

January 10, 2013

Sara Vecchio, Senior Buyer  
Administrative Services Building III, 2<sup>nd</sup> Floor  
3 Rutgers Plaza  
New Brunswick, NJ 08901-8559

Dear Ms. Vecchio:

Meister Consultants Group (MCG) and Sustainable Energy Advantage (SEA) are pleased to submit this proposal to provide consulting services to Rutgers University and the Center for Energy, Economic and Environmental Policy in support of their work with the New Jersey Board of Public Utilities. MCG has significant previous experience working with state regulators, local jurisdictions and federal governments on the design and implementation of solar PV policies and programs. For this proposal, MCG will serve as the prime contractor, partnering with Sustainable Energy Advantage, LLC (SEA), a leading renewable energy consulting firm with substantial experience in clean energy market analytics and state-level renewable energy policy.

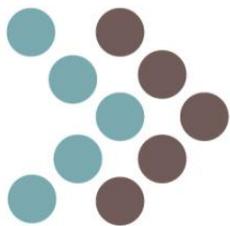
The Project Team has significant previous experience working with state policy makers to analyze, develop and implement clean energy policies and program. Team members have completed several recent solar PV market analysis projects for Northeast states, such as Connecticut, Delaware, Massachusetts, New York, Rhode Island, and Vermont. Team members have also been directly engaged in PV market design projects in Africa, Asia, Latin American and the Caribbean, and the Middle East. Experience gained from these and other team projects will be leveraged to provide CEEEP with an extensive and comprehensive set of recommendations related to solar market volatility in New Jersey.

Please find attached our complete proposal. Andrew Belden, the State and City Programs Director at Meister Consultants Group will be the primary contact for this proposal. Please do not hesitate to contact him if you have any further questions at 617.245.0272 or [andy.belden@mc-group.com](mailto:andy.belden@mc-group.com).

Sincerely,



**Wilson Rickerson.** CEO  
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# INVESTIGATING APPROACHES TO MITIGATE SOLAR DEVELOPMENT VOLATILITY

Prepared for Rutgers University and the Center for  
Energy, Economic and Environmental Policy

January 10, 2013

# INTRODUCTION

Meister Consultants Group, Inc. (MCG), in partnership with Sustainable Energy Advantage (“the Project Team”), is pleased to provide this proposal to Rutgers University for consultancy services in support of the development of recommendations to the New Jersey Legislature to reduce solar market volatility. The Project Team has significant previous experience working on state-level solar incentive policy and has also supported a number of national and international public sector clients in their efforts to design and implement best-practice solar market development programs.

The Project Team includes professionals with significant experience in solar program design, renewable energy market analysis and international incentive design best practices. Recent Project Team consulting engagements include:

- A comprehensive solar market and policy study for NYSERDA that evaluated risks, costs and market volatility of several alternative solar incentive and market models.
- Developing a solar renewable energy credit (SREC) system dynamics model to inform development of the Massachusetts solar carve-out in 2010, followed by a series of major studies on “next phase” SREC-based market mechanisms for Massachusetts in 2013.
- The establishment of cost-based rates for renewable energy generators for the Rhode Island Office of Energy Resources in 2011 through 2013.
- Direct support for the development of the original Massachusetts REC-based RPS (1999-2002).
- Direct support for the development of the Rhode Island (2002) REC-based RPS policy, including drafting Rhode Island’s original RPS model legislation (2002) and regulations (2005).
- A quantitative and qualitative evaluation of Delaware’s SREC pilot programs in 2012, as well as drafting of Delaware’s original RPS legislation in 2005.
- An in-depth review of all reports, stakeholder comments, and New Jersey Board of Public Utility (BPU) documents related to the New Jersey solar energy market transition during a three year period.
- The development of a renewable energy market analysis framework for investors for Deutsche Bank, followed by the development of a concept for a global platform to de-risk renewable energy investment in emerging economies. This concept is now being implemented by KfW and the World Bank in Africa.
- Development of procurement policy and strategies for 40 GW of solar capacity for the Kingdom of Saudi Arabia with the goal of establishing stable market growth and minimal ratepayer impacts.
- The design of PV policies in a diverse range of jurisdictions such as Ghana, Jamaica, Malaysia, Trinidad and Tobago, and Tunisia.
- Served as the technical analyst for solar and other renewable energy policy development stakeholder processes, in Massachusetts, Connecticut, Rhode Island, California, Vermont and New York.
- Provided analysis of proposed solar legislation in both Massachusetts and Minnesota for regulatory authorities in 2013.

In addition to the projects sited above, the Project Team has supported state regulators and policy makers across the United States on solar policy and market analysis, worked with international finance institutions to assist member countries evaluate solar program options, provided renewable energy market monitoring services for project developers, and supported federal government efforts to foster the growth of U.S. solar markets across the United States through programs such as the SunShot Solar Outreach Partnership and the SunShot Rooftop Solar Challenge II. These and other past Project Team efforts will be effectively leveraged to provide Rutgers and the New Jersey BPU with a comprehensive report that presents short and long-term recommendations for reducing market volatility in New Jersey.

Solar incentive program design requires carefully tailored and well-structured programs that balance the needs of multiple stakeholders, from regulators and ratepayers to utilities and system owners. The diverse range of market actors, with their unique perspectives and conflicting interests, can present substantial challenges for regulatory authorities. The Project Team specializes in working with both regulatory authorities and stakeholder groups to understand these various interests and developing policy recommendations that appropriately balance the interests of multiple stakeholders. The Project Team's significant previous experience and comprehensive analytical approach will ensure that the final policy recommendations are well tailored to the New Jersey market, are informed by the latest best practices, and effectively address the market volatility issues identified by the legislature.

This proposal has been formatted to conform to the requirements of the University's December 6<sup>th</sup> Request for Proposal. The narrative provides an overview of the Project Team's proposed scope of work, profiles for both MCG and SEA, a fee proposal as well as references. Additionally, the appendices of this proposal include all required documentation. The narrative sections of this proposal have been formatted and numbered to conform with the requirements of the RFP.

## TEAM APPROACH AND STRUCTURE

MCG will serve as the prime contractor with SEA as a subcontractor. Project staffing and rolls are envisioned as follows

- Project Manager: Andy Belden (MCG) will serve as the primary interface with the client, and be responsible for timely conduct of the project.
- Day-to-day project leads: Andy Belden (MCG) and Tom Michelman (SEA) will serve as chief analysts, editors and integrators.
- Senior advisors: Wilson Rickerson (MCG) and Bob Grace (SEA) will be briefed on the literature review and public record review findings, and be involved in scoping, brainstorming findings and recommendations, drafting, and reviewing.
- Specialists: Jason Gifford (SEA) will provide support and input on targeted issues including those relevant to modeling and finance, while Chad Laurent (MCG) will provide input and support on targeted issues pertaining to law and regulation, and contribute to report drafting.
- Staff: Jayson Uppal (MCG), Kathryn Wright (MCG) and Po-Yu Yuen (SEA) will conduct research, literature review and report drafting.

# APPROACH TO SCOPE OF WORK

The Project Team proposes to implement the scope of work in four phases. This *draft* approach should be considered preliminary. The Project Team will work closely with Rutgers and other appropriate stakeholders to refine the scope of work after a more detailed discussion of project goals, required timeline, and a review of existing research. We have crafted a preliminary Gantt chart reflecting a detailed step-by-step approach to executing the project scope, which can be found in Appendix C.

## PROJECT MANAGEMENT AND COORDINATION APPROACH

The proposed scope of work includes a two-hour kickoff call during which the Project Team will discuss key elements of the scope of work. At this meeting, the Project Team and client will establish a formal project timeline, review any research completed to date, and discuss and agree on the general project objectives, appropriate evaluation criteria to guide the development of recommendations, expected outcomes, and potential constraints. A review of the overall analytical approach will also be presented to ensure both the Project Team and CEEEP staff have a common understanding of the methodology that will be employed.

The Project Team also proposes weekly calls with Rutgers staff to provide updates, discuss preliminary findings and review current progress. This project management approach, coupled with continuous communications between the client and the Project Team will ensure that potential issues can be discussed early and that the final project deliverable closely matches client expectations.

## PHASE I: LITERATURE AND PUBLIC RECORD REVIEW

CEEEP staff have compiled an extensive bibliography of existing resources related to solar market volatility. During the first phase of this project, the Project Team will review the documents from this list and augment the bibliography with other relevant papers. Several of the documents cited in the literature review were authored by Project Team members<sup>1</sup> and many of the other documents are resources that Project Team members are familiar with and have reviewed as part of previous work. MCG and SEA staff's extensive knowledge of the existing literature on solar market incentive design will mean that the Project Team can quickly complete the relevant literature review. Given the tight timeline for this project, the Project Team has developed a preliminary list of additional potential resources that could be reviewed to supplement the list provided in the RFP. Presented in Appendix B of this proposal, the list of potential resources includes a broad range of publications that address issues related to market volatility in U.S. and international markets and. The Project Team will augment this list after consultation with CEEEP to include up to 10 more documents.

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<sup>1</sup> This includes an academic paper on the Massachusetts SREC market design which was co-authored by project lead Andrew Belden and five reports developed for the Massachusetts DOER by Project Team members Bob Grace, Jason Gifford, Andrew Belden and Wilson Rickerson.

In addition to the literature review, the Project Team will review the public record related to New Jersey's solar market. The New Jersey BPU maintains a substantial record of regulatory proceedings related to the development of solar market policies. These and other resources will be reviewed in order to familiarize Project Team staff with the history and nuances of New Jersey's solar market. The Project Team has previously conducted a similar comprehensive review of documents from a three year period related to the NJ solar market transition process.

Given the project's timeline, the Project Team will commence the Phase I literature and public records review immediately upon authorization to proceed and if feasible, may begin this research in advance of the formal project kickoff meeting.

## **PHASE II: DEVELOP SHORT- AND LONG-TERM RECOMMENDATIONS REGARDING APPROACHES TO MITIGATE SOLAR DEVELOPMENT VOLATILITY IN NEW JERSEY**

Based on the project objectives and constraints, the review of the New Jersey solar public records and review of other relevant literature and experiences, the Project Team will develop recommendations to the BPU and the legislature. Consistent with the project objectives, recommendations may focus on mitigation of volatility in both SREC prices and the pace of solar PV development in New Jersey, including those that may be ideal but only feasible in the long-term, and those more readily feasible in the short-term. Team members will engage in an iterative policy analysis and brainstorming exercise. This exercise will occur in time to develop draft recommendations which will coincide with, and be integrated into the content outline described in Phase III.

## **PHASE III: REPORT DRAFTING**

The Project Team proposes to take an iterative approach to drafting the final report and recommendations. This sequential approach will include three deliverables: a content outline, an initial draft and a final draft. The content outline will consist of a bullet-level review of major report elements including findings and recommendations. After development of the content outline, the Project Team will review the document with CEEEP staff to receive feedback and ensure that all major elements of the final deliverable are adequately addressed. The Project Team will then expand the content outline into the first draft which will be provided to the client for more extensive review and comment. The final draft will then be developed based on CEEEP comments and input from other stakeholders, if required. This iterative drafting approach ensures that the final work product will be well vetted by CEEEP staff and does not require major revisions after substantial content has been developed.

While content of the report will be developed in close collaboration with CEEEP staff, the following bullets are provided as an example of key elements that could be included in the final report.

- A formal definition of solar market volatility based on the public record, legislative intent and discussions with CEEEP and BPU staff.
- A brief review of the development of the New Jersey solar market including relevant legislative and regulatory history.

- A discussion of potential policy goals related to solar market volatility and the potential constraints, conflicting tradeoffs and complementary synergies of those goals.
- A review of near-term policy options and recommendations for reducing solar market volatility given current legislative and regulatory authority in New Jersey.
- A discussion of long-term policy options and recommendations for creating a stable and growing solar market in New Jersey based on the best practices literature review.

A limited number of examples will be provided of other jurisdictions that have implemented policy or program elements which have succeeded in limiting solar PV market volatility. The final report will also include an executive summary which will be structured to provide a succinct set of recommendations based on the analysis performed by the Project Team and discussions with CEEEP staff.

## **PHASE IV: PRESENTATION OF FINDINGS**

In keeping with the timeline proposed in the RFP, the Project Team will take the content of the draft report and develop a presentation that will be delivered before a public forum at the Bloustein School. During this public session, the Project Team will take feedback from stakeholders and will incorporate relevant comments into the final report.

# **5.1 PROFESSIONAL PROFILE**

## **ABOUT MCG**

Meister Consultants Group (MCG) is an international, Boston-headquartered consulting firm specializing in energy policy and strategy development. MCG's clients include state energy offices, local governments, regulators, national labs, and the U.S. Department of Energy (U.S. DOE), as well as international governments, agencies, and finance institutions. In the United States, MCG has partnered with SEA to work with clients such as the Massachusetts Department of Energy Resources (DOER), the New York State Energy Development and Research Authority (NYSERDA), and the Rhode Island Office of Energy Resources (OER) on solar program design and implementation during the past two years. At the national level, MCG supports the U.S. DOE through a local government engagement and technical assistance program that has educated more than a thousand municipal government officials on solar policy best practices and soft cost reduction strategies. Internationally, MCG has worked with clients such as the World Bank, UNEP, UNDP, OAS, IEA-RETD, and the Inter-American Development Bank, supporting their member countries with clean energy consultancy services. MCG also provides on-call expertise on renewable energy policy to governments internationally through the Clean Energy Solutions Center.

Founded in 2008, MCG has 15 employees in the US and over 100 colleagues in its parent company in Germany. MCG was founded through the merger of Rickerson Energy Strategies, an energy policy consulting firm that had been in business since 2006, and IFOK GmbH, a European consulting firm founded in the early 1990s. MCG provides a range of services for its clients including:

- Market Research
- Policy Analysis

- Program Implementation
- Participation and Dialogue

MCG's recent work portfolio has included a number of projects that directly relate to the services requested by the RFP. This work includes a comprehensive solar market analysis of the Massachusetts SREC market, a program review of the Delaware SREC pilot program for the Delaware Public Services Commission, an extensive study of the New York solar market, and an ongoing study of emerging PV policies under "parity" scenarios for the International Energy Agency. Many of these projects were completed in close partnership with Sustainable Energy Advantage. Internationally, MCG was part of a team which helped design the solar market development approach currently being implemented by the Kingdom of Saudi Arabia. This work involved analyses of solar policies in most of the world's active PV markets. A full accounting of MCG's relevant projects and staff are provided in the following sections.

