TESTIMONY OF

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BEFORE THE

SENATE COMMITTEE ON ENERGY & NATURAL RESOURCES
HEARING ON ELECTRICITY TRANSMISSION

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"We will build the roads and bridges, the electric grids and digital lines that feed our commerce and bind us together."
President Barack Obama
January 20, 2009

Mr. Chairman and Members of the Committee,

Thank you for the opportunity to submit this written testimony on reforming the way in which electric transmission lines are planned, paid for, and sited in the United States. We are grateful that the Committee recognizes the important role the transmission grid plays in shaping our clean energy future.

I. Introduction

The Solar Energy Industries Association (SEIA) is the national trade association for the solar energy industry. Established in 1974, SEIA works to expand the use of solar technologies, strengthen research and development, remove market barriers and improve education and outreach for solar.

SEIA is collaborating with many other organizations committed to expanding access to and development of the grid. In particular, SEIA and the American Wind Energy Association (AWEA) recently released a white paper, *Green Power Superhighways: Building a Path to America's Clean Energy Future*, and we recommend this reading to you.[1] We recognize and appreciate the ongoing work by our associates at AWEA; the Energy Foundation; the Energy Future Coalition; T. Boone Pickens and others involved in the Pickens Plan; the WIRES Group and Jim Hoecker; national environmental organizations – NRDC, the National Wildlife Federation, the Sierra Club, the Wilderness Society – and many others.

A. Transmission is Important to Solar Energy Development

SEIA is grateful for the proactive leadership Chairman Bingaman and Majority Leader Reid have brought to the issue of our out-dated transmission grid. We are happy to see that our long-neglected electricity infrastructure will be a priority in the 111th Congress. While many think of solar energy as a distributed generation resource, deployment of utility-scale solar power plants is increasingly common. Last July this Committee held a field hearing in Albuquerque, New Mexico, on Concentrating Solar Power (CSP) technologies where this trend was discussed.

[1] http://www.seia.org/galleries/pdf/GreenPowerSuperhighways.pdf

In addition to the CSP plants already operating in the Southwest, several announced projects intend to use photovoltaic (PV) arrays to generate hundreds of megawatts of electricity.[2] Regardless of the solar technology employed, sellers of wholesale electricity will invariably require access to the transmission grid. A study conducted by the Department of Energy for the Western Governors' Association determined that the seven states in the Southwest (Arizona, California, Colorado, Nevada, New Mexico, Texas and Utah) have the combination of solar resources and available suitable land to generate up to 6,800 gigawatts (GW) of electricity.[3] Compares this to today's nameplate capacity for all electricity generation in the U.S.: 1,000 GW.[4]

President Obama is committed to producing 25 percent of U.S. energy from renewable sources by 2025. This will not be achieved without reinvesting in our national grid infrastructure. Investment in the transmission grid will stimulate economic development, reduce electricity costs for consumers, and improve grid reliability. Legislation introduced by Chairman Bingaman, Senator Reid, and others provides a solid framework for new transmission infrastructure that will allow vast quantities of solar power to be delivered to consumers across the country.

It should be noted that SEIA does not view transmission development as an alternative to energy efficiency measures, nor deployment of distributed generation technologies. Indeed, all of these strategies should be pursued to promote a clean energy economy in this country.

We need a dramatic shift in where and how transmission is planned and built. A robust electric transmission grid will allow limitless sources of renewable energy to power our homes, businesses, and communities. It will also cultivate economic development and new, good-paying jobs in the areas where power plants and transmission infrastructure are developed. Investment in the transmission grid will reduce costs to consumers, improve grid reliability, and link solar-rich regions to high-demand population centers.

B. Transmission Policy Reform is an Urgent Need

Our nation is in peril. We face the highest unemployment since 1981 and our President is pointing to renewable energy development as a driver for creating millions of new jobs.

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[2] See Utility-Scale Solar Projects List at Attachment 1.

[3] "Analysis of Concentrating Solar Power Plant Siting Opportunities: Discussion Paper for WGA Central Station Solar Working Group," M. Mehos, NREL, July 2005, Page 2.

[4] http://www.eia.doe.gov/cneaf/electricity/epa/epat2p2.html

Construction and operation of utility-scale solar power plants will be responsible for creating tens of thousands of these jobs.

