California Solar Initiative

RD&D: Research, Development, Demonstration and Deployment Program

GO solar CALIFORNIA

Final Project Report:

Sustainable Energy & Economic Development Fund (SEED Fund™)

Grantee:

Strategic Energy Innovations

July 30, 2015

www.CalSolarResearch.ca.gov

PREPARED BY

Strategic Energy Innovations

899 Northgate Dr. #410
San Rafael, CA 94903
415-507-1433

Principal Investigator:
Stephen Miller
stephen @ seiinc.org

Project Partners:
Optony, Inc.

PREPARED FOR

California Public Utilities Commission
California Solar Initiative: Research, Development, Demonstration, and Deployment Program

CSI RD&D PROGRAM MANAGER

Program Manager:
Smita Gupta
Smita.Gupta@itron.com

Project Manager:
Smita Gupta
Smita.Gupta@itron.com

Additional information and links to project related documents can be found at
http://www.calsolarresearch.ca.gov/Funded-Projects/

Preface

The goal of the California Solar Initiative (CSI) Research, Development, Demonstration, and Deployment (RD&D) Program is to foster a sustainable and self-supporting customer-sited solar market. To achieve this, the California Legislature authorized the California Public Utilities Commission (CPUC) to allocate **$50 million** of the CSI budget to an RD&D program. Strategically, the RD&D program seeks to leverage cost-sharing funds from other state, federal and private research entities, and targets activities across these four stages:

- Grid integration, storage, and metering: 50-65%
- Production technologies: 10-25%
- Business development and deployment: 10-20%
- Integration of energy efficiency, demand response, and storage with photovoltaics (PV)

There are seven key principles that guide the CSI RD&D Program:

1. **Improve the economics of solar technologies** by reducing technology costs and increasing system performance;
2. **Focus on issues that directly benefit California**, and that may not be funded by others;
3. **Fill knowledge gaps** to enable successful, wide-scale deployment of solar distributed generation technologies;
4. **Overcome significant barriers** to technology adoption;
5. **Take advantage of California's wealth of data** from past, current, and future installations to fulfill the above;
6. **Provide bridge funding** to help promising solar technologies transition from a pre-commercial state to full commercial viability; and
7. **Support efforts to address the integration of distributed solar power into the grid** in order to maximize its value to California ratepayers.

For more information about the CSI RD&D Program, please visit the program web site at www.calsolarresearch.ca.gov.

Table of Content

1 Abstract

The Sustainable Energy and Economic Development Fund (SEED Fund) is a durable financing mechanism based on a collaborative procurement business model to support regional sustainability projects. The program was designed to enable potential public participants like municipalities and schools to overcome existing barriers to collaborative procurement efforts, such as high upfront costs, high administrative effort and information gaps. Utilizing a California Solar Initiative (CSI) Research, Development, Demonstration, and Deployment (RD&D) grant, the SEED Fund Team had the goal to create a first round collaboration pool of up to 15 public partners with up to 100 potential sites, that would lead to at least 5MW of solar contracted in Marin, Napa and Sonoma Counties. The SEED Fund Team, comprised of Strategic Energy Innovations (SEI) and Optony, Inc., provides overall financial, technical and educational expertise at solar project procurement to reach this goal.

Collaborative Procurement, in which several public agencies work together to seek and deploy similar projects, has many demonstrated benefits. However, there remain upfront costs for site feasibility assessments and procurement development and management, which can be a barrier to participation for many public entities. The SEED Fund initiative sought to greatly extend the market potential of the collaborative procurement model by launching a revolving fund mechanism that defers upfront costs for public partners and provides expert technical support through the process of analyzing and contracting solar projects. The revolving fund was designed to be a sustainable financing mechanism, enabling the SEED Fund to conduct iterative rounds of collaborative procurement in new geographical territories once the revolving fund had been replenished by the preceding round. This mechanism, then, greatly expands the scope of the initial investment by CSI and the deployment of distributed solar in California.

The success of this program has demonstrated that an upfront investment in collaboration, equal to 1-2% of total estimated project costs, results in better

pricing (an estimated 8-10% total project cost savings), lower project risks with higher returns, reduced transaction costs and reduced administrative effort (resulting in an estimated 50-70% admin cost savings for participants).

2 Executive Summary

2.1 Purpose

The Sustainable Energy and Economic Development Fund (SEED Fund) is designed to create a durable financing mechanism for regional sustainability projects that creates new economic activity while improving the regional environment. The focus is on supporting renewable energy and energy efficiency deployment for municipalities, schools and public agencies to help reduce costs while demonstrating leadership in clean energy. The SEED Fund also provides resources and training for stakeholders to build understanding and internal capabilities and to support interaction across the communities.

A primary goal of the SEED Fund was to create a first round collaboration pool of up to 15 public partners with up to 100 potential sites that would lead to at least 5MW of solar contracted in Marin, Napa and Sonoma Counties. With this outcome, the SEED Fund team would demonstrate a highly valuable business model in which private investors can yield significant returns while simultaneously allowing public partners to benefit from a 6:1 cost benefit ratio (1-2% upfront costs yielding 10-12% project costs savings). Based on the amount of savings, the participants of the SEED Fund Program were able to pay a modest reimbursement fee (1.9% of project costs) to replenish the SEED Fund. Additionally, the procurement documents were structured to require the selected solar installer to pay for this reimbursement for any financed solar option—leading to procurement with no money out-of-pocket for participants who are financing their solar installations. This reimbursement activity allows for the launch of subsequent rounds of collaborative procurement of solar in other regions, which will be a great long-term benefit for California. As of August 31, 2014, the SEED Fund reimbursement has been paid by the first SEED Fund participant to enter into a solar contract, with up to eleven additional public agencies seeking to sign contracts by September 30, 2014. On June 9, 2014, the Sonoma County Employees' Retirement Association signed a contract with the selected vendor for a Power Purchase Agreement, and per Memorandum of

Understanding, paid the SEED Fund LLC 1.9% of the installed cost ($5,411). With this replenishment of the revolving fund, the team is actively launching Round 2 of the SEED Fund in the California Central Valley.