## ABOUT SEA

Since 1998<sup>2</sup>, Sustainable Energy Advantage, LLC has been a national leader on renewable energy policy analysis and program design for nearly 15 years. SEA has supported the decision-making of more than 100 clients— including more than 20 governmental entities— through the analysis of renewable energy policy, projects and markets. By providing market, policy, strategic and financial analyses and support, SEA helps its clients develop the building blocks of a sustainable energy future: wholesale and retail renewable electricity businesses; public policies such as Renewable Portfolio Standards and incentive programs; and rules of the road for electricity markets. SEA focuses exclusively on surmounting the barriers to and tapping the potential of clean, renewable energy sources. As a result, the SEA team can bring an unparalleled level of focus, knowledge, experience, expertise, insight and credibility to the challenges faced by our clientele.

SEA is known and respected widely as an independent analyst, a reputation earned through the firm's ability to identify and assess all stakeholder perspectives, conduct analysis that is objective and valuable to all affected, and provide advice and recommendations that are in touch with market realities and dynamics.

SEA's services, practice areas and experience include the following:

- **Public Policy Analysis, Development and Implementation.** SEA has provided policy and technical analysis and strategic support for public sector renewable energy policy mechanisms, for both public-sector and private-sector clients. We have authored a variety of policy papers and studies on the analysis and design of Renewable Portfolio Standards (RPS), Feed-in Tariffs and other major renewable energy technology and policy support mechanisms and their design and implementation details. We have evaluated opportunities, developed strategies, and designed programs for several state renewable energy program administrators, including Massachusetts, New York, California, Connecticut, and Rhode Island. Policy analyses have spanned a wide range of renewable energy technologies including land-based and offshore wind, solar, geothermal and

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<sup>2</sup> Prior to July of 1999, SEA operated as Sustainable Energy Solutions.

biomass, and topics including moving generation attributes across market boundaries and industry experience with conflicting policy objectives.

- **Market Analysis and Quantitative Modeling.** SEA specializes in objective renewable energy market analysis for private and public sector clients, including assessing the market impacts, costs and environmental impacts of several RPS mandates, market rules and technology support initiatives. We are adept at assessing the fundamentals of renewable energy markets, modeling complex interactions of supply, demand, power markets, technology cost, finance and price, and analyzing the impact of exogenous drivers of future uncertainty and risk. Using our proprietary supply database of operating and proposed renewable energy projects throughout New England, we perform detailed REC supply-demand forecasts and REC price projections. We provide continuous analysis of the New England market through our New England Renewable Energy Market Outlook subscription briefings, as well as project-based analysis of existing, new or proposed initiatives throughout the U.S. SEA has also developed spreadsheet-based decision models for electricity portfolio management and product pricing.
- **Financial Modeling & Advisory Services.** SEA develops project and enterprise financial models available for licensing and customization. We perform detailed project financial modeling of installations such as community-scale wind projects, including the evaluation of multiple financing and project ownership options. We provide strategic analysis in support of project development, financing and contract bidding/negotiation, detailed economic feasibility studies, testing project financials under various financing and ownership structures, and reconciliation of projected to actual performance, for reporting and verification. We developed for National Renewable Energy Laboratory the publicly-available and widely-used Cost of Renewable Energy Spreadsheet Tool (CREST), designed as a flexible and transparent model of renewable energy technology cost of energy designed for use in public policy analysis. We have utilized CREST to drive a range of policy analyses including the New York Solar Study, development of a wind power supply curve for NESCOE, setting of Rhode Island's distributed generation standard offer, an assessment of the potential impact of geothermal feed-in tariffs, and an ongoing New York offshore wind study.
- **Strategy Development.** Whether for public- or private-sector clients, SEA specializes in the development of renewable energy and green power market strategy to achieve the organization's objectives. Efforts have included analyses of market opportunities and barriers for renewable power projects, developers and technologies. SEA or its principals have either developed or implemented all or part of business plans and market analyses for wholesale generation companies; retail marketers; aggregators; wind and solar developers and renewable energy funds.
- **Renewable Energy Supply.** SEA has assessed market potential and provides strategic and competitive analysis of renewable energy supply. We develop competitive procurement programs and solicitations, and evaluate responses, for several wholesale and retail buyers and sellers of renewable power. We lead or support contract negotiations between and among developers, generators, wholesalers, retailers, aggregators, involving renewable generation technologies such as wind, landfill gas, solar, and hydroelectric.

- **Business Infrastructure Development.** SEA develops spreadsheet-based tools for managing wholesale and retail green power businesses. We assist clients with setup of competitive market retail delivery infrastructure and design of tradable renewable energy credit systems.
- **Transaction Facilitation, Contract Development and Negotiation Support.** SEA has represented clients, as well as provided support to clients, in negotiating contracts to buy or sell renewable energy or renewable energy credits. We have also facilitated negotiations between renewable energy buyers and sellers.
- **Green Power Product Development and Pricing.** SEA has analyzed, created and developed pricing for green power product offerings for wholesale generation companies, retail energy service providers and aggregators. Efforts have supported groundbreaking exploration of tapping the hedge value of renewable energy sources.

Relevant to this initiative, SEA has led or participated in a number of initiatives evaluating and recommending state-level solar energy policy throughout the northeast, including:

- Leading the New York Solar Study: An Analysis of the Costs and Benefits of Increasing Generation From Solar Photovoltaic Devices, published in 2012 for NYSERDA;
- Leading the recent analyses conducted on behalf of the Massachusetts Department of Energy Resources in support of the development of its SREC-II policy, culminating in several reports included in Rutgers' literature review;
- Providing market research and economic analysis to the Rhode Island Office of Energy Resources in developing the state's Distributed Generation Standard Contract policy ceiling prices since the policy's outset
- Supporting elements of Connecticut Clean Energy Finance and Investment Authority's solar programs; and
- Leading a team developing white papers, and both guiding and supporting a stakeholder process exploring the role of feed-in tariffs primarily for renewable energy projects below 20 MW for the California Energy Commission.

These projects, and others, are described more fully below.

SEA, a single-member Delaware LLC owned by Robert C. Grace, has been in business for 15 years. SEA currently has a staff of 8, including the following positions: President, Principal, Director, Sr. Consultant, Director of Operations, Project Manager, Sr. Analyst, and Research Analyst. More information on SEA's staff can be found at <http://www.seadvantage.com/about-us/our-team/>.

The Project Team is uniquely suited to helping CEEEP and the New Jersey BPU evaluate policy options for reducing solar market volatility. Meister Consultants Group and Sustainable Energy Advantage have the combined policy analysis, project management and incentive program design expertise to develop a comprehensive set of recommendations under the aggressive timeline proposed in the RFP. The team's expertise in solar market policy design provides a unique combination of skills critical to successfully completing all aspects of this project.

Neither MCG nor SEA are currently or have been involved financially in the New Jersey solar market. The Project Team does not include individuals or organizations with known conflicts of interest. In the unlikely event that a conflict of interest is identified after the submission of this proposal, individuals with conflicts will be removed from the project and their previous contributions to the project will be discussed and thoroughly vetted with the client.

## **RELEVANT PROJECTS**

### **JOINT MCG-SEA PROJECT EXPERIENCE**

MCG and SEA have collaborated on a number of previous projects, many of them directly relating to state solar policy design and solar market volatility. The following section provides project descriptions for a selection of joint SEA-MCG projects.

#### **SOLAR CARVE-OUT EXPANSION (SREC-II) INCENTIVE PROGRAM ANALYSIS (2013)**

##### **CLIENT: MASSACHUSETTS DEPARTMENT OF ENERGY RESOURCES (DOER)**

To inform the development of the SREC-II program design, DOER hired a team of consultants - The Cadmus Group, Inc., Sustainable Energy Advantage, LLC, La Capra Associates, and Meister Consultants Group - to provide analyses and reports on solar costs and needed incentives, comparisons of a solar carve-out policy using an SREC model with other policy alternatives, evaluate the SREC-I Program's success in meeting its objectives, analyze the costs and benefits of the proposed SREC-II program, and compare regional economic impacts of solar ownership and financing alternatives. Robert Grace of SEA served as project manager for the team and MCG's Andrew Belden served as the primary researcher for MCG on the project. Deliverables for the project included the following reports:

- Task 1: Evaluation of Current Solar Costs and Needed Incentive Levels Across Market Segments
- Task 2: Comparative Evaluation of Carve-out Policy with Other Policy Alternatives
- Task 3a: Evaluation of 400 MW (SREC-I) Program in Meeting its Objectives
- Task 3b: Analysis of Economic Costs and Benefits of Solar Program (SREC-II)
- Task 4: Comparative Regional Economic Impacts of Solar Ownership/Financing Alternatives

These reports are available on the Massachusetts Department of Energy Resources website at: <http://www.mass.gov/eea/energy-utilities-clean-tech/renewable-energy/solar/rps-solar-carve-out/post-400-mw-solar-policy-development.html>

#### **RHODE ISLAND DG CONTRACT CEILING PRICE DEVELOPMENT AND STAKEHOLDER PROCESS (2011-14)**

##### **CLIENT: RHODE ISLAND OFFICE OF ENERGY RESOURCES**

Since the outset of this policy, SEA, with the support of MCG, has provided the Rhode Island (RI) Office of Energy Resources with modeling support regarding the establishment of ceiling prices for RI Distributed Generation Standard Offer Program. SEA and MCG worked with state regulators to develop a cost basis for establishing solar & wind standard offer prices for 20 year contracts with National Grid, the state's investor-owned utility. SEA conducted renewable energy standard offer contract rate setting for wind

and solar distributed generation projects, while MCG provided market research and analysis related to regional solar market conditions. This detailed rate setting analysis was used to set cost-based tariff rates for a number of distinct classes of solar, wind and other distributed generation scale renewables. The cost-based analysis was conducted through interviews, project cost analysis, and levelized cost of energy (LCOE) analysis using the National Renewable Energy Laboratory (NREL) CREST model developed by SEA. SEA and MCG supported the OER through three annual rounds of analysis and support to a multi-stakeholder process, including surveying market participants, and presenting draft and final recommendations to stakeholder meetings.

### **COST OF RENEWABLE ENERGY SPREADSHEET TOOL (CREST) (2009-PRESENT)**

#### **CLIENT: NATIONAL RENEWABLE ENERGY LABORATORY**

SEA led the development of the CREST LCOE models for solar, wind, and geothermal projects, including a model user manual. SEA drafted a detailed policy paper on approaches to cost-based incentives. MCG supported SEA in this work through international best practices research and policy analysis. SEA is the primary architect on all CREST LCOE models and author of the user manual. SEA is also the lead author of the cost-modeling policy paper. CREST is an economic cash flow model that enables designed users to assess renewable energy projects, design incentives, and evaluate the impact of tax incentives or other support structures. A solar-specific version was developed that has been utilized to design or explore the impact of PV incentives in Rhode Island, Massachusetts, and New York. The model is a product of a 2009-2010 partnership between the National Renewable Energy Laboratory (NREL), the U.S. Department of Energy (DOE) Solar Energy Technologies Program (SETP), and the National Association of Regulatory Utility Commissions (NARUC). It is designed for use by state policy makers, regulators, utilities, beginning developers or investors, and other stakeholders. It allows users to:

- Estimate LCOE for solar PV projects;
- Inform the process of setting of cost-based incentive rates;
- Gain understanding of the economic drivers of renewable energy projects, which lead to the calculated COE and LCOE;
- Understand the relative economics of generation projects with differing characteristics, such as project size, resource quality, location (e.g. near or far from transmission) or ownership (e.g. public or private.)

The accompanying paper developed a taxonomy of LCOE calculation approaches, surveyed existing modeling tools and approaches, examined industry experience with feed-in tariff calculation methods, defined a flexible approach to different levels of modeling input detail to match available data and applications, and provided extensive guidance on the selection of modeling choices based on the objectives and context.

- CREST Tool and User Manual: <https://financere.nrel.gov/finance/content/CREST-model>
- Gifford, Jason S., Robert C. Grace, and Wilson H. Rickerson, *Renewable Energy Cost Modeling: A Toolkit for Establishing Cost-Based Incentives in the United States*, National Renewable Energy Laboratory Subcontract Report NREL/SR-6A20-51093, March 2011. <http://www.nrel.gov/docs/fy11osti/51093.pdf>

- Gifford, Jason S. and Robert C. Grace, CREST Cost of Renewable Energy Spreadsheet Tool: A Model for Developing Cost-based Incentives in the United States. User Manual Version 1, National Renewable Energy Laboratory, Subcontract Report NREL/SR-6A20-50374, March 2011. <http://www.nrel.gov/docs/fy11osti/50374.pdf>.
- Rickerson, Wilson, Jason Gifford, Robert Grace and Karlynn Cory, *Geothermal FIT Design: International Experience and U.S. Considerations*, National Renewable Energy Laboratory Technical Report NREL/TP- 6A20-53320, August 2012. <http://www.nrel.gov/docs/fy12osti/53320.pdf>

## **NEW YORK SOLAR STUDY: AN ANALYSIS OF THE BENEFITS AND COSTS OF INCREASING GENERATION FROM PHOTOVOLTAIC DEVICES IN NEW YORK (2011-12)**

### **CLIENT: NEW YORK STATE ENERGY RESEARCH & DEVELOPMENT AUTHORITY (NYSERDA)**

In response to a statutory mandate, SEA and MCG were engaged by NYSERDA to conduct the New York Solar Study, a comprehensive study of policy options, costs and benefits for driving 5000 MW of solar in New York by 2025. The statewide study examined the New York solar PV market, incentives, future policy options to support widespread adoption, levelized energy costs, and market costs and benefits. The study included multiple cost, value and incentive futures and explored LCOE sensitivities to many variables. SEA served as overall project manager and prime contractor for a team including MCG, LaCapra Associates and Economic Development Research Group. SEA played lead in modelling PV deployment projections, establishing PV cost and financing assumptions, and performing LCOE analysis. MCG provided market research and policy analysis support for this project. MCG and SEA co-led all solar policy analysis including an evaluation of multiple future New York state solar policy incentive structures. The full report is available online:

- The New York State Energy Research & Development Authority, *New York Solar Study: An Analysis of the Costs and Benefits of Increasing Generation From Solar Photovoltaic Devices in New York*, Albany, NY, January 10, 2012. See: <http://www.nyserda.ny.gov/Publications/Program-Planning-Status-and-Evaluation-Reports/Solar-Study.aspx>

## **FEED-IN TARIFF EXPLORATION (2008-2010)**

### **CLIENT: CALIFORNIA ENERGY COMMISSION**

SEA led a team of consultants on a project exploring the role of feed-in tariffs primarily for renewable energy projects below 20 MW. SEA was the project manager on a team including MCG as a primary contributor, as a subcontractor to KEMA. The team conducted research on lessons learned from international feed-in tariff policies on the financing implications of feed-in tariff design, international feed-in tariff rate setting methodology, and the interplay between feed-in tariffs and transmission planning. Work products included stakeholder presentations, guiding and supporting a stakeholder process, presenting issues, options, analysis, and recommendations to a stakeholder group, surveying stakeholders for input, and incorporating comments to finalize white papers including:

- Grace, Robert, Wilson Rickerson, Karin Corfee, Kevin Porter, and Hans. Cleijne, *California Feed-In Tariff Design and Policy Options*. California Energy Commission. Publication Number: CEC-300-

2008-009F, Sacramento, CA, May 2009. <http://www.energy.ca.gov/2008publications/CEC-300-2008-009/CEC-300-2008-009-F.PDF>.