Moreover, provisions in the recent *American Recovery and Reinvestment Act of 2009*[5] make available guaranteed loans for renewable energy and transmission projects and grants from the Treasury department for renewable energy development. Recipients of either program are required to commence construction of their project before September 30, 2011 (loan guarantees) or December 31, 2010 (grant program). Unless critical transmission reforms are put in place to enable the development of renewable energy generating resources, we will lose the opportunity to create tens of thousands of new, green-collar jobs from these projects.

The need for a more integrated and extensive transmission network is real. The U.S. is home to the greatest amount of renewable resources in the world, yet today renewable energy comprises less than 2% of our electricity generation. As we transition to a low-carbon energy future, renewable resources will provide the vast majority of our new generation. A recent report from the North American Electric Reliability Corporation (NERC), urges the electric industry to focus on solutions to integrating renewable resources. NERC CEO Rick Sergel added, "The need to reliably integrate renewable resources is no longer a question, it is a priority."[6] Unfortunately, policy barriers – not technological or economical barriers – are the primary reason why modernizing the grid has been, at best, slow going.

II. Policies Required for Creating Green Power Superhighways

While SEIA continues to study the various legislative proposals put forth, we focus our testimony here on a three major principles that need to be carefully addressed in any transmission legislation: (1) interconnection-wide transmission planning; (2) interconnection-wide cost allocation; and (3) streamlined siting processes. Certain proposals suggest changes that would apply to all transmission built in the U.S. However, our recommended policy reforms are focused on only those facilities that are necessary for creating Green Power Superhighways. These superhighways would be designed with the specific goal of interconnecting renewable generation resources, while maintaining system reliability.

[5] See Section 406 – Temporary Loan Guarantee Program for Rapid Deployment of Certain Renewable Energy, Electric Power Transmission, and Biofuel Projects.

[6] Keynote speech delivered by Rick Sergel to the Federal Energy Regulatory Commission, March 2, 2009, in Docket No. AD09-4-000.

A. Interconnection-Wide Transmission Planning

A key to achieving our national clean energy goals is to effectively plan new transmission and existing grid upgrades, with the goal of connecting to the grid location-constrained renewable resources. Both the Western and Eastern interconnections should develop a comprehensive, regional transmission plan that identifies where new transmission lines, or increased capacity on existing lines, are necessary to connect renewable energy resources to the grid. Such plans should include both extra-high-voltage transmission lines and lower-voltage feeder lines that are necessary to facilitate the development of green power superhighways.

Planning these grid enhancements must focus on national goals while accommodating local and regional concerns. To that end, the planning process should be informed by governors, public utility commissions, and other regulatory bodies in the interconnection. These entities can provide expert insight and advice on how an interconnection-wide plan will help their states meet their environmental, energy, and economic development goals. In addition, the planning process should be open and transparent, allowing all affected stakeholders to express their views.

Reaching location-constrained renewable resources is the primary goal of this interconnection-wide transmission planning exercise. However, these plans should also promote reliability, reduce transmission congestion, and integrate other resources that are necessary to support the grid. Plans should expressly take into account established state and federal renewable energy requirements, as well as anticipated changes in generation and demand pattern shifts resulting from greenhouse gas emission policies and the commercialization of plug-in electric vehicles.

Creating transmission plans that are designed to safeguard sensitive lands and protect the environment is of great importance. To minimize environmental impact, plans should utilize existing transmission corridors whenever possible, and new lines should be designed to their optimal size.

B. Interconnection-Wide Cost Allocation

Just as the transmission grid should be planned to meet broad regional and national energy goals, so too should the costs of meeting these goals be shared on an interconnection-wide basis. Ratemaking and certainty of cost recovery should address one of the most important barriers to transmission development – the question of who should pay. The current process of assigning costs to specific users who volunteer to pay does not work; it only exacerbates the free rider problem where transmission grid users attempt to shift costs onto others. All users

benefit from a reliable and robust transmission grid, pollution reductions, and greater access to low-cost renewable generation, and our regulatory policies must reflect these realities. Facilities identified in the interconnection-wide plan as necessary for the development of green power superhighways should be eligible for broad, regional cost allocation. Specifically, the Federal Energy Regulatory Commission (FERC) should allocate, based on electricity usage, the capital and operating costs of these transmission lines across all load-serving entities on an interconnection-wide basis.