2.2 Background

Public entities (municipalities, special districts, and schools) are increasingly motivated to adopt photovoltaic (PV) technologies as part of their overall economic, clean energy and environmental strategies. However, high upfront costs and lack of technical capacity prohibit many public entities from identifying potential projects and fully assessing their options. Additionally, project costs, while coming down, remain high for individual entities pursuing PV. Collaborative procurement is emerging as a powerful means to tackle the costs and technical barriers to public PV investments[1].

Collaborative procurement enables public entities to accelerate public implementations of sustainable energy projects. This approach creates economies of scale and synergy effects by consolidating fragmented efforts to pursue viable options. This collaboration also leads to a significant reduction of transaction costs and administrative effort. Collaborative procurement also shortens the learning curve on new technologies and financing options because of the extended shared participants' pool of experience. Ultimately, this yields lower project risks with higher returns for all participants, greater market interest and better pricing due to the economies of scale.

But, even with all the benefits of the collaborative procurement approach, there are still barriers for public agencies to participate. For an effective solar procurement, project feasibility assessments are needed for all included sites. Additionally, few public agencies have access to market-leading procurement documents that are specific to solar and cover all the intricacies necessary for a

[1] http://www.wri.org/publication/purchasing-power

successful and competitive bid process. And then, after a preferred vendor has been evaluated and chosen, the contracting process, particularly for financed installation options, can be daunting. There are also existing knowledge gaps in terms of the technical and financial aspects of implementing solar power systems. And finally the coordination and communication of collaborative projects are a challenge without a superior project management service provider. In most collaborative PV procurements, public agencies need to pay for all of these services out-of-pocket, which is not possible for some cash-strapped potential participants.

Being aware of all these potential hurdles drove the SEED Fund Team to research and develop an innovative collaborative procurement mechanism that empowers public participants to overcome these barriers and enter into a collaboration to adopt solar power. The developed revolving fund mechanism, using initial investment from the CSI program, is the result and provides the perfect answer to these challenges.

Because the upfront costs of entering into a collaborative solar procurement are still prohibitive for many public entities, the SEED Fund initiative sought to greatly extend the market potential of the collaborative procurement model by providing expert technical support with deferred costs for public partners. In the process, the SEED Fund sought to attract private investment to support this model in an ongoing manner, with the possibility of further expanding the impact of the initial investment by CSI.

The core of the SEED Fund is the revolving fund business model for project technical services and collaboration support. As a stand-alone fiscal entity, the SEED Fund is independent of the SEED Fund Team's component companies. This project allows SEED Fund to utilize the initial $ 300,000 CSI grant, additional $70,000 in private support and $155,537 in-kind match to establish the model and demonstrate its viability, thereby providing private markets and other public partners the evidence they need to utilize the model on a broader scale. The SEED Fund covers upfront costs that would otherwise prevent public

partners from effectively identifying, evaluating, and procuring distributed solar photovoltaic systems for their operations. Participants thus achieve economies of scale and rapidly overcome the gaps in knowledge that are common in the quickly evolving solar industry.

2.3 Outcomes

As of August 31, 2014, the first round of the SEED Fund is nearing completion. With $300,000 in initial CSI grant funding, matched by $70,000 in private funding and supported by $155,537 of in-kind match, the SEED Fund team has achieved the following outcomes: engaged 37 Marin, Napa and Sonoma County public agencies in the collaborative procurement process, including 143 high-level site assessments and 41 full feasibility studies. The site-screening process identified potential for over 130 MW of solar power installation, including several sites with the potential for utility-scale PV installations. The team issued a joint Request For Proposals (RFP), involving 32 sites across 13 public agencies with a combined 6.8 MW estimated potential capacity for solar generation. As of August 31, 2014, 25 sites amongst 12 public agencies have entered, or are planning to enter into purchase or PPA contracts with the selected vendor.

As of the writing of this “report-to-date”, the revolving fund is actively being replenished through the modest reimbursement fee (1.9%) for projects that move forward. As the fund is replenished, the SEED Fund team is currently launching Round 2 of the program, amongst public entities in the California Central Valley.

This project has demonstrated that an upfront investment in collaboration results in increased participation by potential participants, better pricing from vendors, lower project risks with higher returns, reduced transaction costs and reduced administrative effort, and increased participant understanding of the solar

industry, solar technical and financial details, and their own solar potential. The following information provides evidence for these claims:

- There were 36 agencies that expressed interest in possibly moving forward with solar installations on their facilities through the group procurement, and only approximately 25% of these agencies had completed solar installations previously.
- The SEED Team's analyses of 35 public agency PPA projects signed in 2011-2013, showed that an average Levelized Cost of Energy (LCOE) over 20 years was $0.2422/kWh, compared to an average weighted LCOE for the SEED Fund projects of $0.2079/kWh over 20 years. Year 1 pricing for SEED Fund projects was only slightly better than the studied projects ($0.1797/kWh SEED vs. $0.1803/kWh for samples), but it should be noted that the other project pricing regularly included CSI incentives, whereas the SEED Fund pricing does not. SEED Fund's LCOE was significantly lower because of a novel 10% de-escalator applied to PPA pricing after Year 15.
- Project risks were reduced by the competitive bid process with three qualified vendors, as well as a review of both proposals and contracts by solar consultants, experienced agency staff, and both outside and internal legal counsel.
- Transactional costs were reduced due the RFP documents being developed by solar consultants. Additionally, only two of thirteen agencies felt the need to participate in refining the documents. All agencies participated in the site walks, but only four of thirteen participated in the review of proposals, as the staff members at those four agencies were trusted to represent the best interests of the participant group. The City of San Rafael provided internal and external legal review and contract negotiations, so other participants were able to receive PPA contracts that were 90-95% complete, needing only minor agency-specific edits before authorization by Boards and Councils.