- Grace, Robert, Wilson Rickerson, Kevin Porter, Jennifer DeCesaro, Karin Corfee, Meredith Wingate and Jonathan Lesser, *Exploring Feed-in Tariffs for California: Feed-In Tariff Design and Implementation Issues and Options*. California Energy Commission. Publication number: CEC-300-2008-003-F, Sacramento, CA, November 2008. <http://www.energy.ca.gov/2008publications/CEC-300-2008-003/CEC-300-2008-003-F.PDF>.
- Corfee, Karin, W. Rickerson, M. Karcher, B. Grace, J. Burgers, C. Faasen, H. Cleijne, J. Gifford, and N. Tong. KEMA. *Feed-In Tariff Designs for California: Implications for Project Finance, Competitive Renewable Energy Zones, and Data Requirements*. California Energy Commission. Publication Number: CEC-300-2010-006. Sacramento, CA, August 2010. <http://www.energy.ca.gov/2010publications/CEC-300-2010-006/CEC-300-2010-006.PDF>.

## **MCG PROJECT EXPERIENCE**

This section describes MCG projects that are directly relevant to the New Jersey solar market volatility study. References for select projects are provided in Section 5.7 below. Other references are available upon request.

### **MCG US SOLAR PROJECTS**

#### **SOLAR RENEWABLE ENERGY CREDIT PROGRAM MODELING (2010)**

##### **CLIENT: MASSACHUSETTS DEPARTMENT OF ENERGY RESOURCES**

The Massachusetts DOER contracted MCG to build a system dynamics computer simulation model of DOER's solar renewable energy credit (SREC) program. Model results led DOER to make fundamental changes to the SREC program design, which were eventually written into the regulations DOER issued in January 2010. DOER gained comfort in other components of the market design that the model suggested would perform as expected.

#### **DELAWARE SREC PILOT EVALUATION (2012)**

##### **CLIENT: DELAWARE PUBLIC SERVICE COMMISSION**

MCG conducted an evaluation of the Delaware SREC pilot procurement program for the Delaware Public Service Commission (DPSC). This work included the development and implementation of a comprehensive program participant survey, a sensitivity analysis of administratively set SREC contract prices and a projection of the effects of competing state policies on the Delaware SREC market. MCG's made several recommendations to the PSC for improving future solicitation rounds from the perspective of Delaware ratepayers. Many of these recommendations were adopted and included in the next round of the program. The final report for this project is available at:

<http://dep.sc.delaware.gov/electric/11399%20SREC%20Pilot%20Final%20Rpt.pdf>

#### **NEW JERSEY SOLAR ENERGY TRANSITION PROCEEDINGS (2008)**

##### **CLIENT: UNION OF CONCERNED SCIENTISTS (UCS)**

MCG conducted an in-depth study of the New Jersey solar energy market transition process on behalf of UCS in order to inform work on REC market structure nationwide. MCG reviewed and catalogued all of

the reports, stakeholder comments, and New Jersey Board of Public Utilities documents created during 2006-2008 and traced the evolution of different stakeholder positions and policy proposals over time. MCG compared the REC market models under consideration in New Jersey with parallel models around the US.

### **SUNSHOT SOLAR OUTREACH PARTNERSHIP (2010-PRESENT)**

#### **CLIENT: U.S. DEPARTMENT OF ENERGY**

MCG is part of a national team conducting municipal solar strategy and policy assistance as part of the U.S. Department of Energy's SunShot Solar Outreach Program. MCG is responsible for engaging policymakers and officials from cities, towns, and counties across the country and delivering targeted training and outreach modules that target a broad range of stakeholders with varying levels of expertise across multiple regions. To date, MCG has engaged a network over 1,200 city officials, town planners, utility officials, and others, at over twenty national workshops across the country. MCG was also recently invited to present on utility-specific solar issues at an American Public Power Association conference and solar and design issues for the American Institute of Architects. In addition MCG fields questions through the SunShot Ask the Expert Portal and delivers direct technical assistance to applicants through the SunShot Technical Assistance Portal.

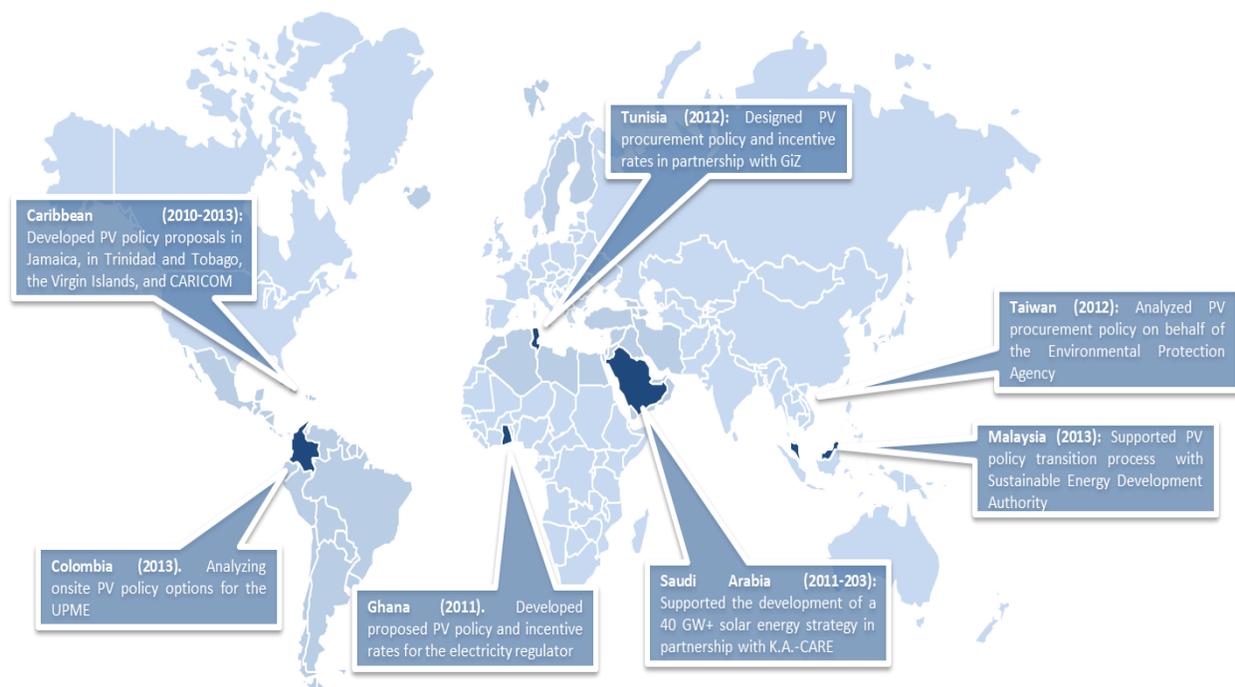
### **ROOFTOP SOLAR CHALLENGE – SOLAR READY II (2013-PRESENT)**

#### **US DEPARTMENT OF ENERGY**

MCG, in partnership with the National Association of Regional Councils and the Mid-America Regional Council, was awarded a SunShot Rooftop Solar Challenge grant to use established and trusted relationships among regional planning councils and local governments to spread solar-friendly best practices to nine diverse regions across the country representing over 1,000 local governments. MCG provides technical support to the participating regions and local governments in developing a regulatory framework to support solar development, increasing the efficiency of permitting processes, and expanding access to financing for solar projects, permitting processes, and expanding access to financing for solar projects.

### **MCG INTERNATIONAL MCG SOLAR PROJECTS**

MCG has tracked and analyzed international PV policies for entities such as REN21, the international semiconductor manufacturers' association (SEMI PV Group), and Deutsche Bank. MCG has also been involved in the design of national PV policies. The map below provides a high level summary of recent projects, followed by more detailed descriptions of select projects:



### **GET FIT PROGRAM (2010-2012)**

#### **CLIENT: DEUTSCHE BANK CLIMATE CHANGE ADVISORS**

MCG has served as a technical advisor to Deutsche Bank Climate Change Advisors' (DBCCA) landmark studies on international renewable energy policy design from an investor's perspective. MCG served as a strategic and technical advisor to DBCCA as it developed a concept for a global renewable energy program. The purpose of the program, called GET FIT, is to support stable renewable energy policies that catalyze the supply of and demand for private sector financing in the developing world. The program targets both the rapid scale up of renewable energy and the expansion of energy access through direct financial support, risk management, and targeted technical assistance. As part of the project, the MCG team analyzed how international climate finance mechanisms could support existing renewable energy policies in developing countries, and conducted outreach to over 160 international stakeholders. The concept is currently being implemented in Uganda by KfW and the World Bank.

### **SUSTAINABLE ENERGY FINANCING GUIDE FOR THE CARIBBEAN REGION (2013)**

#### **CLIENT: ORGANIZATION OF AMERICAN STATES**

MCG developed a financing guide that provides actionable recommendations and steps for credit unions, banks, and other funders to take to provide consumer-scale PV and energy efficiency project financing in the Caribbean region. The guide includes an evaluation of economic and non-economic investment barriers, analyses of different available and potential funding vehicles, and suggestions for how funders can grow their RE/EE lending portfolios. MCG conducted stakeholder interviews, an online survey and led two regional consultations for this project. MCG staff additionally designed and facilitated the participatory processes.

## **RENEWABLE ENERGY LAW DRAFTERS' GUIDE FOR DEVELOPING COUNTRIES (2013)**

### **CLIENT: UNITED NATIONS ENVIRONMENT PROGRAMME (UNEP)**

MCG developed a law drafters' guide for renewable energy in developing countries, based on a review of renewable energy laws and regulations from over 50 jurisdictions in Latin America and the Caribbean, North America, Africa, Asia, and Europe. The law drafters' guide walks through over 20 policy design issues, presents legal and regulatory language from different countries to illustrate how the design issues have been codified, and discusses the pros and cons of different policy design issues from the perspective of developing countries. MCG also identified and helped recruit a network of international experts and policy makers to support UNEP's policy-related outreach as part of the United Nations Secretary General's Sustainable Energy for All initiative.

## **RENEWABLE ENERGY POLICY CONSULTING FOR SAUDI ARABIA (2012)**

### **CLIENT: KINGDOM OF SAUDI ARABIA**

MCG supported the development of a policy framework for the promotion of renewable electricity in the Kingdom of Saudi Arabia (KSA). The project consisted of the design of two competitive procurement rounds and full-scale standard offer incentive mechanism design. MCG conducted an international scan of renewable energy policy designs around the world, and developed an incentive rate setting model. MCG developed and delivered a capacity building and knowledge-transfer workshop on renewable energy policy design and rate setting to KSA policymakers and renewable energy program staff. The Saudi Arabian renewable energy program will target 54 GW of newly installed capacity by 2032.

## SEA PROJECT EXPERIENCE

In addition to the joint projects with MCG led by SEA discussed above, this section describes SEA projects that are directly relevant to the New Jersey solar market volatility study. References for select projects are provided in Section 5.7 below. Other references are available upon request.

### RESIDENTIAL SOLAR PROGRAM CONTRACTING ANALYSIS (2012) AND REC MONETIZATION STRATEGY (2013)

#### CLIENT: CONNECTICUT CLEAN ENERGY FINANCE AND INVESTMENT AUTHORITY

Through CEFIA's residential solar programs, CEFIA purchases received RECs from supported projects. SEA provided consulting support for CEFIA's residential solar program REC monetization strategy in 2013, and also analyzed the role of the residential sector's participation in Connecticut's Class I RPS market. CEFIA is undertaking efforts to establish residential clean energy financing programs that attract private capital investment in renewable energy and energy efficiency projects in Connecticut. One aspect to that strategy is to encourage long-term contracting for the purchase of RECs from residential renewable energy and energy efficiency projects by utilities or other competitive suppliers.

### MASSACHUSETTS SOLAR CARVEOUT MARKET ANALYSIS (2012-PRESENT)

#### CLIENT: MULTI-CLIENT SUBSCRIPTION ANALYSIS

In June 2012, SEA conducted a detailed Massachusetts "**Solar Energy Market Outlook**" Webinar for subscribers consisting of the results of a market fundamental analysis. In December 2013, SEA hosted a free webinar called "**Achieving Insight into the Massachusetts Solar Market**" which analyzed:

- (i) the wind-down of Massachusetts DOER's SREC-I program, including new analyses and insights into the factors driving the ultimate size and characteristics of the SREC-I market resulting from DOER's emergency regulations which increased the 400 MW target, and the implications of those results on the final SREC-I target and future SREC-I obligation;
- (ii) the ramp-up of DOER's Proposed SREC-II program, including high-level analysis of the implications of DOER's SREC-II proposal on development hot and cold spots in the marketplace which will drive future market trends under a variety of combinations of installation type, policy, ownership, and location; and  
implications of interconnection and net metering developments on the SREC-I and SREC-II markets. This webinar was a preamble to a 2014 Massachusetts Solar Market Multi-Client Study which SEA is in the process of rolling out. More details about this service can be found at:

[http://www.seadvantage.com/Documents/Solar\\_Product/MCS\\_Cut\\_Sheet\\_Prod\\_\(final\\_12\\_0413\).pdf](http://www.seadvantage.com/Documents/Solar_Product/MCS_Cut_Sheet_Prod_(final_12_0413).pdf)

**NEW ENGLAND SOLAR EYES & EARS REGULATORY, POLICY AND LEGISLATIVE TRACKING & ANALYSIS SERVICE (2007-PRESENT)**

**CLIENT: MULTI-CLIENT SUBSCRIPTION USED BY PRIVATE AND PUBLIC SECTOR ENTITIES**

Since 2007, SEA has performed a tracking and analysis of solar and other renewable energy regulation, legislation and policy as a multi-client subscription service covering the New England region. Solar Eyes & Ears services include:

- Weekly flash updates summarizing the week's news and highlighting time sensitive solar energy related issues which may require action or attention.
- Regularly published electronic digests with detailed analyses of issues to help subscribers understand what is happening that might impact their interests. Digests are indexed and cross-referenced, for easy access as a ready-reference to each issue's history and status.
- Emergency Flash updates summarizing and analyzing issues of high importance as they happen.
- Supplemental follow-up briefings

See <http://www.seadvantage.com/subscription-services/new-england-solar-eyes-ears-service/> for more information about this service.