C. Streamlined Siting Processes

Following the robust planning process, and guarantees of cost recovery, policies to ensure siting of transmission are necessary. Many a transmission line has been proposed and financed without ultimately being constructed and delivering electricity. To achieve dramatic increases in renewable electricity production, substantial reform of the transmission siting process is required. The most effective model for streamlined siting is the full authority given to FERC for siting interstate natural gas pipelines.

For green power superhighways, the facilities identified in the interconnection-wide plans would be subject to FERC approval for siting and permitting. Separate siting approval at the state level would not be required. FERC should act as the lead agency for purposes of coordinating all applicable federal authorizations and environmental reviews with other affected agencies. As is the case for natural gas pipeline and hydroelectric facility permitting, FERC would be required to consider siting constraints based on habitat protection, environmental considerations, and cultural site protections identified by state and federal agencies.

While the concept of federal siting authority for electric transmission has been controversial in the past, laws governing the siting of transmission date from an era when utilities were generally not interconnected and the modern network of interstate lines and multi-state interconnections did not exist. The need to connect location-constrained renewable generation resources to growing load centers requires a new regulatory approach and justifies giving FERC exclusive authority for siting green power superhighways.

III. Conclusion

The U.S. has enormous economic, energy, and climate challenges to face in the months and years to come. None can be solved without new, innovative ways of carrying renewable electricity across a robust transmission grid. If we want to improve our energy independence,

tackle global warming, and expand our use of electricity for electric cars and other emerging technologies that make our lives better, then we can no longer wait. The time for Congress to act on this is now.

Again, thank you for allowing SEIA to submit this testimony. We look forward to working with the Committee to cultivate solar energy development in this country and spur investment in the infrastructure needed for green power superhighways.

ATTACHMENT 1
UTILITY-SCALE SOLAR PROJECTS LIST

Major Solar Projects: Operational and Under Development
Updated 3/26/09

Projects in Operation

Developer	Project Name	Electricity Purchaser	Location	Technology	Capacity (MW)
Concentrating Solar Power (including Concentrating Photovoltaic)					
Acciona	Nevada Solar One	NV Energy	Boulder City, NV	Trough	64
Solargenix	Saguaro Solar Power Plant	Arizona Public Service	Red Rock, AZ	Trough	1
Solel	Solar Energy Generating Systems (SEGS) I	Southern California Edison	Daggett, CA	Trough	14
Solel	Solar Energy Generating Systems (SEGS) II	Southern California Edison	Daggett, CA	Trough	30
Solel	Solar Energy Generating Systems (SEGS) III	Southern California Edison	Kramer Junction, CA	Trough	30
Solel	Solar Energy Generating Systems (SEGS) IV	Southern California Edison	Kramer Junction, CA	Trough	30
Solel	Solar Energy Generating Systems (SEGS) IX	Southern California Edison	Kramer Junction, CA	Trough	80
Solel	Solar Energy Generating Systems (SEGS) V	Southern California Edison	Kramer Junction, CA	Trough	30
Solel	Solar Energy Generating Systems (SEGS) VI	Southern California Edison	Kramer Junction, CA	Trough	30
Solel	Solar Energy Generating Systems (SEGS) VII	Southern California Edison	Kramer Junction, CA	Trough	30
Solel	Solar Energy Generating Systems (SEGS) VIII	Southern California Edison	Kramer Junction, CA	Trough	80
				Concentrating Solar Power Total	*419*
Photovoltaics (excluding Concentrating Photovoltaic)					
Conergy	Exelon-Conergy Solar Energy Center	Exelon Generation, LLC	Philadelphia, PA	PV	3
First Solar/Sempra Generation	El Dorado Energy Solar Project	Pacific Gas & Electric	Boulder City, NV	Thin-film PV[2]	10
SunEdison	Alamosa Photovoltaic Solar Plant	Xcel Energy	Alamosa, CO	PV	8
SunPower	Nellis Air Force Base	Nellis Air Force Base	Clark County, NV	PV	14
				Photovoltaics Total	*35*
Total Operational					**454**