- While there is no precise way to demonstrate the increased technical understanding (increased participant understanding of the solar industry, solar technical and financial details, and their own solar potential), we can point to the fact that twelve of fourteen participating agencies felt comfortable enough with the economics to present the projects to, and gain approval from, their respective Boards and Councils. Additionally, the two agencies that did not move forward made that choice because of their good understanding of the poor economics or logistical considerations of their specific projects.

Additionally, with the initiation of additional rounds of procurement with the replenishment of the revolving fund, the initial public investment is poised to create long-term PV market growth in California.

SEED Fund Outcomes	
Indicator	Outcome
RFP	
Participating Agencies	14
Assessed Sites	143
Sites included in RFP	32
Size of Potential Solar Power included in RFP	6.8 MW
Revised Proposal of preferred Vendor (Sunetric)	
System Size	3,905.4 kW-DC
Year 1 expected output	5,775,620 kWh Yield 1,479 kWh/kW-DC
Purchase Price w/ 5% Bundle Discount	$ 13,448,266
Discounted Price	$ 3.44 /W-DC (estimated: $ 4 /W-DC)
Agency Actions and SEED Fund Reimbursement	
Financing types	Purchase, PPA, Pre-paid (40%) PPA
System Size	In progress: 4.32MW-DC
Year 1 expected output	6,378,704 kWh Yield 1,477 kWh/kW-DC
Purchase price w/ 5% Bundle Discount	$ 13,932,966
Discounted Price	$ 3.23 /W-DC (estimated: $ 4 /W-DC)
Estimated SEED Fund Reimbursement	$ 200,776

3 Introduction

The benefits of Solar photovoltaics (PV) are clear. It is a commercially proven technology, which is market-ready and, when subsidized, can out-compete traditional fossil fuel-based power. As the solar industry has grown and matured, the installed costs per Watt of solar power have been driven down, thereby making solar energy more accessible to a mainstream market.[2] While there is great potential for much more significant reductions in the installed cost of solar, several barriers remain to bringing solar PV to scale.

- **Transaction costs can be high.** With a highly fragmented national solar industry that lacks standardization, there is a huge variety in installation process procedures and negotiated contracts among solar market participants. It can therefore be costly for public entities to negotiate fair contracts and allocate internal staff resources for each potential site.
- **Learning takes time and effort.** For public entities, knowledge of the solar market, financing, and technology is not easily acquired and, consequently, it takes a lot of time to build internal consensus for moving forward.
- **Demand is fragmented with many individual sites being developed opportunistically.** Designing, permitting, contracting, and installing systems for one facility at a time, as is common today, is inefficient.
- **Solar procurements work differently than most other public works projects.** The financing and contracting mechanisms available for solar projects are not familiar to public agencies, necessitating outside help for evaluating sites, vendors, proposals, and contracts.

These barriers help explain the slow progress of solar PV adoption amongst public entities. To overcome these barriers, collaborative purchasing can help support solar market growth by enabling economies of scale and bridging

[2] World Resources Institute's publication "Purchasing Power" by Jenna Goodward, Alex Perera and Chris Lau and others published in April 2011

information gaps that prevent efficiency. By forming groups of interested agencies (and their potential installation sites), collaborative procurement can reduce transaction costs and can help educate potential buyers.

The SEED Fund team launched a California Bay Area solar collaborative procurement effort in an area where this approach had not yet been attempted. To go beyond the proven benefits of collaborative procurement and further reduce overall upfront, transaction and administrative costs, the SEED Fund Team sought to share its technological and financial expertise with public agencies that were interested in solar, but who may have avoided participation in a collaboration if upfront cost requirements were included. While the collaborative approach has proven to be a successful model for enabling more widespread adoption of solar power amongst public entities,[3] there are still remaining hurdles that prevent more wide scale participation in such collaborative efforts. The SEED Fund team thus developed a durable revolving fund mechanism with an initial grant from the CSI RD&D program to overcome the remaining barriers. The SEED Fund has enabled public participants to adopt solar power in a very efficient way and with a successful project outcome. With a modest reimbursement fee, the SEED fund is replenished and thus a durable financing model is established as a model and source for funding subsequent rounds.

[3] http://www.solarroadmap.com/regional-initiatives/sv-rep/

4 Project Summary

4.1 Overview

The Solar Energy & Economic Development Fund (SEED Fund) initiative demonstrates an innovative solar collaborative procurement business model that utilizes a public-private revolving fund to create a durable mechanism for enabling public participants to overcome adoption barriers with technical support that delivers significant reductions to overall project, transaction and administration costs.

4.2 Background

A partnership was formed between Strategic Energy Innovations (SEI) and Optony, Inc to develop an innovative strategy to reduce the challenges that many public entities face when procuring renewable energy. Together, they developed a model that maximizes the demonstrated benefits of the collaborative procurement approach while also utilizing a revolving fund as a leveraging mechanism to increase participation and establish a durable financial model.

4.2.1 Addressing Barriers to Solar Procurement: The Collaborative Approach

Collaborative procurement is emerging as a powerful means to tackle the costs and technical barriers to public PV investments.[4] Public entities (including counties, municipalities, special districts, and school districts) are increasingly motivated to adopt solar photovoltaic (PV) technologies as part of their overall economic, clean energy and environmental strategies. However, high upfront costs and lack of technical capacity prohibit many public entities from identifying

[4] http://www.wri.org/publication/purchasing-power

potential projects and fully assessing their options. Additionally, project costs, while coming down, remain high for individual entities pursuing PV.

Collaborative procurement enables public entities to accelerate public implementations of sustainable energy projects. This approach creates economies of scale and synergy effects by consolidating fragmented efforts to pursue viable options. This is conterminous to a significant reduction of transaction costs and administrative effort. Collaborative procurement also shortens the learning curve on new technologies and financing options because there is a shared pool of experience amongst participants. Ultimately, this yields lower project risks with higher returns for all participants, greater market interest and better pricing due to the economies of scale.