## 5.6 FEE PROPOSAL

Task	MCG					SEA				Task Total
	WR	AB	CL	JU	KW	RCG	JG	TSM	PYY	
Rate	\$220	\$175	\$175	\$130	\$130	\$233	\$204	\$217	\$99	
Review the public record compiled by Board Staff	1	6			12	2	1	6	8	\$5,597
Review CEEEP Lit Rev docs	1	6			12	2	1	6	8	\$5,597
Augment and supplement CEEEP's literature review	1	4		4	8	2	1	4	8	\$4,812
Develop short term and long term recommendations to mitigate solar development volatility in New Jersey	3	4				3		6	2	\$3,562
Write a report (draft and final) detailing findings	6	24	4	12	24	6	1	16	16	\$17,566
Present results at public forum	12	12				4		10		\$7,847
Project Management		4								\$700
Kickoff Meeting	4	4			4	4		4	2	\$4,100
Weekly client update calls	4	12			6	6		12	6	\$8,362
Total by Individual (hrs)	32	76	4	16	66	29	4	64	50	341
									<b>Total Staff Costs</b>	\$58,143
									<b>Travel Expense</b>	\$450
									<b>Total Project Cost</b>	<b>\$58,593</b>

**Total project cost:** Fifty eight thousand five hundred ninety three dollars (**\$58,593**)

### NOTE ON INSURANCE REQUIREMENTS

Discussions with insurance industry professionals have indicated that some of the nonstandard insurance requirements are unavailable, not applicable or prohibitively expensive for consulting firms. These include the blanket crime coverage and privacy and security breach. . Given this, any contract signed would require minor alterations to the proposed insurance requirements.

## 5.7 REFERENCES

Five references for both MCG and SEA are provided below. MCG References

Organization	Contact	Date	Project Description	Contact Information
<b>Massachusetts Department of Energy Resources (DOER)</b>	Dwayne Breger	2013	DOER hired a team of consultants to provide analysis related to the development of new SREC program regulations. The team includes The Cadmus Group, Inc., Sustainable Energy Advantage, LLC, La Capra Associates, and Meister Consultants Group. Robert Grace of SEA served as project manager for the team. The consultants were asked to provide analysis and reports on solar costs and needed incentives, comparison of a solar carve-out policy using an SREC model with other policy alternatives, evaluating the SREC-I Program's success in meeting its objectives, analyzing the costs and benefits of the proposed SREC-II program, and comparing regional economic impacts of solar ownership and financing alternatives.	100 Cambridge St., Suite 1020 Boston, MA 02114 <a href="mailto:Dwayne.Breger@state.ma.us">Dwayne.Breger@state.ma.us</a> Phone: (617) 626-7327 Fax: (617) 727-0030
<b>New York State Energy Research &amp; Development Authority</b>	Carl Mas	2011-12	<i>NYSERDA hired a team of consultants to develop the New York Solar Study: An Analysis of the Benefits and Costs of Increasing Generation from Photovoltaic Devices in New York</i> , a comprehensive study of policy options, costs and benefits for driving 5000 MW of solar in New York by 2025. The statewide study examined the solar NY PV market, incentives, future policy options to support widespread adoption, LCOE, costs and benefits. It developed multiple cost, value and incentive futures and explored LCOE sensitivity to many variables. SEA served as overall project manager and prime contractor for a team including MCG, LaCapra Associates and Economic Development Research Group. SEA played lead in modelling PV deployment projection, establishing PV cost and financing assumptions, and performing LCOE analysis. SEA was a co-lead with MCG in all solar policy analysis.	17 Columbia Circle Albany, NY 12203-6399 <a href="mailto:cim@nyserda.org">cim@nyserda.org</a> Phone: (518) 862-1090 x3294 Fax: (518) 862-1091
<b>Delaware Public Service Commission</b>	Pamela Knotts	2012	MCG conducted an evaluation of the Delaware SREC pilot procurement program for the Delaware Public Service Commission (DPSC). This work included the development and implementation of a comprehensive program participant survey, a sensitivity analysis of administratively set SREC contract prices and a projection of the effects of competing state policies on the Delaware SREC market. MCG has made several recommendations to the PSC for improving future solicitation rounds from the perspective of Delaware ratepayers. Many of these recommendations were adopted and included in the next round of the program.	861 Silver Lake Blvd. Cannon Bldg., Suite 100 Dover, DE. 19904 <a href="mailto:pamela.knotts@state.de.us">pamela.knotts@state.de.us</a> Phone: (302) 736-7500 Fax: (302) 739-4849
<b>U.S. Department of Energy</b>	Joshua Huneycutt	2010-2015	SunShot Solar Outreach Partnership, MCG is part of a national team conducting municipal solar policy education as part of the U.S. Department of Energy's SunShot Solar Outreach Partnership (SolarOPs). Under the U.S. DOE program, MCG is playing a lead role in the development of training and education modules that target a broad range of stakeholders with varying levels of expertise across multiple regions. The technical team presents at national and regional conferences (over 1,700 attendees in 24 states) and provides in-depth one-on-one technical assistance on the topics of solar financing, zoning, access and rights laws, permitting, planning and solar as an economic development tool.	U.S. Department of Energy SunShot Initiative 1000 Independence Ave, SW Washington, DC 20585 <a href="mailto:joshua.huneycutt@ee.doe.gov">joshua.huneycutt@ee.doe.gov</a> Phone: 202.287.1781 Fax: 202.340.6764
<b>Deutsche Bank Climate Change Advisors (DBCCA)</b>	Mark Fulton	2009-2012	DBCCA hired MCG to conduct a series of international studies on renewable energy policy from the investor perspective, including a framework for policy assessment (the "TLC" framework), a concept for de-risking renewable energy investment environments in developing countries (GET FiT and GET FiT Plus), and in-depth studies of the evolution of German renewable energy policy in 2011 and 2012.	Mark Fulton, former Managing Director and Global Head of Climate Change Research, DBCCA <a href="mailto:mfultonwork@gmail.com">mfultonwork@gmail.com</a> +19176553182

## SEA REFERENCES

Organization	Contact	Date	Project Description	Contact Information
<b>Massachusetts Department of Energy Resources (DOER)</b>	Dwayne Breger	2013	To inform the development of the SREC-II program design, DOER hired a team of consultants to support specific tasks. The team included The Cadmus Group, Inc., Sustainable Energy Advantage, LLC, La Capra Associates, and Meister Consultants Group. Robert Grace of SEA served as project manager for the team. The consultants were asked to provide analysis and reports on solar costs and needed incentives, comparison of a solar carve-out policy using an SREC model with other policy alternatives, evaluating the SREC-I Program's success in meeting its objectives, analyzing the costs and benefits of the proposed SREC-II program, and comparing regional economic impacts of solar ownership and financing alternatives.	100 Cambridge St., Suite 1020 Boston, MA 02114 <a href="mailto:Dwayne.Breger@state.ma.us">Dwayne.Breger@state.ma.us</a> Phone: (617) 626-7327 Fax: (617) 727-0030
<b>New York State Energy Research &amp; Development Authority</b>	Carl Mas	2011-12	<i>NYSERDA hired a team of consultants to develop the New York Solar Study: An Analysis of the Benefits and Costs of Increasing Generation from Photovoltaic Devices in New York</i> , a comprehensive study of policy options, costs and benefits for driving 5000 MW of solar in New York by 2025. The statewide study examined the solar NY PV market, incentives, future policy options to support widespread adoption, LCOE, costs and benefits. It developed multiple cost, value and incentive futures and explored LCOE sensitivity to many variables. SEA served as overall project manager and prime contractor for a team including MCG, LaCapra Associates and Economic Development Research Group. SEA played lead in modelling PV deployment projection, establishing PV cost and financing assumptions, and performing LCOE analysis. SEA was a co-lead with MCG in all solar policy analysis.	17 Columbia Circle Albany, NY 12203-6399 <a href="mailto:cjm@nyserda.org">cjm@nyserda.org</a> Phone: (518) 862-1090 x3294 Fax: (518) 862-1091
<b>National Renewable Energy Laboratory</b>	Michael Mendelsohn	2009 to Present	SEA developed CREST levelized cost of energy (LCOE) models for solar, wind and geothermal projects, including a model user manual. SEA also drafted a detailed policy paper on approaches to cost-based incentives. SEA was the primary architect on all CREST LCOE models including solar models, and author of the model's user manual, and the served as the lead author of cost-modeling policy paper.	15013 Denver West Parkway Golden, CO 80401 <a href="mailto:michael.mendelsohn@nrel.gov">michael.mendelsohn@nrel.gov</a> Phone: (303) 384-7363 Fax: (303) 630-2125
<b>Rhode Island Office of Energy Resources</b>	Chris Kearns	2011-2014	SEA provided the Rhode Island state energy office with modeling support regarding establishment of ceiling prices for RI Distributed Generation Standard Offer Program. SEA developed a cost basis for establishing solar & wind standard offer prices for 20 year contracts with National Grid.	One Capitol Hill Providence, RI 02908 <a href="mailto:Christopher.Kearns@energy.ri.gov">Christopher.Kearns@energy.ri.gov</a> Phone: (401) 574-9113 Fax: (401) 574-9125
<b>Connecticut Clean Energy Finance and Investment Authority</b>	Bryan Garcia	2012; 2013	Through CEFIA's residential solar programs, CEFIA purchases received RECs from supported projects. SEA provided consulting support for CEFIA's residential solar program REC monetization strategy in 2013, and analyzed the role of the residential sector's participation in Connecticut's Class I RPS market in 2012. CEFIA is undertaking efforts to establish residential clean energy financing programs that attract private capital investment in renewable energy and energy efficiency projects in Connecticut. One aspect to that strategy is to encourage long-term contracting for the purchase of RECs from residential renewable energy and energy efficiency projects by utilities or other competitive suppliers.	845 Brook Street Rocky Hill, CT 06067-3444 <a href="mailto:bryan.garcia@ctcleanenergy.com">bryan.garcia@ctcleanenergy.com</a> Phone: (860) 257-2170 Fax: (860) 563-4877

## 5.8 SUPPLIER DIVERSITY

The Project Team does not anticipate incorporating additional subcontractors as part of the scope of work under this project. Given the short timeline and limited budget for this activity, hiring additional firms to support this project is not consistent with the scope of work. The Project Team does not have diversity utilization goals for this project given the limited contract size and scope of work.

## 5.9 SUBCONTRACTORS

Since 2007, Sustainable Energy Advantage and Meister Consultants Group have partnered on a number of relevant engagements. The two firms have a close working relationship and have frequently provided collaborative and complementary services on a number of contracts. A selection of relevant, previous MCG/SEA collaborations are described below:

- For NYSERDA, SEA and MCG collaborated on the performing the policy analysis tasks in the *New York Solar Study: An Analysis of the Costs and Benefits of Increasing Generation from Solar Photovoltaic Devices in New York*.
- For the California Energy Commission, MCG and SEA collaborated on a project exploring the role of feed-in tariffs primarily for renewable energy projects below 20 MW. SEA was the project manager on a team including MCG as a primary contributor, as a subcontractor to KEMA.
- For the National Renewable Energy Laboratory (NREL), the MCG and SEA teams collaborated on published papers related to cost-based renewable energy incentives, and the development of the Cost of Renewable Energy Spreadsheet Tool (CREST).
- For the Massachusetts Department of Energy Resources (DOER), SEA and MCG were hired as part of a team of consultants to develop reports and analysis relating to future state SREC program designs. This team included The Cadmus Group, Inc., and La Capra Associates.
- For the Hawaiian Energy Companies (HECO), MCG and SEA were hired as part of a team of consultants to develop reports and analyses related to future state renewable energy policies and to support HECO's participation in state regulatory proceedings.
- For the New York Power Authority's Solar Market Acceleration program, MCG and SEA are both part of a team with Navigant Consulting providing technical support services, which include identifying and prioritizing mechanisms to reduce solar PV cost and increase market penetration.
- The firms' leaders have collaborated on two published policy analyses:
  - Rickerson, Wilson and Robert C. Grace, *The Debate over Fixed Price Incentives for Renewable Electricity in Europe and the United States: Fallout and Future Directions*, A White Paper Prepared for The Heinrich Böll Foundation, Feb. 2007. [http://www.futurepolicy.org/fileadmin/user\\_upload/PACT/Learn\\_more/Rickerson\\_Grace\\_2007.pdf](http://www.futurepolicy.org/fileadmin/user_upload/PACT/Learn_more/Rickerson_Grace_2007.pdf); and
  - Rickerson, Wilson H., Janet L. Sawin and Robert C. Grace, *If the Shoe FITs: Using Feed-in Tariffs to Meet U.S. Renewable Electricity Targets*, The Electricity Journal, Vol. 20 (4), May 2007.

## APPENDIX A: STAFF QUALIFICATIONS



# Wilson Rickerson

CEO

O: 617.934.1676

M: 617.930.5502

wilson.rickerson@mc-group.com

## Experience

### **Meister Consultants Group**

*Chief Executive Officer*

*Boston, MA 2006 - Present*

Leads the firm's international energy and climate practice. Together with its European affiliate, MCG draws on a network of 110 consultants in Brussels, Berlin, Frankfurt, and Boston. Mr. Rickerson specializes in renewable energy policy design and has worked with a broad range of governments, international organizations, and corporations. In North America, he has supported RPS and standard offer design at the state level in Rhode Island, Massachusetts, Vermont, New York, Nova Scotia, Delaware, California, and Hawaii. He currently supports solar energy community engagement efforts nationally under the US Department of Energy SunShot Solar Outreach Partnership, and through regional programs with Massachusetts Clean Energy Center and NYSERDA. He previously served as the solar coordinator for Boston. Internationally, he has worked with organizations such as the National Renewable Energy Laboratory, the Inter-American Development Bank, Deutsche Bank, and the World Bank to support solar energy in Asia, Africa, Latin America, the Caribbean, and the Middle East.

### **Center for Sustainable Energy**

*Policy Advisor*

*New York, NY 2005 – 2007*

Mr. Rickerson managed energy efficiency and renewable energy programs and established the Center's domestic clean energy policy research practice. He coordinated New York City's Million Solar Roofs partnership with the US Department of Energy (DOE), and completed the first comprehensive solar market, policy, and barrier studies for New York City. He also supported the development of the City of New York's Solar City Partnership, including New York's unique property tax abatement for renewable energy.

### **Delaware Senate Energy and Transit Committee**

*Research Assistant*

*Newark, DE 2003 – 2005*

Served as legislative staff to the Delaware Senate Energy & Transit Committee during which time he drafted Delaware's renewable portfolio standard and performance contracting legislation.

