resource sector clients' interests at ISO-NE and PJM stakeholder meetings. Assist clients in navigating RTO market rules, especially regarding reliability assessments for coal-fired power plants and participation of energy efficiency and distributed generation in wholesale capacity markets.

**Earthjustice, Oakland, CA. Research and Policy Analyst, 2005 – 2011.**

Analyzed federal, state, and local regulations, policies, and environmental planning documents in support of clean air and climate change campaigns. Drafted substantial comment letters on priority issues, often leading to significant policy changes. Advocated at public hearings critiquing proposed policies or regulatory actions. Developed and maintained strong relationships with federal, state, and local agency staff, client groups, community and grassroots groups, technical and scientific experts, and key media contacts. Developed factual basis for and evaluated environmental significance of lawsuits to advance clean air and climate change campaigns

**Central Valley Air Quality Coalition, Central Valley, CA.**

*Chair, Watchdog Committee, 2007 – 2011.*

Analyzed and prioritized federal, state, and local regulatory and legislative activities affecting air quality in California's polluted Central Valley. Managed and coordinated with technical consultants on complex regional air pollution clean-up plans. Educated and mobilized committee members and affected communities, empowering them to participate on priority issues. Developed and facilitated technical trainings and educational events for coalition members and citizens.

*Steering Committee Member, 2005 – 2011.*

Managed and set policy priorities for a diverse coalition of more than 75 community, public health, faith, environmental, and environmental justice organizations and individuals working for clean air in California's Central Valley. Helped develop Strategic Plan for advancing policy priorities and making coalition more effective.

**Kopelman & Paige, P.C., Boston, MA. Land Use Paralegal, 2003 – 2005**

Performed legal research on subjects such as wetlands protection, coastal management, legality of municipal bylaws, and validity of comprehensive permits in support of Land Use department.

Reviewed and prepared administrative records, briefs, litigation status reports, and other legal documents.

**Governor's Office of Energy and Community Services, Concord, NH. *Energy Program Intern, 2001***

Assisted in the research and organizational stages of drafting a State Energy Plan. Participated in the initial implementation of the Energy, Environmental & Economic Integration Project. Special projects relating to energy efficiency and renewable energy.

## **EDUCATION**

**Vermont Law School, South Royalton, VT**  
Master of Environmental Law and Policy, 2003

**Mount Holyoke College, South Hadley, MA**  
Bachelor of Arts in English and Environmental Studies, 2001

## **PUBLICATIONS**

Stanton, E. A., S. Jackson, B. Biewald, M. Whited. 2014. *Final Report: Implications of EPA's Proposed "Clean Power Plan."* Synapse Energy Economics for the National Association of State Utility Consumer Advocates.

Stanton, E.A., B. Biewald, S. Jackson. 2014. *111(d): Next Steps for States.* Synapse webinar presented July 2014.

Stanton, E.A., S. Jackson. 2014. *Draft 111(d) Rule: Issues on Which EPA is Seeking Comment.*

Luckow, P., E. A. Stanton, B. Biewald, S. Fields, S. Jackson, J. Fisher, F. Ackerman. 2014. *CO<sub>2</sub> Price Report, Spring 2014: Includes 2013 CO<sub>2</sub> Price Forecast.* Synapse Energy Economics.

Keith, G., S. Jackson, J. Daniel, K. Takahashi. 2014. *Idaho's Electricity Sources: Current Sources and Future Potential.* Synapse Energy Economics for the Idaho Conservation League.

Ackerman, F., S. Jackson, S. Fields. 2014. *Sustainable Development for the Navajo Nation: Replacing the Navajo Generating Station with Renewable Energy.* Synapse Energy Economics for Chorus Foundation.

Stanton, E.A., J. Daniel, F. Ackerman, S. Jackson. 2013. *Review of EPA's June 2013 Steam Electric Effluent Limitations and Guidelines (40 CFR Part 423).* Synapse Energy Economics for Earthjustice, Environmental Integrity Project, and Sierra Club.

Jackson, S., P. Peterson, D. Hurley, T. Woolf. 2013. *Forecasting Distributed Generation Resources in New England: Distributed Generation Must Be Properly Accounted for in Regional System Planning.* Synapse Energy Economics for E4 Group.

Whited, M., D. White, S. Jackson, P. Knight, E.A. Stanton. 2013. *Declining Markets for Montana Coal*. Synapse Energy Economics for Northern Plains Resource Council.

Keith, G., S. Jackson, A. Napoleon, T. Comings, J. Ramey. 2012. *The Hidden Costs of Electricity: Comparing the Hidden Costs of Power Generation Fuels*. Synapse Energy Economics for Civil Society Institute.

Fisher, J., S. Jackson, B. Biewald. 2012. *The Carbon Footprint of Electricity from Biomass: A Review of the Current State of Science and Policy*. Synapse Energy Economics.

Peterson, P., D. Hurley, S. Jackson, M. Schultz. 2012. *The Road to Better System Planning: ISO-New England's Revised Energy Efficiency Forecast*. Synapse Energy Economics for Connecticut Office of Consumer Counsel.

*Resume dated November 2014*



**CERTIFICATE OF SERVICE**

I hereby certify that on this 4<sup>th</sup> day of December, 2014, I caused to be served the foregoing SIGNATORY PAGES TO APPENDIX B OF PROTECTIVE ORDER 14-416 OF SIERRA CLUB upon all party representatives on the official service list for this proceeding via electronic mail.

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Dated this 4<sup>th</sup> day of December, 2014 at San Francisco, CA.

*/s/ Derek Nelson*

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