The SEED Fund Team was able to draw upon its own experience with solar collaborative procurement to design and execute a California Northern Bay Area project. Optony has successfully lead collaborative procurement programs for public entities throughout the Bay Area through their two existing projects: SV-REP (including 11MW of installed power) and R-REP (including 187 potential sites and 31 MW of potential energy).[5] The great success of these two projects was an inspiration for the SEED Fund and a great motivation to pursue and develop this approach as a high performance procurement model.

[5] http://www.solarroadmap.com/regional-initiatives/ba-rrep/

Figure 1: Solar PV installation at a facility owned by the County of Santa Clara, through participation in the SV-REP project

4.2.2 Overcoming Remaining Barriers

While the collaborative approach has shown tremendous success in enabling more widespread adoption of solar power amongst public entities,[6] the SEED Fund team saw room to improve the model and further reduce barriers to solar power adoption. While the collaborative approach reduces transaction costs, achieves economies of scale, and bridges information gaps, the upfront costs associated with investigating sites' solar potential remain high and a significant hurdle for many public agencies.

4.3 SEED Fund Approach

The SEED Fund team developed an innovative strategy to increase the accessibility of the collaborative procurement model by eliminating the upfront costs. The team developed a durable revolving fund mechanism with an initial grant from CSI RD&D to seed the revolving fund. The SEED Fund has enabled

[6] http://www.solarroadmap.com/regional-initiatives/sv-rep/

public participants to adopt solar power in a very efficient way and with a successful project outcome. The SEED Fund is replenished with a modest reimbursement fee from participants of the program, and through the replenishment mechanism, a durable financing model is established that is available for funding iterative rounds of collaborative efforts in new territories.

4.3.1 Revolving Fund Mechanism

The core of the SEED Fund is the revolving fund business model for project technical services and collaboration support. The SEED Fund supports upfront costs that would otherwise prevent public partners from effectively identifying, evaluating, and procuring distributed solar photovoltaic systems for their operations. Participants thus achieved economies of scale and rapidly overcame the gaps in knowledge that are common in the quickly evolving solar industry. The revolving fund is replenished through a modest reimbursement fee (1.9%) for projects that move forward based on an expected 10-12% aggregated cost reduction. As the fund is replenished, additional rounds of collaborative procurement are initiated, and this modest initial public investment will enable long-term PV market growth in California.

As a stand-alone fiscal entity the SEED Fund LLC was established with the CSI RD&D grant of $300,000, and an additional $ 70,000 in private investment. Proving the viability of the model, the revolving fund mechanism can demonstrate to private markets and other public partners the evidence they need to utilize the model at a broader scale.

4.3.2 Lead Agency

Deploying a lead agency from the ranks of high-potential participants in the collaborative effort is a key factor of the SEED Fund's success. The lead agency plays the crucial role of leading administrative efforts across all participating agencies. The Lead Agency, for instance, creates and designs the memorandum of understanding (MOU) that is used to engage additional participating agencies. The lead agency also takes the lead in designing the Request for Proposals

(RFP), then leads a selection committee made up of participants to choose the winning proposal. Once the selected vendor is chosen, the Lead Agency initiates contracting negotiations, thereby providing documents from which other participating agencies can work. In this role, the Lead Agency greatly reduces the administrative effort of other SEED Fund participants, thereby helping them to achieve even greater cost savings.

To play this role effectively, the lead agency should be a strong partner who really wants to move forward with adopting solar power and/or who already has experience in this sector. It is advantageous if the Lead Agency is selected very early on in the engagement process with participants so that they can support in the outreach efforts.

The public agency that takes on the role of Lead Agency has the opportunity to be the face of the procurement effort. By leading the engagement, RFP, and press efforts, the entity demonstrates leadership locally, regionally and nationally, and builds a reputation as a leader in sustainability and clean energy policies.

4.3.3 SEED Fund Team

In partnership, Strategic Energy Innovations and Optony Inc. designed and formed the SEED Fund's model, provided technical and logistical support to participants, managed the procurement process and vendor evaluations, and oversaw fund activities to maximize regional impact.

4.3.3.1 Strategic Energy Innovations

Strategic Energy Innovations (SEI), is a nonprofit organization committed to serving as a community's bridge to sustainability. SEI offers a broad spectrum of consulting services to assist local governments as they design and implement innovative approaches that leverage clean energy and resource efficiency. In the arena of solar energy market development, SEI staff is well versed in working alongside California communities and school districts as they investigate and pursue solar energy (projects, policy and programs) as part of a holistic

sustainability solution. For this project, SEI served as overall program administrators, and provided technical and facilitation support.

4.3.3.2 Optony

Optony Inc. is a global research and consulting services firm focused on enabling government and commercial organizations to bridge the gap between solar energy goals and real-world results. Optony's core services offer a systematic approach to planning, implementing, and managing commercial and utility-grade solar power systems, while simultaneously navigating the dramatic and rapid changes in the solar industry. As part of the DOE Solar America Communities initiative, Optony helped develop an innovative new model for aggregated purchasing of pre-financed solar systems that has been implemented with both public and private entities. For this project, Optony Inc. acted as the lead technical staff, providing site analysis, legal and procurement support.

4.4 Project Objectives

4.4.1 Primary Goal

The primary goal of the SEED Fund project is to demonstrate the viability of an innovative Solar PV procurement business model through implementation of collaborative solar projects in Marin, Napa, and Sonoma Counties. Through the development of this business model, an accessible and realistic approach to scaling up solar energy deployment will be made available to the wider community of California public entities and to public and private entities nationwide.

4.4.2 Program Objectives

It is the SEED Fund's objective to develop and share a financial mechanism (the SEED Fund) that will provide long-term fiscal sustainability to enable the creation of solar installation projects**,** while also demonstrating how a collaborative model

combined with the SEED fund overcomes initial barriers to solar installation projects for public entities.