### **Solar New York**

*Associate Director*

*New York, NY 2003*

### **Bundesverband WindEnergie e.V (BWE)**

*Congress-Bundestag Exchange Fellow*

*Berlin, Germany 2002*

### **Development Alternatives, Inc. (DAI)**

*Associate*

*Bethesda, MD 1998 – 2000*

**Education**

<b>University of Delaware</b> <i>Masters in Energy and Environmental Policy</i>	<i>Newark, DE</i>	<i>2005</i>
<b>The College of William and Mary</b> <i>BA, International Relations</i>	<i>Williamsburg, VA</i>	<i>1999</i>

**Relevant Work**

<b>2012 NYSERDA Solar Study</b> <i>New York State Energy Research and Development Authority</i>	<i>US</i>	<i>2012</i>
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MCG worked with a team of consultants to assist NYSERDA with a comprehensive analysis of potential future solar market incentive options. MCGs work on this project included the development of comprehensive forward-looking solar market cost projections based on national and international cost trends. The work also included the development of a PV policy options evaluation methodology that was applied to several potential future incentive program scenarios. MCG also developed international case studies of several important foreign solar markets as part of this project.

<b>Global PV Policy Study</b> <i>SEMI PV Group</i>	<i>Global</i>	<i>2010</i>
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Led a team that surveyed global solar energy policies and assessed policy design characteristics. Developed a set of best practices for solar energy policy designs, based on international experience and SEMI PV policy principles. Catalogued and compared solar policies in 30 jurisdictions around the world. Conclusions and recommendations were drafted in a final report and published white paper that integrated peer reviewer comments.

<b>Transforming Markets for On-Grid Renewable Energy</b> <i>United Nations Development Programme</i>	<i>Global</i>	<i>2012</i>
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Reviewed a portfolio of over 100 renewable energy policy projects in 80 countries that have been supported with funds from the Global Environment Facility (GEF). Investigated how national policies and international support have been combined in different countries. Co-authored a report published by UNDP that explored how policy de-risking and financial de-risking instruments have been deployed in parallel to support national policy development.

## Professional Associations

**Truman Security Fellow**, Truman National Security Project

**Board Member**, IFOK GmbH, Germany

**Editorial Board**, BioCycle magazine

**RETScreen Software Trainer**, Natural Resources Canada

**PV Planner**, University of Delaware

**NABCEP® PV Certificate of Knowledge**

**Peer Reviewer**, Energy Policy journal

**Policy Committee Member**, World Renewable Energy Conference 2011 (Denver, USA) and World Renewable Energy Conference 2010 (Abu Dhabi, UAE).

## Selected Publications

Massachusetts Solar Policy Task 2 report: Comparative evaluation of current carve-out policy to other policy alternatives. (2013). Boston, MA: Massachusetts Department of Energy Resources. With Jason Gifford, Robert Grace, Daniel von Allmen, Ryan Miamis, and Andrew Belden.

New York solar study: An analysis of the benefits and costs of increasing generation from photovoltaic devices in New York. (2012) Albany, NY: New York State Energy Research and Development Authority.

Renewable energy cost modeling: A toolkit for establishing cost-based incentives in the United States. (NREL/TP-49143). (2011). Golden, CO: National Renewable Energy Laboratory. With Jason Gifford and Robert Grace.

The German feed-in tariff for PV: Managing volume success with price response. New York, NY: Deutsche Bank Group. (2011). With DB Climate Change Advisors.

System dynamics modeling of the Massachusetts SREC market. (2010). Sustainability 2(1) 2746-2761. With Hilary Flynn, Dwayne Breger, Andrew Belden, Chad Laurent and Natalie Howlett.

World solar energy review: Technology, markets and policies. (2010). Newark, DE: Center for Energy and Environmental Policy. With John Byrne, Lado Kurdgelashvili, Manu Mathai, Ashok Kumar, Jung-Min Yu, X. Zhang, Jun Tian, and G. Timilsina.

New York City's solar energy future: 2010 update. (2010). New York, NY: The City University of New York, New York City Solar America City Partnership. With Neil Veilleux, Tria Case and Alison Kling.

Advancing a sustainable solar future. (2009). San Jose, CA: SEMI PV Group.



# Andrew C. Belden

State and City Programs Director

O: 617.245.0272

andy.belden@mc-group.com

## Experience

### **Meister Consultants Group**

*State and City Programs Director*

*Boston, MA*

*2009 - Present*

Leads the firm's U.S. state and municipal consulting practice. Mr. Belden's work portfolio includes renewable energy market analysis and municipal clean energy policy development. He has supported the development of renewable energy policies and incentive programs in New York, Rhode Island, Delaware and Massachusetts. He also lead's MCG's work with 16 Massachusetts cities and towns to develop stakeholder-based community energy strategies. Mr. Belden provides financial modeling support to a number of east coast local governments in their PPA negotiations with third-party solar PV developers. He is also the coordinator of the City of Boston's Solar City partnership under the Solar America Initiative.

### **Water Resources Agency**

*Graduate Research Assistant*

*Newark, Del.*

*2007- 2008*

Supported the state water coordinator with original research, water quality trend analysis and journal article writing. Led field research that aided policy-makers in raising Delaware's drought emergency status during the fall of 2007. Evaluated the hydroelectric potential of local watersheds. Mined large historical datasets for trends relating to water quality legislation and policies.

### **Delaware Energy Office**

*Green Energy Fund Intern*

*Dover, Del.*

*2007*

Worked on state-level policies relating to renewable energy resource development in Delaware. Led research for legislation related to solar and wind property restrictions and solar access laws. Reviewed residential and commercial grant applications for photovoltaic and geothermal installations.

### **Center for Energy and Environmental Policy**

*Research Associate*

*Newark, Del.*

*2006-2007*

Assisted with a 50-state survey of water and energy policies for the Delaware General Assembly. Developed a profile of power plant water use within Delaware. Researched issues related to water consumption by power plants in Pennsylvania and the Midwest.

**Education**

University of Delaware		
Master’s in Energy and Environmental Policy	<i>Newark, Del.</i>	<i>2006-2008</i>
 Cornell University		
Bachelor’s in Biological Sciences	<i>Ithaca, N.Y.</i>	<i>1996-2000</i>

**Relevant Work**

**Massachusetts SREC Market Studies**  
*Massachusetts Dept. of Energy Resources* *Boston, MA* *2013*

MCG worked with a team of consultants to develop multiple reports for the Massachusetts Department of Energy Resources related to the expansion of the state’s next-generation solar incentive program. MCG conducted extensive solar market research and developed forward-looking solar cost projections based on current market conditions. MCG also worked with Sustainable Energy Advantage to develop a market model the evaluated the total incentive costs required under several policy regimes including a feed-in tariff, an SREC market with a price floor and state-wide competitive procurements for PV generation. The analysis developed as part of this project was used by state policy makers to develop the Massachusetts SREC II program that is currently undergoing regulatory approval.

**2012 NYSERDA Solar Study**  
*New York State Energy Research and Development Authority* *Albany, NY* *2012-2013*

MCG worked with a team of consultants to assist NYSERDA with a comprehensive analysis of potential future solar market incentive options. MCGs work on this project included the development of comprehensive forward-looking solar market cost projections based on national and international cost trends. The work also included the development of a PV policy options evaluation methodology that was applied to several potential future incentive program scenarios. MCG also developed international case studies of several important foreign solar markets as part of this project.

**SREC Program Evaluation**  
*Delaware PSC* *Dover, Del.* *2012*

MCG conducted an evaluation of the Delaware SREC pilot procurement program for the Delaware Public Service Commission (DPSC). This work included the development and implementation of a comprehensive program participant survey, a sensitivity analysis of administratively set SREC contract prices and a projection of the effects of competing state policies on the Delaware SREC market. MCG’s made several recommendations to the PSC for improving future solicitation rounds from the perspective of Delaware ratepayers. Many of these recommendations were adopted and included in the next round of the program.

## Recent Publications

Belden, A., Veilleux, N., Crowe, J., & Wright, K. (2013). *Powering the Future of Health Care, Financial and Operational Resilience: A Combined Heat and Power Guide for Massachusetts Hospital Decision Makers*. Boston, MA: Healthcare Without Harm.

Belden, A., Straus, D. (2013). *Energy Efficiency & Commercial Real Estate: Barriers and Opportunities in the Boston Market*. Boston, MA: A Better City.

Becker-Birck, C., Uppal, J., Chessin, E., Laurent, C., Rickerson, W., Belden, A., & Jackson, S., (2013). *Local Lending Guide for Solar PV: A Guide for Local Governments Seeking to Engage Financial Institutions*. Boston, MA: Meister Consultants Group on behalf of U.S. DOE Solar Outreach Partnership.

Gifford, J., Grace, R., Belden, A., von Allmen, D., & Miamis, R. (2013). *Task 1 Report: Evaluation of Current Solar Costs and Needed Incentive Levels Across Market Segments*. Boston, MA: Massachusetts Department of Energy Resources.

Belden, A., Rickerson, W., Gifford, J., Grace, R., von Allmen, D., & Miamis, R. (2013). *Task 2 Report: Comparative Evaluation of Current Carve-out Policy to Other Policy Alternatives*. Boston, MA: Massachusetts Department of Energy Resources.

Belden, A., Uppal, J., Laurent, C., & Rickerson, W., (2012). *Evaluation of the Delaware SREC Pilot*. Boston, MA: Meister Consultants Group prepared for the Delaware Public Service Commission.

Grace, R., Gifford, J., Zhang, M., Donovan, D., Belden, A., Rickerson, W., Veilleux, N., Laurent, C., Petraglia, L, & Pereira, A. (2012). *New York Solar Study*. Albany, NY: New York State Energy Research & Development Authority.

Veilleux, N., Crowe, J., Belden, A., & Rickerson, W. (2012). *Massachusetts Renewable Heating and Cooling: Opportunities and Impacts Study*. Boston, MA: Meister Consultants Group prepared on behalf of the Massachusetts Clean Energy Center.



# Chad Laurent

Senior Consultant & General Counsel

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## Experience

### **Meister Consultants Group, Inc.**

*Senior Consultant & General Counsel*

*Boston, Mass.*

*2009 - Present*

- Provides renewable energy, climate & environment, and corporate sustainability consulting services to federal, state and local governments, private and corporate clients. Specific areas of expertise in solar and wind power project development, feed-in tariffs, renewable energy certificate markets, renewable energy and climate change law and policy, climate change adaptation strategies and energy efficiency.
- Drafted renewable energy policy law drafter's guide for the United Nations Environment Programme. Research includes analysis of 20+ country's laws and sample text for crafting renewable energy policies.
- Developed and analyzed renewable energy policy and related laws and regulations in Nova Scotia, Canada, Indonesia, Trinidad and Tobago, and Azerbaijan.
- Has worked with over 25 municipalities across the country on sustainability issues including advanced building codes, solar PV procurement, community solar, and zoning and permitting for renewable energy generation.
- Has presented at dozens of regional and national conferences to over 1,000 local government officials on solar PV as part of the U.S. Dept. of Energy SunShot Solar Outreach Partnership.

### **Commonwealth of Massachusetts, Office of the Attorney General**

*Legal Intern, Energy and Telecommunications Division, Business and Labor Bureau*

*Boston, Mass.*

*2008*

- Researched and wrote legal memorandum related to: the legal implications of the Regional Greenhouse Gas Initiative; notice requirements for utility rate cases in Massachusetts and other states; proposed transmission line adders and cost recovery rates; drafted proposed legislative changes.
- Drafted letters to the Department of Public Utilities; edited and cite-checked appellate briefs; edited and prepared discovery documents in preparation for oral argument.

### **Executive Office of Energy and Environmental Affairs**

*Law and Policy Intern, Contractor*

*Boston, Mass.*

*2007 - 2008*

- Worked closely with General Counsel and Undersecretary of Energy. Researched and wrote legal memorandum related to: feed-in tariffs for solar and wind power, Energy Policy Act alternative fuel vehicle compliance, Article 97 lands, federal Indian law, and municipal authority regarding renewable energy generation.
- Provided legal research and wrote memorandum related to executive brownfield and environmental justice policies.
- Drafted legislative changes related to renewable portfolio standards, energy efficiency in buildings, and municipal renewable energy ownership authority (Green Communities Act).

**Massachusetts Energy Consumers' Alliance**  
*Manager, Renewable Energy Programs* Boston, Mass. 2003-2006

**Environmental Defense Fund (EDF)**  
*Research Associate, Alliance for Environmental Innovation (Corporate Partnerships)* Boston, Mass. 2001-2003

**Rocky Mountain Institute**  
*Corporate Sustainability Consulting Intern (Energy and Resources Team)* Snowmass, Colo. 1999 - 2000

**Education**

**Suffolk University Law School**  
*Juris Doctor* Boston, Mass. 2007-2009  
 2008 Rappaport Center Consumer Law Public Service Fellow  
 2007 Rappaport Honors Fellow in Law & Public Policy  
 Suffolk Jurisprudence Award in Environmental Law  
 Dean's List 2007-2009  
 Distinguished Oral Advocate Award in Legal Practice Skills Section

**University of Michigan, School of Natural Resources & Environment**  
*Bachelors of Science Natural Resource Ecology and Management & Environmental Policy and Behavior*  
 Lyle E. Craine Award for Undergraduate Achievement in Environmental Policy Ann Arbor, Mich. 1997-2001

**Relevant Work**

**SunShot Outreach Partnership**  
*US Department of Energy (US DOE)* USA 2009 -present

MCG is part of a national team conducting municipal solar policy education as part of the U.S. Department of Energy's SunShot Solar Outreach Partnership (SolarOPs). Under the U.S. DOE program, MCG is playing a lead role in the development of training and education modules that target a broad range of stakeholders with varying levels of expertise across multiple regions. The technical team presents at national and regional conferences (over 1,700 attendees in 24 states) on the topics of solar financing, zoning, access and rights laws, permitting, planning and solar as an economic development tool.

As part of SolarOPs, MCG provided in-depth one-on-one technical assistance to Sustainable New Jersey and the Solar Energy Industries Association in New Jersey creating a detailed solar guidebook and model solar PV municipal ordinance for New Jersey municipalities. Mr. Laurent also worked with the City of Asheville, NC and the Blue Ridge Sustainability Institute in the development and execution of their solarize program. MCG assisted with the creation of model RFP documents, contracts, marketing and outreach materials, financial analysis, best practice research, and the preparation and delivery of Solar 101 educational workshops.

### **SunShot Rooftop Solar Challenge - Solar Ready II Team**

*US Department of Energy*

*US*

*2013 -Present*

MCG, in partnership with the National Association of Regional Councils and the Mid-America Regional Council, was awarded a SunShot Rooftop Solar Challenge grant to use established and trusted relationships among regional planning councils and local governments to spread solar-friendly best practices to nine diverse regions across the country representing over 1,000 local governments. Mr. Laurent is part of a team of consultants providing technical support to the participating regions and local governments in developing a regulatory framework for solar development, increasing the efficiency of permitting processes, and expanding access to financing for solar projects.