Projects Under Development

Developer	Project Name	Electricity Purchaser	Location	Technology	Capacity (MW)
Concentrating Solar Power (including Concentrating Photovoltaic)					
Abengoa Solar	Solana plant	Arizona Public Service	Gila Bend, AZ	Trough	280
Ausra		Pacific Gas & Electric	Carrizo Plain, CA	Linear Fresnel	177
BrightSource Energy	Ivanpah	Pacific Gas & Electric	Barstow, CA	Tower	300
BrightSource Energy	Ivanpah	Southern California Edison	Barstow, CA	Tower	100
BrightSource Energy		Southern California Edison	California	Tower	1,200
Emcore/SunPeak Power			Southwest US	Lens CPV	200
eSolar	Gaskell Sun Tower (Phase I)	Southern California Edison	Kern County, CA	Tower	105
eSolar	Gaskell Sun Tower (Phase II)	Southern California Edison	Kern County, CA	Tower	140
Florida Power & Light Co.	Martin Next Generation Solar Energy Center	Florida Power & Light Co.	Martin County, FL	Trough[1]	75
GreenVolts, Inc.		Pacific Gas & Electric	Byron, CA	CPV	2
Harper Lake, LLC	Harper Lake Solar Plant		California	Trough	250
Inland Energy, Inc.	Palmdale Hybrid Gas-Solar plant		Palmdale, CA	Trough	50
Inland Energy, Inc.	Victorville Hybrid Gas-Solar plant		Victorville, CA	Trough	50
NextEra Energy Resources	Beacon Solar Energy Project		Kern County, CA	Trough	250
San Joaquin Solar, LLC	San Joaquin Solar 1	Pacific Gas & Electric	Coalinga, CA	Trough[1]	53
San Joaquin Solar, LLC	San Joaquin Solar 2	Pacific Gas & Electric	Coalinga, CA	Trough[1]	53
Solar Millennium	Nye County Project 1	NV Energy	Nye County, NV	Trough	250
Solar Millennium	Nye County Project 2	NV Energy	Nye County, NV	Trough	250
Solel	Mojave Solar Park	Pacific Gas & Electric	Mojave Desert, CA	Trough	553
Sopogy	Demonstration plant		Kailua-Kona, HI	MicroCSP	1
Stirling Energy Systems	SES Solar One	Southern California Edison	Victorville, CA	Dish-engine	500
Stirling Energy Systems	SES Solar One Expansion	Southern California Edison	Victorville, CA	Dish-engine	350
Stirling Energy Systems	SES Solar Two	San Diego Gas & Electric	Imperial County, CA	Dish-engine	300
Stirling Energy Systems	SES Solar Two Expansion	San Diego Gas & Electric	Imperial County, CA	Dish-engine	600
				Concentrating Solar Power Total	*6,090*
Photovoltaics (excluding Concentrating Photovoltaic)					
First Solar	Topaz Solar Farm	Pacific Gas & Electric	Carrisa Plains, CA	Thin-film PV	550
First Solar	Cimarron I Solar Project	Tri-State Generation and Transmission	Cimarron, NM	Thin-film PV[2]	30
First Solar	FSE Blythe	Southern California Edison	Blythe, CA	Thin-film PV	8
Florida Power & Light Co.	DeSoto Next Generation Solar Energy Center	Florida Power & Light Co.	DeSoto County, FL	PV	25
Florida Power & Light Co.	Space Coast Next Generation Solar Energy Center	Florida Power & Light Co.	Kennedy Space Center	PV	10
MMA Renewable Ventures and Suntech Power Holdings		Austin Energy	Austin, TX	PV	30
SunEdison		Lakeland Electric	Distributed in FL Service Area	PV	24
SunEdison		California State Universities	California	Thin-film PV	8
SunPower	California Valley Solar Ranch	Pacific Gas & Electric	San Luis Obispo County, CA	PV	250
	Commercial Rooftop Installations	Southern California Edison	Southern California	PV	250
		Public Service Electric & Gas Company	New Jersey	PV	120
				Photovoltaics Total	*1,305*
Total Under Developoment					**7,394**

Total Operational and Under Development

	Concentrating Solar Power Total	*6,509*
	Photovoltaics Total	*1,340*
Total Operational and Under Development		**7,848**

*Ausra also has a 5 MW Linear Fresnel test plant in operation in Bakersfield, CA that is not connected to the grid.

(1) Hybrid solar plants cofiring with other fuels (peak output reflects solar contribution only)

(2) Capacity reported in megawatts AC (alternating current)

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