The SEED Fund's objectives align with CSI RD&D principles:

1. *Improve the economics of solar technologies by reducing technology costs and increasing system performance*

With a $300,000 initial CSI grant, matched by $70,000 in private funding, and supported by $155,537 of in-kind support, the SEED Fund was launched with the aim of creating a mechanism with long-term fiscal sustainability that directly improves the economics of solar deployment. It was the program's goal to create a first round collaboration pool of up to 15 public partners with up to 100 potential sites, that would lead to at least 5MW of solar contracted in Sonoma, Marin, and Napa Counties (a net increase of 75% of installed solar capacity for this market sector). The project was intended to conclude with the identification of a 2nd round of public partners and new private investment attracted to this business model. With this outcome, SEED Fund will have demonstrated a highly valuable business model in which private investors can yield significant returns while simultaneously allowing public partners to benefit from an 6:1 cost benefit ratio (1-2% upfront costs yielding 10-12% project costs savings).

2. *Focus on issues that directly benefit California, and that may not be funded by others*

Deployment of significant solar projects through the public sector inherently stimulates the California economy and creates a demand for green jobs. This project would bring on line at least 75% more nonutility public Solar PV in Marin, Sonoma, and Napa Counties, resulting in direct cost savings and long-term energy price stability for public agencies in these counties. Such advantages directly benefit the residents of these counties, who are facing significant public cuts in services. Further, deployment of this much PV, at a conservative cost of

$4/watt, would result in creation of over 500 Job-years.[7] With each successive round of collaborative procurement delivered without additional private investment, this stimulus effect multiplies over time. If public partners include local hiring criteria in their contracts, the jobs effect will further reinforce local communities. In addition to local economic benefits, the model supports greater PV market maturity in California by helping public purchasers of PV to make more informed decisions about their options, and put forward market leading requests for bids. This helps to attract more stable PV vendors, which enhances the reputation and resiliency of the PV market in California. Finally, because SEED Fund utilizes a collaboration model it allows participants to demonstrate leadership locally, regionally and nationally. As program success is realized, the program builds its potential to leverage favorable policies, programs, and public support. All of these factors benefit California in ways not likely to be realized through other means.

3. *Fill knowledge gaps to enable successful, wide-scale deployment of solar distributed generation technologies*

Inherently, SEED Fund is about filling knowledge gaps to deploy larger amounts of solar technologies than would not be realized without this business model. Our team fills knowledge gaps by 1) helping public partners identify and understand state of the art PV products and services, 2) using our technical expertise to find the highest quality and most cost-effective solutions for its collaborative partners, 3) helping public partners navigate the complex financing options available for solar products, and 4) acting as a neutral technology and vendor neutral customer representative for the public entities in vendor selection and contract negotiation. Since the SEED Fund team has no vested interest in the products or services that the collaborative selects, we are able to fairly inform our participants about the benefits and costs associated with the full spectrum of PV options available at the time they are moving forward. As a result of our role in

[7] Using the $92,000 / job-year figure utilized in the American Recovery and Reinvestment Act of 2009 developed by the White House Council of Economic Advisors.

filling this knowledge gap, we see considerable administrative and project cost savings, thus allowing participants to ultimately deploy more solar technologies than they would have if acting alone.

4. *Overcome significant barriers to technology adoption*

There is a plethora of permitting, licensing, financial, and technical challenges making the solar procurement process cost-prohibitive. Moreover, informational asymmetries and deficiencies make access to solar extremely complicated. Our innovative business model builds a bridge across these barriers by specifically addressing each challenge with support from a spectrum of dedicated experts. The SEED fund project also allows public entities to participate in this program, without requiring prohibitive staff time or financial outlays.

Recent successes in Silicon Valley and Washington D.C, had already demonstrated the benefits of the collaborative procurement model, however the upfront costs for collaboration remained a barrier to adoption. With local agencies cutting back on staff, working hours and resources, this project has been especially timely to keep the solar market expansion on track with California state goals. Combining the collaborative model with a revolving fund has allowed SEED Fund to address this barrier and accelerate technology adoption for public entities.

5. *Take advantage of California's wealth of data from past, current, and future installations to fulfill the above*

Our team has direct, past experience providing technical support to the solar aggregation project in Santa Clara County and is currently engaged in a number of other collaborative projects. With this experience and in our role as technical experts for solar technology deployment, the SEED Fund's success has been facilitated by our knowledge and access to the most up to date information on solar PV technologies, financing and program structures in California.

6. *Support efforts to address the integration of distributed solar power into the grid in order to maximize its value to California ratepayers*

Our goal has been to realize contracts for at least 5MW of new public non-utility solar PV across 20-30 sites to be integrated into the grid. This represents a net 75% increase in this region's public sector distributed PV. By focusing on the municipal, public and education facilities rather than on utility-scale projects, we have directly impacted large-scale deployment and integration of distributed solar PV. As of August 31, 2014, 97kW of new public non-utility solar PV at 1 public agencies and 1 site has been contracted, and another 4.2 MW of PV amongst 11 public agencies and 24 sites are in contract negotiations with the solar vendor.

4.4.3 Performance Objectives

SEED Fund was designed to achieve significant cost and performance outcomes in terms of public participation, market growth and PV deployment that are highly supportive of the goals laid out in the CSI RD&D Plan. At its core, SEED Fund's business model capitalizes on the opportunity presented through investment in collaboration. This investment yields greater market interest and better pricing (resulting in 10-12% total project cost savings), lower project risks with higher returns, reduced transaction costs and reduced administrative effort (resulting in 50-70% administrative cost savings for participants). However, this opportunity is hard to realize without fiscal support and technical expertise, but SEED Fund creates a market moving opportunity for providing both. As such, we anticipated the following performance and cost objectives (and highlight their relationship to specific tasks) throughout the lifespan of the project.