### **Solar Procurement Consulting**

*Various Municipal and Private Clients*

*USA*

*2010-present*

Mr. Laurent supports a number of private organizations and municipalities by providing procurement guidance and evaluation for a solar net metering credit agreement request for proposals and solar procurement. Mr. Laurent reviews model contract/net metering credit agreements and proposals from developers, meets with local officials to evaluate cost scenarios and cost saving potential. Based on Mr. Laurent's recommendations, municipal and private clients are positioned to save millions of dollars over the life of the projects.

### **Renewable Energy Law Drafters' Guide for Developing Countries**

*United Nations Environment Programme (UNEP)*

*Global*

*2011 -2012*

Mr. Laurent is surveying international renewable energy laws in order to build a framework for designing renewable energy policy in developing countries, supported by accompanying legal text. Additionally, he is building a network of renewable energy policy practitioners in developing countries on behalf of UNEP in order to facilitate South-South knowledge transfer and capacity building.

### **Community-Owned Feed-in Tariff Rate Setting**

*Nova Scotia Utility and Review Board (NSUARB)*

*Canada*

*2010 - 2011*

Mr. Laurent supported the NSUARB with the development of their community-owned feed-in tariffs (COMFITs), including a feed-in tariff for tidal energy. The COMFITs are one of the first feed-in tariffs in the world to require that all eligible renewable energy generation be owned by members of the community. The Board initiated a formal process to set the feed-in tariff rates, following the passage of legislation and the promulgation of initial COMFIT regulations. Final rates were issued in September, 2011.

**Professional  
Associations**

**Bar Admission**, Massachusetts Bar  
**Trained Mediator**, Massachusetts  
**Member**, American Bar Association



# Jayson Uppal

Consultant

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## Experience

### **Meister Consultants Group**

*Consultant*

*Boston, MA 2011 - Present*

Jayson Uppal specializes in renewable energy policy and public sector sustainability strategies. As a technical consultant for the US Department of Energy's SunShot Solar Outreach Partnership and the SunShot Rooftop Solar Challenge Solar Ready II team, Mr. Uppal provides technical support for hundreds of local governments across the country around building regional solar markets through regulatory reform and program implementation. Mr. Uppal has extensive experience creating a regulatory framework for solar development through a solar ordinance, streamlining local regulatory processes, expanding financing options for on-site solar installations, and implementing solar programs under the Solarize model that reduce costs and expand solar adoption.

### **Emergent Energy Group**

*Consultant*

*Boston, MA 2008- 2011*

Prior to joining MCG, Mr. Uppal co-founded and led the engineering effort at Emergent Energy Group, an energy consulting firm dedicated to facilitating proactive discussion around proposed distributed renewable energy projects in Massachusetts, Maine, and New York. In this role, Mr. Uppal assisted communities in understanding their renewable energy potential and designing responsible master plans that would attract profitable wind and solar power development to their region while mitigating negative impacts.

### **Volpe Center, US Department of Transportation**

*Intern*

*Cambridge, MA 2007*

Mr. Uppal assisted with the management of a superfund remediation site in Libby, MT. Mr. Uppal worked with subcontractors to reduce waste and increase project efficiency.

### **The Energy and Resource Institute**

*Research Intern*

*Delhi, India 2006*

Mr. Uppal performed research on using zeolites synthesized from fly ash, a toxic waste product of coal electricity generation, as an air entraining agent to produce lightweight concrete.

## Education

### **Tufts University**

*Bachelors of Science in Civil Engineering (Cum Laude)*

*Somerville,*

*MA*

*2004-2008*

#### **Relevant Research:**

- Green Roof Initiative: initiated Independent Research Project to study the use of synthetic aggregate materials on Green Roofs. Received EPA P3 grant in 2006.
- Conducted research in Brussels, Belgium on the EU Emissions Trading Scheme (2007).
- Designed a biogas electrical generation system for farm in Vermont (2007 – 2008).
- Travelled to Abu Dhabi in 2008 on a grant-funded research project studying the renewable energy efforts in the middle east

## Relevant Work

### **Renew Boston Solar Program**

*City of Boston*

*US*

*2011 -Present*

Mr. Uppal serves as a strategic consultant for the Renew Boston program, the citywide initiative that earned Boston the top score on the American Council for an Energy Efficient Economy scorecard for 2013. As a part of the initiative MCG has supported the City's efforts to align its clean energy permitting, zoning, and procurement processes with national best practices, and to facilitate the competitive procurement and installation of solar electric and solar thermal installations. Mr. Uppal recently led the effort on behalf of the City to streamline the permitting process for large residential and commercial solar projects, reducing the turn around time from 30 days to 7 days. Additionally, Mr. Uppal assisted in the development of the Renew Boston Solarize program, which has already generated over 711 leads for new solar residential projects.

### **Sunshot Solar Outreach Partnership**

*US Department of Energy*

*US*

*2011 -Present*

MCG is currently part of a national team conducting outreach and education to municipalities as part of the U.S. Department of Energy's SunShot Solar Outreach Partnership program. Under the U.S. DOE program, MCG is playing a lead role in the development of training and education modules on solar policy best practices that target a broad range of stakeholders with varying levels of expertise across multiple regions. Mr. Uppal provides continued support to this project, having delivered trainings and technical assistance to over 1,000 local government administrators and elected officials. Mr. Uppal recently assisted the City of Asheville, North Carolina in the development and implementation of the first Solarize program in the state, which is expected to drive the development of over 500 kW of new residential solar projects.

### **SunShot Rooftop Solar Challenge - Solar Ready II Team**

*US Department of Energy*

*US*

*2013 -Present*

MCG, in partnership with the National Association of Regional Councils and the Mid-America Regional Council, was awarded a SunShot Rooftop Solar Challenge grant to use established and trusted relationships among regional planning councils and local governments to spread solar-friendly best practices to nine diverse regions across the country representing over 1,000 local governments. Mr. Uppal is part of a team of consultants providing technical support to the participating regions and local governments in developing a regulatory framework for solar development, increasing the efficiency of permitting processes, and expanding access to financing for solar projects.

### **Newmarket Solar Feasibility Study**

*Boston Redevelopment Authority*

*US*

*2011 -2012*

As a part of a larger initiative to provide support in improving the resource efficiency, profitability, and public health, the Boston Redevelopment Authority has contracted with MCG to evaluate buildings in the Newmarket District in Boston, MA for solar power production. Mr. Uppal led the energy and financial assessment for six businesses in the district to determine their feasibility for a solar PV installation.

## **Publications**

Uppal, J., Veilleux, N., Belden, A. & Laurent, C. (2012). Solar Energy for Businesses in the Newmarket District. Boston, MA: Boston Redevelopment Authority

Belden, A., Uppal, J., & Laurent, C. (2012). Evaluation of the Delaware SREC pilot. Boston, MA: Prepared for the Delaware Public Service Commission.

Rickerson, W., Uppal, J., Glassmire, J., Lilienthal, P., Sanders, E., Colson, C., et al. (2012). Renewable Energies for Remote Areas and Islands. Utrecht, The Netherlands.: International Energy Agency Renewable Energy Technology Deployment.



# Kathryn Wright

Consultant

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## Experience

### **Meister Consultants Group**

*Consultant*

Boston, MA

Nov 2013-pres.

Contributes to national consulting projects with foci in renewable energy, energy efficiency and climate change adaptation. Kathryn's current projects include climate adaptation planning support for Denver and Boston, working with the commercial real estate sector working group of the Boston Green Ribbon Commission on sustainability objectives, and providing technical assistance and research support for the Sunshot Solar Outreach partnership and Solar Ready 2 Department of Energy programs. Kathryn joined MCG in July 2013 as a research fellow.

### **India Initiative Research Assistant, NRDC**

New Haven, CT Feb 2013-May 2013

Developed dissemination strategies, blogs and materials for a heat action plan for Ahmedabad, India, and created energy efficiency case studies for the Indian real-estate industry as part of the Yale Environmental Protection Clinic.

### **Student Consultant, Chipotle Mexican Grill**

New Haven, CT Dec 2012-May 2013

Conducted marketing research and developed strategies for Chipotle's Food with Integrity program, and prepared a comparative life cycle assessment for Chipotle's Sustainability Department.

### **Consulting Team Member, Yale University**

New Haven, CT Jan 2012-May 2013

Developed and conducted environmental and economic analyses for organizations including the New Haven Economic Development Corporation, Bigelow Tea Company, and homoecos (Latvia) for COP18.

### **Microloan Coordinator, Yale Office of Sustainability**

New Haven, CT Sep 2011-May 2012

Assisted and evaluated applicants, facilitated awareness, administrated the university's Sustainability Microloan Fund. Ms. Wright awarded over \$20,000 dollars in funding to energy efficiency, solar PV and other sustainability projects. She also managed revolving loan payments and fund health.

## Education

### **Yale University**

*Master of Environmental Management*

New Haven, CT

2013

### **University of Pittsburgh**

*BS Marketing, BA Environmental Studies, Minor German*

Pittsburgh, PA

2011

## Relevant Work

### **SEEDs Grant Research Assistant**

*Yale University*

US

Apr-Jun 2013

Assisted a Department of Energy SEEDs grant team in analyzing the effectiveness of solar incentives and solar group purchasing programs in Connecticut. The SEEDs partnership consisted of Yale University, Columbia University, SmartPower and others.

### **Lead Sunshot Initiative Research Fellow**

*US Department of Energy*

US

2012 – 2013

Managed and contributed to Yale's research and communications effort with the Connecticut Clean Energy Finance Investment Authority (CEFIA) and eight public and private partners for a Department of Energy solar grant. Ms. Wright's contributions focused on permitting, planning and zoning and interconnection. The findings from the project were recently released in a report available from Energize CT.

### **Sunshot Solar Outreach Partnership**

*US Department of Energy*

US

Jul 2013-Pres.

MCG is currently part of a national team conducting outreach and education to municipalities as part of the U.S. Department of Energy's SunShot Solar Outreach Partnership program. Under the U.S. DOE program, Ms. Wright currently provides research support and technical assistance to the MCG project team. She has conducted research and developed guides on implementing and developing Solarize programs, and provided technical assistance on solar ordinances.

### **Community Energy Strategies Pilot**

*Massachusetts Clean Energy Center*

US

Aug 2013-Pres.

MCG developed and implemented a community dialogue process to engage stakeholders and citizens in size local and regional communities participating in this pilot project. MCG will work with each community to develop a clean energy roadmap based on the results of a citizen and stakeholder engagement process and a technical clean energy resource assessment. Ms. Wright was one of nine MCG facilitators supporting the engagement process and also provided assistance with design and preparation of communication materials and presentations.

### **SunShot Rooftop Solar Challenge - Solar Ready II Team**

*US Department of Energy*

US

Oct 2013 –Pres.

MCG, in partnership with the National Association of Regional Councils and the Mid-America Regional Council, was awarded a SunShot Rooftop Solar Challenge grant to use established and trusted relationships among regional planning councils and local governments to spread solar-friendly best practices to nine diverse regions across the country representing over 1,000 local governments. Ms. Wright offers research support to the Solar Ready II team by developing factsheets and guidance on the latest best practices in solar policy and planning.

## **Publications**

Sunrise New England Project Team. (2013) Sunrise New England Final Project Report. Rocky Hill, Connecticut: Energize Connecticut.

Belden, A., Veilleux, N., Crowe, J., & Wright, K. (2013). *Powering the Future of Health Care, Financial and Operational Resilience: A Combined Heat and Power Guide for Massachusetts Hospital Decision Makers*. Boston, MA: Healthcare Without Harm.

Wright, K., Emmerman, D. and Holmatov, B. (2012). *Latvian Climate Policy in the Context of International Negotiations: A Primer for COP18*. New Haven, Connecticut and Riga, Latvia: Prepared for homo ecos on behalf of Yale University.



## Robert C. Grace

### Overview

Bob is a leader and innovator in technical and policy analysis of renewable energy markets. Trained as an interdisciplinary analyst in energy and environment, Bob has worked with a broad range of stakeholders and a diverse array of functions over his 28 years in the electricity industry, the last 14 exclusively focusing on renewable energy. He specializes in multi-stakeholder activities addressing complex and cutting edge challenges, and is known for doing so in a comprehensive, insightful and objective manner. He is a frequent public speaker, author of several business plans, market assessments, RFPs, and policy papers, and a regular participant in committees/workshops probing issues shaping the renewable power landscape in a competitive market environment.

### Employment

#### **Sustainable Energy Advantage, L.L.C. (Framingham, MA)**

**President** and founder, 1998-present (1998-1999, operated as Sustainable Energy Solutions)

He has provided renewable energy market, policy, financial and strategic analysis to over 125 public, private and non-profit sector clients, developing businesses, markets, opportunities and infrastructure for renewable electricity supply. Provides support in the following areas:

- Assisting energy businesses, governments and non-profit organizations in developing renewable electricity businesses, markets, opportunities, policies, programs and infrastructure.
- Strategic, technical, financial, modeling, and policy analysis of renewable energy markets.
- Public policy analysis, development and implementation spanning all renewable energy technologies. Examples include renewable portfolio standards, feed-in tariffs, funding and financing programs, as well as comparative and best-practice studies.
- Market fundamentals analysis, including assessment of interaction of complex renewable energy policies, supply-demand, supply curve, price and cost and benefits analysis. Scenario analysis and risk assessments.
- Market analysis studies for developers, investors and asset owners.
- Economic and financial analysis.
- Renewable energy supply analysis, including development of comprehensive procurement programs and solicitations, proposal evaluation, transaction facilitation and negotiation support.
- Strategy development.
- Project and enterprise investment due diligence.
- Development of wholesale power market rules and accounting/verification programs pertaining to renewable energy.
- Wind (on-shore and offshore), solar, biomass, biogas, geothermal, fuel cell and hydroelectric resources.

#### **AllEnergy Marketing Company, LLC (New England Electric System Subsidiary)**

(Waltham, MA)

**Director, ReGen Division, 1997-1998**

Championed ReGen, the “green” power marketing division, creating and implementing business plan and designing wholesale and distribution channel strategy, from conception to implementation. Responsible

# Sustainable Energy Advantage, LLC



for management and budget; supply procurement, portfolio management & delivery; product design and pricing; marketing and sales; and policy activities in highly uncertain market.