SEED Fund's performance objectives focus on the degree to which we have been able to attract public participants into the collaborative model and the resulting potential solar opportunities identified through this process.

1. Develop the SEED Fund Mechanism
2. Collaboration Development: At least 10 public partners sign MOUs to participate
3. Project Identification and Selection: At least 100 sites are prescreened; up to 70 sites receive feasibility assessments; and at least 10 MW of viable solar projects are identified across all participant sites

4. Solicit Proposals and Award Contracts: At least 5MW of viable solar projects are included in a collaborative RFP; at least 5 qualified vendors submit bids on SEED Fund projects
5. Establish SEED Fund Sustainability: At least 10 public partners express interest in participating in a second round

4.4.4 Cost Objectives

SEED Fund's cost objectives focused on setting up the fiscal structure to realize both the financial and Solar PV deployment objectives that make this an effective market leading business model that can continue to grow through future investments from the private sector.

1. At least 5 MW of public (non-utility) PV is contracted for, with a total project cost of at least $20M based on a conservative $4/watt installed costs for large-scale projects.
2. An average of at least 50% administrative cost-savings for public participants is realized based on total costs participants would have incurred if acting alone.
3. Costs for contracted solar is at least 10% below market rates based on regional equivalent project costs.
4. With inclusion of payback to SEED Fund, (1.9% of project costs) participants realize at least a net savings of 8% below market rates (based on the difference between total cost-savings; see above) and payback costs of no more than 2% of total project costs.
5. SEED Fund is able to provide private investors 10% annual rate of return.

4.5 Project Outcomes

As of August 31, 2014, we have observed the following performance outcomes (and highlight their relationship to specific tasks) throughout the lifespan of the project:

1. The SEED Fund Mechanism: The mechanism and formation of an LLC was successfully developed. (Performance Objective #1)
2. Collaboration Development: 37 public agencies engaged in the process, and 14 public partners signed MOUs to participate (Performance Objective #2)
3. Project Identification and Selection: 143 sites were prescreened; 41 of those sites received full feasibility assessments; and 130 MW of viable solar projects were identified across all prescreened sites (Performance Objective #3)
4. Solicit Proposals and Award Contracts: 6.8MW of viable solar projects were included in a collaborative RFP representing 13 public agencies; 4 qualified vendors submitted bids on SEED Fund projects (Performance Objective #4)
5. Establish SEED Fund Sustainability: Numerous public partners (at least 19) in the California Central Valley have expressed interest in participating in a second round (Performance Objective #5)
6. The achievement of Cost Objectives remains to be seen, but approximately 4.3 MW of solar are currently contracted or under immediate consideration for contracting. Pricing was lower than expected, leading to total project costs of approximately $14 million and significant energy savings to participants. Participation in the collaborative led to a maximum possible 10% price discount for all contracts signed by September 30, as long as a total of 2 MW of solar is contracted by that time.

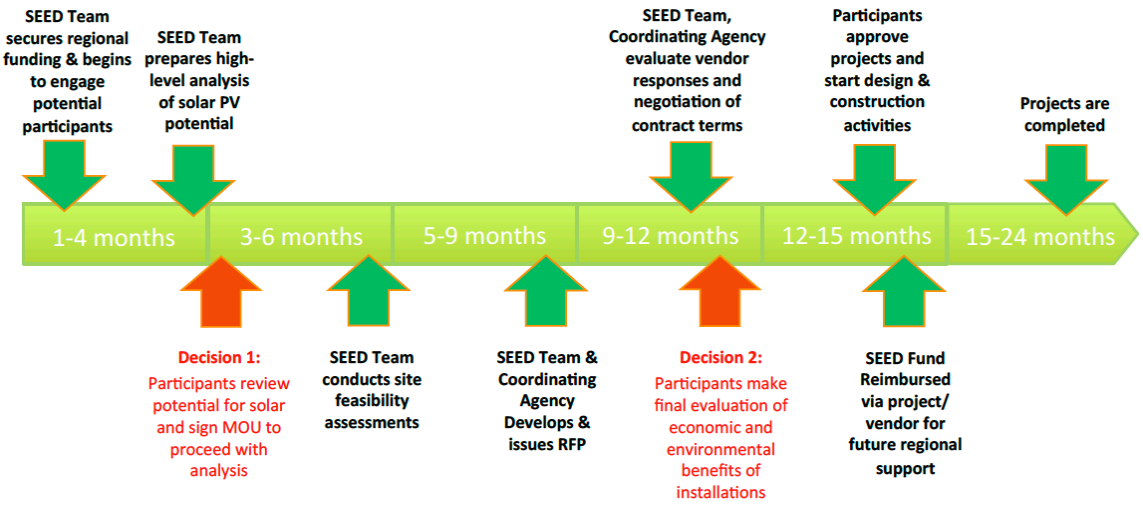


Figure 1: Overview of SEED Program Timing and Activities

The SEED Fund followed this general workplan:

1. Utilize the CSI RD&D grant to establish the SEED Fund mechanism
2. Engage public entity participants and a Lead Agency.
3. Conduct site assessments to assess participants' solar PV potential.
4. Establish participation with the signing of a MOU
5. Conduct feasibility studies on all viable sites with MOU-signing participants
6. Design the RFP in cooperation with the Lead Agency.
7. Form a Selection Committee amongst participants to evaluate RFP responses from vendors
8. Select winning bid
9. Work with Lead Agency to negotiate contract terms with the selected vendor
10. Upon signing of contracts, invoice participants for reimbursement of the SEED Fund
11. Identify new markets and launch the next round of collaborative procurement.