## Accomplishments in Business Innovation and Policy Leadership:

- Developed the first competitive retail product offering in the New England electric market, and the first competitive green power offering in the eastern U.S., an innovative, retail renewable energy credit-based offering designed to overcome market obstacles and uncertainties
- Developed and negotiated innovative, low cost and flexible supply contracts, options and strategic partnerships/alliances with renewable power suppliers, facilitating early development of new renewable resources to serve opening competitive retail markets
- Negotiated first-of-its-kind joint windpower development agreement which ultimately led to the largest operating wind farm in Massachusetts (as of 2012) (completed by others)
- Built solid relationships with target distribution channels
- Developed and maintained relationships with allies of environmentally preferable power
- Negotiated unprecedented “Cooperative Agreement” with Environmental Defense Fund to advise on business plan, charter, product definition and communications; built ReGen reputation for integrity and excellence among influencers.
- Served as a founding Board Member of the Renewable Energy Alliance trade group
- Key negotiator in multi-stakeholder Green-e (NE) green power certification program
- Played consensus-building role in regulatory, legislative, settlement and technical workshop processes developing market rules, regulations, standards of conduct, and legislation to support disclosure, tracking, and workable markets for renewable electricity

## **New England Power Company (New England Electric System subsidiary)**

(Westborough, MA)

### ***Generation Marketing Dept: Principal Analyst, 1994-1997, Senior Analyst 1993-94***

Instrumental in successfully shepherding NEES, a pioneer in deregulation/restructuring, through the first complete integrated electric utility restructuring in the US.

- Served as Wholesale Business Unit representative to all NEES industry restructuring teams developing strategy to implement unbundling and retail choice, and supporting Federal and state industry restructuring proceedings, including drafting testimony and market rules.
- Developed company position and strategy, and analyzed financial impact and risk of Standard Offer service, eliminating fuel clause, and instituting virtual direct access.
- Developed electric market price projections for internal analysis, stranded cost recovery support.
- Played instrumental role in developing comparable open access transmission & ancillary services tariffs.

### **Power Marketing Accomplishments:**

- Developed wholesale “green” marketing business plan.
- Managed winning proposal for long-term all-requirements power supply to Nantucket Electric Company which led to corporate acquisition.
- Developed strategy, analyzed markets for retail competition.
- Participated in NH and MA electric choice retail pilot program, including development of pilot programs and wholesale supply of “commodity” and “green” competitors.
- Negotiated monthly to multi-year power sales and purchase contracts.
- Wrote short-term marketing plan and developed new wholesale products.

# Sustainable Energy Advantage, LLC



- Led team optimizing operations, fuel switching to minimize environmental compliance costs and risks. Participated in teams developing incentive-based rates and implementing Clean Air Act compliance.

## **U.C. Berkeley - Project funded by the Electric Power Research Institute -- Environment Div.**

### *Graduate Student Research Assistant, 1993*

Investigated the potential of intermittent redispatch of electric power systems as an ozone abatement strategy as member of team awarded research grant.

## **California Public Utilities Commission (Division of Strategic Planning) and Pacific Gas & Electric Company (Corporate Planning Dept.)**

### *Graduate Student Intern/Independent Contractor/Special Project, 1992-93*

Initiated and performed jointly supported feasibility and cost-effectiveness study of intermittent, emission-biased electric system dispatch for combating smog episodes. Optimized operational vs. engineering emission control techniques using production modeling to demonstrate cost saving potential of nearly \$100 million.

## **La Capra Associates (Boston, MA) -- Senior Analyst, 1985-91**

Provide consulting support to over 20 electric and gas utility clients. Specializing in utility resource planning, cost analysis, rate design, load management, budgeting, financial and load forecasting, computer modeling and regulatory support.

- Managed power supply portfolio management function for an electric utility
- Managed and performed least cost, need analyses for IPP cogeneration plant siting approvals
- Testified as an expert witness on power supply valuation and cost issues
- Prepared, recommended, analyzed and evaluated financial and power supply restructuring proposals during debt restructuring negotiations between a utility and its creditors
- Prepared least-cost supply plan and developed probabilistic dispatch modeling methodology for a transmission isolated electric system's resource plan filing; performed dispatch modeling and production cost analysis of numerous electric & gas systems
- Assisted IPP developer in market evaluation and power sales
- Negotiated lease of electric transmission capacity
- Served as representative on utility task force planning the import of power from Hydro-Quebec
- Developed capacity planning, financial forecasting, load analysis, rate design computer models

## **Applied Resources Group (Brookline, MA) -- Energy Analyst/Programmer, 1985**

Designed rate analysis, demand modeling and load management software; tested, refined and documented energy management software; performed feasibility studies of cogeneration and photovoltaic systems.

## **QED/Seaver Associates (Needham, MA) -- Energy Management Research Associate, 1983-84**

Performed computer analysis of solar thermal heating, energy efficiency, and thermal storage.



## Education

### Energy & Resources Group, University of California, Berkeley

M.S., Energy & Resources, 1991-93 - U.C. Regents Fellow

Thesis: *Intermittent Environmental Dispatch of Electric Power Systems for Ozone Control.*

### Brown University

Sc.B., Energy Studies, 1980-84 - Magna Cum Laude; Elected to Sigma Xi

Senior Project: *The Power of Dynamic Simulation as a Solar Building Design Tool.*

### Other Coursework

Environmental Regulation (Tufts Univ.); Statistics, Accounting, Finance (Harvard University Ext.)

## Committees & Memberships

### Current:

- Northeast Energy & Commerce Association (Board of Directors)
- Editor, New England Wind Forum
- Principal Investigator, New England Wind Energy Education Project
- NEPOOL Generation Information System Working Group
- New England Clean Energy Council (Developer's Roundtable; Policy Committee)
- Environmental Business Council of New England

### Past:

- Co-Chair Northeast Energy & Commerce Association Renewable Energy Committee
- New England Green-e Advisory Committee
- Center for Resource Solutions' Tradable Renewable Certificates working group
- Green-e national TRC certification standard committee
- Massachusetts Renewable Energy Trust's Green Power Working Group
- New England Disclosure Working Group
- National Council on Competitiveness, Electricity Consumer Information Disclosure Regional Workshop
- Planning committees for DOE Wind Powering America & National Wind Coordinating Council regional wind issues forums
- Peer review of various publications
- NYSERDA and Connecticut Clean Energy Fund Technical Evaluation Panels

# Sustainable Energy Advantage, LLC



## THOMAS S. MICHELMAN

### Sustainable Energy Advantage, LLC

Principal with over 20 years experience in renewable energy consulting and development, retail energy consulting and energy efficiency program evaluation programs. Expertise includes renewable energy, retail energy markets, quantitative and policy analysis. Have managed all aspects of renewable energy development as an Owner's Representative for commercial and industrial customers installing wind and solar systems from fatal flaw analysis, feasibility study, design, procurement and construction oversight to renewable energy certificate marketing and sales.

#### **Sustainable Energy Advantage, L.L.C. (Framingham, MA)**

**Principal** (December 2013 – Present)

As Principal is primarily leading SEA's Massachusetts Solar Multi-Client study.

#### **Boreal Renewable Energy Development, (Arlington, MA)**

**Co-Founder and Principal** (2003 – 2013)

As Principal and co-founder of Boreal Renewable Energy Development ([www.boreal-renewable.com](http://www.boreal-renewable.com)) managed dozens of wind turbine and solar projects from fatal flaw analysis through, feasibility study, then design and construction for commercial, industrial, municipal and institutional clients with over 10 MWs installed.

Managed or supported Boreal's role as Owner's Representatives, and included: economic payback analysis, wind and solar PV resource modeling, project costs estimation, estimate of revenue generation taking into account retail, wholesale, and REC market structure. Management as Owner's Representative included vetting product manufacturers and their specific products, creating procurement RFPs for equipment and construction firms, recommending equipment and managing portions of design and construction. Ensured timetables, budget, permitting, interconnection, commissioning, optimum net metering configuration, etc. were completed most favorably. Post-operation tasks included ensuring manufacturer lives up to its warranty and maintenance obligations, and renewable energy certificate marketing and sales.

Managed or key participant in numerous consulting assignments. Highlights include a Department of Energy study which characterized status and quantified market potential, availability and economics of mid-sized wind turbines; a Block Island study which assessed offshore wind farm decommissioning assurance structures; for We Energies researched, assessed, and provided new community-based renewable energy business models; for World Energy analyzed, and crafted alternatives for long-term procurement of renewable energy for State of Maryland accounts.

Managed many aspects of small business including business development, payroll, insurance, invoicing, cashflow management, etc.

#### **KEMA-Xenergy (Burlington, MA)**

**Senior Consultant** (1997 – 2003)

Specializing in retail energy, price responsive load, demand side management, and renewable energy. Responsibilities included managing millions of dollars of consulting projects and key developer of retail energy consulting practice. Leveraged multi-client subscription studies as springboard to over \$3 million of new consulting work. Industry expert in retail energy field, presenting at dozens of conferences and meetings, and authoring dozens of articles and reports. Originator, managing editor, and contributor of KEMA-XENERGY's Retail Energy Foresight. Bimonthly periodical published the only comprehensive updates on U.S. retail energy switching.

**Senior Analyst** (1993-1997)

Performed quantitative impact analysis for dozens of energy efficiency and Demand Side Management (DSM) evaluations. Executed statistical billing analyses for evaluation of numerous electric and gas DSM programs, including large-scale multi-measure, new construction, low-income and multi-fuels programs.

#### **University of Rhode Island (Kingston, RI)**

**Graduate Student / Research Assistant** (1990-1992)

Part of team collecting data and then analyzing preferences on proposed new central landfill location using contingent valuation methods.

#### **National Perinatal Information Center (Providence, RI)**

# Sustainable Energy Advantage, LLC



## Senior Research Analyst (1987 – 1990)

Provided analytic support to staff, including cleaning, processing, combining and analyzing birth outcomes for both mother and child for more than 30 hospitals. Analysis focused on birth weight, c-sections, and outcomes.

## Putnam, Hayes & Bartlett (Cambridge, MA)

### System Operator / Research Analyst (1984 – 1986)

Operated Hewlett Packard and Data General mini-computers. Data analysis including spreadsheet and Fortran and COBOL programming.

## Education

### University of Rhode Island (Kingston, MA)

M.S., Resource Economics, University of Rhode Island (1992). Thesis, *Contingent Valuation and the Bounded Rationality Perspective* winner of award of merit at AAAE and NAREA conferences.)

### Northwestern University (Evanston, Ill)

B.A., Mathematical Methods in the Social Sciences/Political Science,

Additionally, master's level continuing education classes in wind power, finance, statistics, and management.

## Other

Board Member of the Northeast Energy Commerce Association. 2005-2009 ([www.necanews.org](http://www.necanews.org)), leader in fashioning and planning very successful annual renewable energy conferences. Session moderator in 2007 & 2009. Member 2004-Present.

Member of Acton's Green Advisory Board. Supported Acton's efforts to become a Green Community through research, grant writing and education.

President – Friends of the Bruce Freeman Rail Trail 2006-Present, Secretary 2004-2006 ([www.brucefreemanrailtrail.org](http://www.brucefreemanrailtrail.org)). Instrumental in growing and maintaining the non-profit, all volunteer organization into one of (if not) the largest and most potent Massachusetts rail trail advocacy groups, with over 400 dues paying members.

Numerous additional volunteer activities, including Open Door Theater, Friends of the Acton Libraries, HGRM, Acton Citizens for Environmental Safety, and local and statewide political campaigns.

# Sustainable Energy Advantage, LLC



## JASON S. GIFFORD

### Sustainable Energy Advantage, LLC

**Sustainable Energy Advantage, LLC** (Framingham, MA)

(2006 – Present)

**Director (2014); Senior Consultant (2010 –13); Consultant (2008 –10); Project Manager (2006 –08)**

Advise public and private sector clients on renewable energy policy, strategy, and finance matters.

- Develop and enhance project-specific financial models for renewable energy project developers. Analyses range from small, community-sponsored installations to multi-project portfolios.
- Assist project developers and investors in understanding and participating in renewable energy markets; Identify and assess acquisition opportunities for domestic and international investors.
- Conduct renewable energy market fundamentals analysis for a broad range of market participants. Maintain database of over 1,000 planned or operating renewable energy projects throughout New England.
- Develop client-specific strategies to use renewable energy as a long-term hedge against electricity price volatility.
- For the National Renewable Energy Laboratory, developed a detailed report and a series of financial modeling tools to support the analysis and design of cost-based incentives in the United States.
- Inform state public utility commissions, energy offices, attorneys' general, and clean energy funds on the design and implementation of renewable energy policies.

**Massachusetts Renewable Energy Trust** (Westborough, MA)

(2004 – 2006)

**Manager, Industry Investment & Development**

- Managed program to promote and finance community scale wind power projects.
- Performed financial modeling, analysis and due diligence for innovative renewable energy incentive programs and direct investments in renewable energy companies.
- Served as a new program development incubator, by aligning the needs of industry entrepreneurs with the interests of the Trust.

**Green Mountain Energy Company** (Burlington, VT)

(1998 – 2002)

**Manager, Regulatory Affairs & New Market Development**

- Led Company due diligence, bidding, and negotiation efforts to acquire new business in New England, the mid-Atlantic and Ohio.
- Co-negotiated \$400M contract to serve nation's largest electricity-buying aggregation. Resulted in 400% increase in Company's total number of customers, exceeding shareholder targets and enabling subsequent rounds of corporate financing.
- Established strategic relationships with key stakeholders to promote Company presence and influence, and managed relationships with competitors.
- Negotiated new rules for electricity deregulation in Pennsylvania, New Jersey, and Maryland.

### **Education**

**F.W. Olin Graduate School of Business** (Wellesley, MA)

Master of Business Administration, Finance & Entrepreneurship (2004), Cum Laude

**Bates College** (Lewiston, ME)

Bachelor of Arts, Political Science (1997)

# Sustainable Energy Advantage, LLC



**PO-YU YUEN**

## **EDUCATION**

M.S. Urban and Regional Policy, May 2013

Northeastern University, Boston, MA

B.S. Environmental Science (Policy and Pre-Law Concentration), December 2010

Wentworth Institute of Technology, Boston, MA

## **PROFESSIONAL EXPERIENCE**

### **2013 – Present**

#### **Sustainable Energy Advantage, L.L.C.**

##### **Analyst**

- Conduct interdisciplinary market research and analysis regarding the renewable energy development activities, markets, policies and programs in a wide range of states, but focusing on solar energy in the northeastern U.S.
- Perform quantitative and qualitative analysis of state- and regional-level energy policies and provide policy development and implementation support to public sector clients.
- Monitor renewable energy policies, legislative and regulatory activities and programs in the northeastern U.S. and provide high-level policy analysis support to SEA's private sector and public sector clients.
- Perform quantitative analyses on a wide range of renewable energy-related policy incentives, programs and business activities; including supply and demand within New England's REC markets at present and using future projections.
- Provide support in the development and uses of detailed spreadsheet models for renewable energy market and policy analysis.
- Support business development at conferencing and networking events.
- Manage and update SEA's website and SEA's subscription-based resource center.

### **2012-2013**

#### **Metropolitan Area Planning Council (MAPC)**

##### **Energy Intern**

- Conducted ongoing research and interview with public, private, and non-profit clean energy stakeholders to develop a Clean Energy Strategy Toolkit that provides guidance for communities on planning and implementing innovative energy consumption reduction and greenhouse gas emission reduction actions.
- Provided technical consulting services to municipal governments and community advisory boards in strategic energy planning, as well as the development and implementation of energy efficiency and alternative energy projects.
- Conducted policy research and analysis on renewable energy programs, financing incentives, and policies in the New England region with a focus on the Massachusetts market.
- Developed and provide guidance in the implementation of Local Energy Action Plans to help municipal governments adopt cost-effective strategies, policies, and technologies that reduce energy consumption and greenhouse gas emission in the municipal, residential, and commercial sectors.
- Assisted municipalities in managing energy data, developing energy baselines, establishing energy reduction goals, benchmarking energy savings, and generating monthly energy reports.

### **2009 and 2010**

#### **Wentworth Institute of Technology**

##### **Chemistry Research Student**

- Designed and implemented an on-campus biodiesel generation project to increase awareness on renewable energy and to promote waste conservation on campus.
- Constructed a ten gallon biodiesel generation system that utilized used vegetable oil from the campus cafeteria.

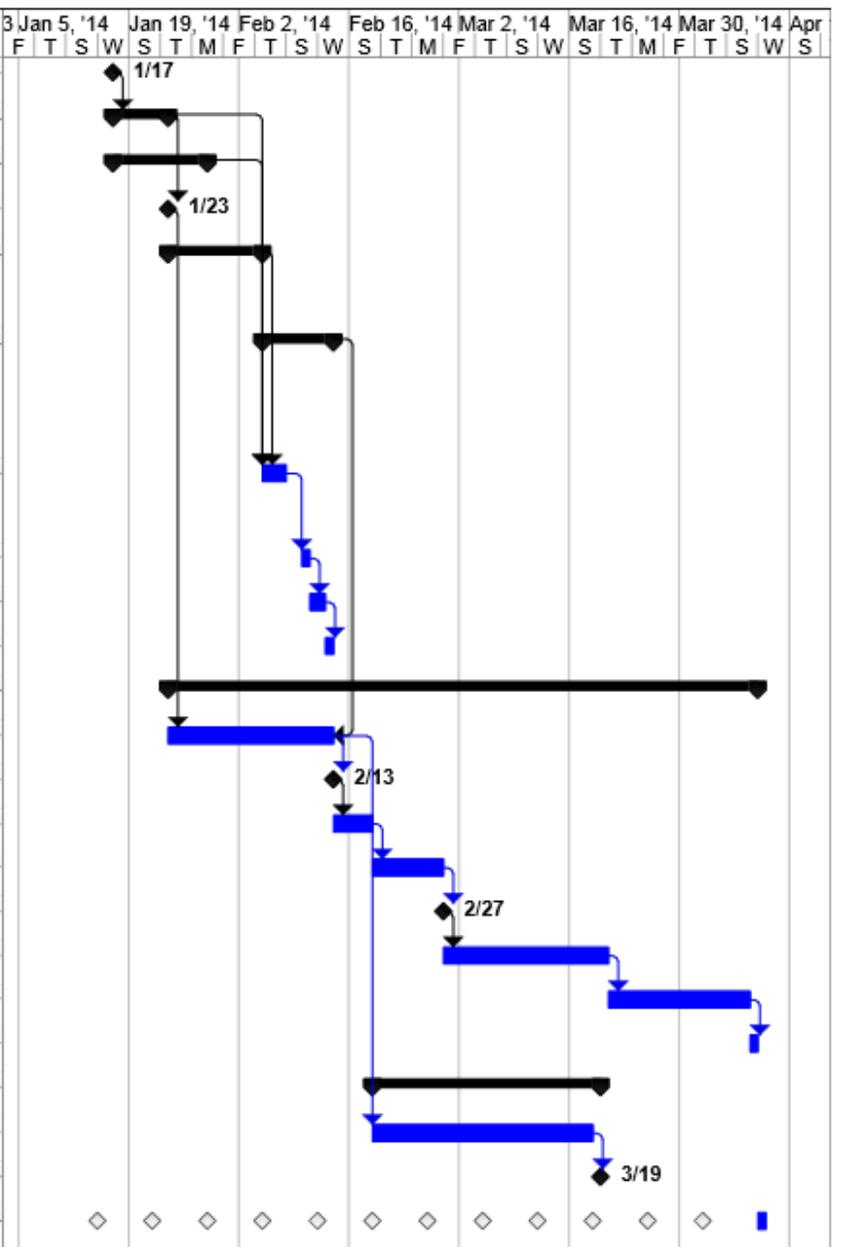
**APPENDIX B:  
POTENTIAL RESOURCES FOR ADDITIONAL  
LITERATURE REVIEW**

- Baratoff, M. C., Black, I., Burgess, B., Felt, J. E., Garratt, M., & Guenther, C. (2007). Renewable power, policy, and the cost of capital: Improving capital market efficiency to support renewable power generation projects. Ann Arbor, MI: University of Michigan, Erb Institute for Global Sustainable Enterprise. Prepared for UNEP/BASE Sustainable Energy Finance Initiative.
- Bergek, A., & Jacobsson, S. (2010). Are tradable green certificates a cost-efficient policy driving technical change or a rent-generating machine? Lessons from Sweden 2003-2008. *Energy Policy*, 38(3), 1255-1271.
- Bird, L., Heeter, J., & Kreycik, C. (2011). Solar renewable energy certificate (SREC) markets: Status and trends. Golden, CO: National Renewable Energy Laboratory.
- Butler, L., & Neuhoff, K. (2008). Comparison of feed-in tariff, quota and auction mechanisms to support wind power development. *Renewable Energy*, 33(8), 1854-1867.
- DB Climate Change Advisors. (2009). Paying for renewable energy: TLC at the right price - Achieving scale through efficient policy design. New York, NY: The Deutsche Bank Group.
- Farrell, J. (2011). CLEAN v SRECs: Finding the more cost-effective solar policy. Minneapolis, MN: Institute for Local Self-Reliance.
- Flynn, H., Breger, D., Belden, A., Bier, A., Laurent, C., Howlett, N., & Rickerson, W. (2010). System dynamics modeling of the Massachusetts SREC market. *Sustainability*, 2, 2746-2761.
- Ford, A., Vogstad, K., & Flynn, H. (2007). Simulating price patterns for tradable green certificates to promote electricity generation from wind. *Energy Policy*, 35(1), 91-111.
- Kildegaard, A. (2008). Green certificate markets, the risk of over-investment, and the role of long-term contracts. *Energy Policy*, 26(9), 3413-3421.
- Rickerson, W., & Grace, R. C. (2007). The debate over fixed price incentives for renewable electricity in Europe and the United States: Fallout and future directions. Washington, DC: Heinrich Böll Foundation North America.
- Shrimali, G., Triumalachetty, S., & Nelson, D. (2012). Falling short: An evaluation of the Indian renewable certificate market. Hyderabad, India: Climate Policy Initiative.
- Sovacool, B. (2011). The policy challenges of tradable credits: A critical review of eight markets. *Energy Policy*, 39(2), 575-585.
- Summit Blue Consulting, & Rocky Mountain Institute. (2008). Assessment of the New Jersey renewable energy market. Trenton, NJ: New Jersey Board of Public Utilities, Office of Clean Energy.
- Verbruggen, A. (2009). Performance evaluation of renewable energy support policies, applied on Flanders' tradable certificates system. *Energy Policy*, 37(4), 1385-1394.

Wiser, R., Barbose, G., & Holt, E. (2010). Supporting solar power in renewables portfolio standards: Experience from the United States. Berkeley, CA: Lawrence Berkeley National Laboratory.

APPENDIX C:  
DRAFT PROJECT SCHEDULE

ID	Task Name	Duration	Start	Finish	3 Jan 5, '14	Jan 19, '14	Feb 2, '14	Feb 16, '14	Mar 2, '14	Mar 16, '14	Mar 30, '14	Apr
					F T S W	S T M F T S W	S T M F T S W	S T M F T S W	S T M F T S W	S T M F T S W	S	
1	Commence Work	0 days	Fri 1/17/14	Fri 1/17/14		1/17						
2	Review public record compiled by Board Staff	5 days	Fri 1/17/14	Thu 1/23/14								
6	Review CEEEP Lit Rev Documents	8 days	Fri 1/17/14	Tue 1/28/14								
9	Kickoff Meeting w/ Client (Telecon)	0 days	Thu 1/23/14	Thu 1/23/14		1/23						
10	Augment and supplement CEEEP's literature review (provided as part of this RFP)	8 days	Thu 1/23/14	Tue 2/4/14								
14	Develop Short- and Long-Term recommendations regarding approaches to mitigate solar development volatility in New Jersey	7 days	Wed 2/5/14	Thu 2/13/14								
15	Prelim. Draft Recommendations/Programatic & Policy Analysis	3 days	Wed 2/5/14	Fri 2/7/14								
16	Brainstorm Session #1 re: recommendations	1 day	Mon 2/10/14	Mon 2/10/14								
17	Draft & internal review of prelim recommendations	2 days	Tue 2/11/14	Wed 2/12/14								
18	Brainstorm Session #2 re: recommendations	1 day	Thu 2/13/14	Thu 2/13/14								
19	Report drafting	53 days	Fri 1/24/14	Tue 4/8/14								
20	Develop content outline, Including recommendations	15 days	Fri 1/24/14	Thu 2/13/14								
21	Content outline to Client	0 days	Thu 2/13/14	Thu 2/13/14								
22	Client review of content outline	3 days	Fri 2/14/14	Tue 2/18/14								
23	Development of draft report	7 days	Wed 2/19/14	Thu 2/27/14								
24	Sumit draft report to BPU	0 days	Thu 2/27/14	Thu 2/27/14								
25	BPU review of report	15 days	Fri 2/28/14	Thu 3/20/14								
26	Develop second draft	12 days	Fri 3/21/14	Mon 4/7/14								
27	Submit final report to the BPU	1 day	Tue 4/8/14	Tue 4/8/14								
28	Public Forum	21 days	Wed 2/19/14	Wed 3/19/14								
29	Develop presentation for public forum	20 days	Wed 2/19/14	Tue 3/18/14								
30	Present at Public Forum	0 days	Wed 3/19/14	Wed 3/19/14							3/19	
31	Weekly calls	61 days	Wed 1/15/14	Wed 4/9/14								



**APPENDIX D:  
REQUIRED FORMS**

**EXHIBIT A**

**BIDDER'S DECLARATION**

This proposal is in response to Rutgers Request for a Proposals ("RFP 2482") for **Subcontractor to Investigate Approaches to Mitigate Solar Development Volatility**

Bidder agrees to perform in accordance with all provisions of the RFP documents and any addenda thereto, except as may be specifically stated in this proposal, at the prices set forth in their proposal.

Signature of the bidder attests that the bidder has read, understands, and agrees to all terms, conditions, and specifications set forth in this Request for Proposal unless otherwise stated in writing and submitted with the proposal and that Rutgers shall not be responsible for any errors or omissions on the part of the undersigned in preparing this proposal.

 Authorized Signatory	CEO Title
MEISTER CONSULTANTS GROUP Company Name	1/7/14 Date
98 N. WASHINGTON ST, SUITE 302, BOSTON MA 02114 Company Address	
617-245-0272 Telephone Number	36-4636331 Federal Taxpayer I.D. Number
WILSON.DICKENS@MC-GROUP.COM Email Address	 DUNS Number

**Exhibit D**

**DECLARATION OF OWNERSHIP FORM**

**BIDDER'S NAME:** MEISTER CONSULTANTS GROUP, INC.

**INSTRUCTIONS:** This form must be completed in its entirety, signed by an authorized representative of the Bidder and submitted to Rutgers with the supplier's bid package. If Bidder has completed this form for previous RFP's with Rutgers, please update any necessary information in Section I or indicate "no change" and the RFP number you submitted the original form with, and complete sections II and III of this form. If there are any questions regarding the form, please contact the Buyer listed in the RFP package.

**I. OWNERSHIP DISCLOSURE**

1. Are there any individuals, corporations, or partnerships owning a 10% or greater interest in the firm? (If no, proceed to Section II; if yes please go to Question 2)

Yes     No

2. Please provide the names and addresses of all individuals, corporations or partnerships owning a 10% or more interest in the firm. Attach additional pages if necessary.

NAME            ADDRESSES

<u>IFOK GmbH</u>	<u>BERLINER Ring 89, D-64625 Bensheim, GERMANY</u>
_____	_____
_____	_____
_____	_____

**II. REPRESENTATIONS**

1. Has any person listed in this form or its attachments ever been arrested, charged, indicted, pled guilty or been convicted in a criminal or disorderly persons matter by the State of New Jersey, any other Political subdivision state or the U.S. Government? (If yes, attach a detailed explanation for each instance.)

Yes     No

2. Has any person or entity listed in this form or its attachments ever been excluded suspended, debarred or otherwise declared ineligible by any agency of government from bidding or contracting to provide services, labor, material or supplies? (If yes, attach a detailed explanation for each instance.)

Yes     No

3. Are there now any criminal matters, suspension or debarment proceedings pending in which the firm and/or its officers and/or managers are involved? (If yes, attach a detailed explanation for each instance.)

Yes  No

4. Has any federal, state or local license, permit or other similar authorization, necessary to perform the work applied for herein and held or applied for by any person or entity listed in this form, been suspended or revoked, or been the subject of any pending proceedings specifically seeking or litigating the issue of suspension or revocation? (If yes to any part of this question, attach a detailed explanation for each instance.)

Yes  No

### III. CERTIFICATION

I, being duly sworn upon my oath, hereby represent and state that the foregoing information and any attachments thereto to the best of my knowledge are true and complete. I acknowledge that Rutgers is relying on the information contained herein and thereby acknowledge that I am under a continuing obligation from the date of this certification through the completion of any contracts with Rutgers to notify Rutgers in writing or any changes to the answers or information contained herein. I acknowledge that I am aware that it is a criminal offense to make a false statement or misrepresentation, and if I do so, I recognize that I am subject to criminal prosecution under the law and that it will also constitute a material breach of my agreement(s) with Rutgers and that Rutgers at its option, may declare any contract(s) resulting from this certification void and unenforceable.

I, being duly authorized, certify that the information supplied above, including all attached pages, is complete and correct to the best of my knowledge. I certify that all of the foregoing statements made by me are true. I am aware that if any of the foregoing statements made by me are willfully false, I am subject to punishment.

SIGNATURE: \_\_\_\_\_

PRINTED NAME: \_\_\_\_\_

TITLE: \_\_\_\_\_

DATE: \_\_\_\_\_