SEED Parameter	Anticipated Values
Primary Goal	Enable Public Participants to Adopt Solar Power
Mechanism	Durable Revolving Fund w/ Initial CSI Grant
SEED Fund Team	Strategic Energy Innovations (SEI) and Optony Inc.
Region	Marin, Napa, Sonoma Counties
Funding	$300k CSI Initial Grant + $70k Private Support + $155,537 In-Kind Match
Estimated Participants	At Least 10 Public Agencies
Estimated Technical Assessments	At Least 100 Potential Technical Sites w/ At Least 5 MW Solar Power Potential
Estimated Savings	10-12% Overall Savings
Estimated Reimbursement	Based on the Savings, 1-2% Reimbursement Fee

Figure 2: SEED Fund Program - Quick Facts

4.5.1 SEED Fund Mechanism Development (Task 2)

4.5.1.1 Purpose

The purpose of Task 2 was to develop and begin operation of the SEED Fund as a standalone legal and fiscal entity that can implement the revolving fund model. The Team worked with a legal consultant to define appropriate operational, participatory and investing terms and created a process diagram for SEED Fund operations that includes a financial and operational flowchart to clearly identify how funds were allocated and spent and could be reimbursed to future investors (e.g. 10% return on investment within 12 months). The team created a SEED Fund guidance

manual from these terms and the related flowchart that clearly defines operating rules for the fund and its managers and contributors. The team developed a template of a memorandum of understanding (MOU) for public participants that enables clear interaction between the Fund and participating municipal agencies.[8] Finally, the team established SEED Fund LLC, a financial structure that regulates fund expenditures under the terms defined in the guidance manual.

4.5.1.2 Activities

Research and Development of the SEED fund mechanism:

Q2 2012

- The SEED Team researched possible fund mechanisms (special purpose funds, trusts, revolving loans).
- Sought legal counsel to consider structures that allow a 501c3 to conduct work as designed for SEED

Q4 2012

- The SEED Fund team finalized an approach in which an initial non-profit fund would be setup and, if needed, a for-profit fund would be setup.

Q1 2013

- The SEED Fund team continued to work with legal counsel on the operating agreement for SEED Fund NP LLC, a wholly owned subsidiary of SEI, who will manage SEED Funds that arise from public investment, and in particular will receive the funds from round 1 reimbursements.
- SEI finalized the SEED Fund NP LLC and filed the articles of incorporation.

Process diagram and Guidance Manual:

Q3 2012

- The SEED Fund developed a process diagram for inclusion in a Guidance Manual for the operation of the SEED Fund. The team developed a first draft of an operating agreement designed to serve as the binding structure for the SEED Fund LLC.
- The SEED Team provided preliminary language for a program Memorandum of Understanding to our legal contractor – Meyers Nave - that incorporates the goals and requirements of the SEED Fund program.

[8] See Appendix 1: SEED Fund Participant MOU Template

- The first draft of the MOU was finalized and shared with the convening committee participants (Marin and Sonoma County representatives), then shared with participants

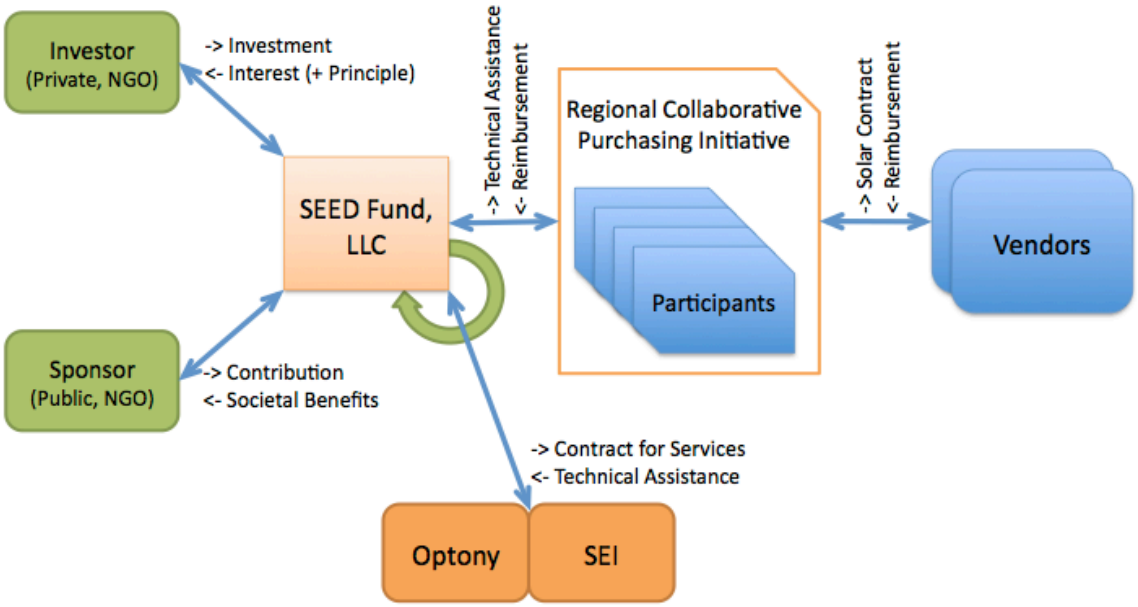


Figure 3: Process Diagram

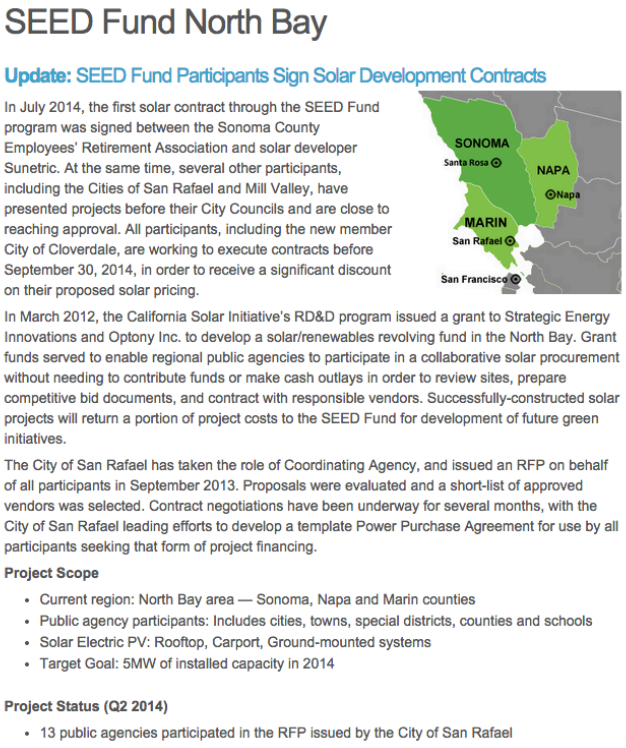
-

4.5.2 Collaboration Development

4.5.2.1 Purpose

The purpose of Task 3 was to engage partners in the collaboration model to enable them to receive investment-grade project support at little to no cost, and to create a project pool to test the revolving fund model. Through this process, the SEED Fund team identified both general public partners, as well as a Lead Agency. The Lead Agency target was an agency already committed to pursuing solar PV development, and/or one that has the largest potential for site development. A Lead Agency is of critical importance to collaboration, as this agency is the one who helps solidify engagement among participants, and shoulders some of the administrative burden. The Lead Agency will assist in the coordination of public partners.

Engage Public Participants: The SEED Fund team developed marketing materials which provided information about the collaborative partnership, and disseminated them to schools and local governments in the North San Francisco Bay Area.[9] Outreach to potential participants was focused first on the entities that signed onto the proposal. Secondly, the SEED Fund team reached out to local government networks such as the Marin Climate Energy Partnership to acquire names of interested parties. Third, the team utilized PG&E partners to alert public entities of this opportunity, and finally, SEED Fund team members leveraged their own public networks to notify interested agencies about this program. The SEED Fund team conducted stakeholder meetings with prospective participants and made presentations at municipal and school meetings. The team developed a website for the project, creating a single public point of reference for this effort.[10] The team also summarized meeting outcomes and distributed them to participants.



SEED Fund North Bay

Update: SEED Fund Participants Sign Solar Development Contracts

In July 2014, the first solar contract through the SEED Fund program was signed between the Sonoma County Employees' Retirement Association and solar developer Sunetric. At the same time, several other participants, including the Cities of San Rafael and Mill Valley, have presented projects before their City Councils and are close to reaching approval. All participants, including the new member City of Cloverdale, are working to execute contracts before September 30, 2014, in order to receive a significant discount on their proposed solar pricing.

In March 2012, the California Solar Initiative's RD&D program issued a grant to Strategic Energy Innovations and Optony Inc. to develop a solar/renewables revolving fund in the North Bay. Grant funds served to enable regional public agencies to participate in a collaborative solar procurement without needing to contribute funds or make cash outlays in order to review sites, prepare competitive bid documents, and contract with responsible vendors. Successfully-constructed solar projects will return a portion of project costs to the SEED Fund for development of future green initiatives.

The City of San Rafael has taken the role of Coordinating Agency, and issued an RFP on behalf of all participants in September 2013. Proposals were evaluated and a short-list of approved vendors was selected. Contract negotiations have been underway for several months, with the City of San Rafael leading efforts to develop a template Power Purchase Agreement for use by all participants seeking that form of project financing.

Project Scope

- Current region: North Bay area — Sonoma, Napa and Marin counties
- Public agency participants: Includes cities, towns, special districts, counties and schools
- Solar Electric PV: Rooftop, Carport, Ground-mounted systems
- Target Goal: 5MW of installed capacity in 2014

Project Status (Q2 2014)

- 13 public agencies participated in the RFP issued by the City of San Rafael

Figure 4: Website Screenshot

[9] See Appendix 2: SEED Fund Marketing Materials and Power Point Presentation
[10] http://www.solarroadmap.com/regional-initiatives/north-bay/

Confirm Participation: The SEED Fund team worked to reach agreement with at least 10 public agency partners to sign on to the SEED Fund project by having them execute MOUs between the public agencies and the SEED Fund team that reflect the terms of participation defined in Task 2.0. The team also found one public partner, the City of San Rafael, to serve as the Lead Agency. A summary report was developed on the public engagement process to identify lessons learned with this new business model.[11]

4.5.2.2 Activities

Engage Public Participants:

Information Materials and Website:

Q2 2012

- The SEED team developed initial outreach materials (flyer, presentation materials) in support of two opportunities to share this program.
- Developed and launched the project website: www.solarroadmap.com/seed

Outreach:

Q2 2012

- During the outreach process, the SEED Fund Team outreached aggressively to potential participants and held calls and meetings as appropriate.
- Presented the SEED Fund project to an audience at a regional conference in Rohnert Park (Sonoma County).
- Presented the SEED Fund to the Marin Climate and Energy Partnership
- Presented the SEED Fund to the Regional Climate Protection Authority of Sonoma County's Coordinating Committee.
- The SEED Team held many meetings and presentations for individual jurisdictions
- 13 agencies signed the MOU to officially participate in the program, and SEI and Optony shepherded final potential participants

Q3 2012

- SEED team held a webinar for participants. 29 representatives participated in this webinar during which the SEED team reviewed the program scope and status, talked about financing options and also reviewed next steps.
-

[11] See Appendix 3.2: Collaborative Development Lessons Learned Report

- Prescreening reports were provided to participating agencies

Stakeholder meetings:

Q3 2012

- The SEED team began with the development of two workshops in each of the three counties. The workshops were a 2 part series focused on financing information and technical implementation information, held in Marin, Sonoma, and Napa
- To engage all relevant contacts, the team developed a newsletter that was mainly sent to the various city managers throughout all three counties: 292 invites to representatives in total.

Confirm Participation:

Objective: MOUs with at least 10 partners

The SEED Fund signed MOUs the following public agencies:

1. City of Cloverdale
2. City of Cotati (signed in 2014)
3. City of Mill Valley
4. City of Novato
5. City of San Rafael
6. City of St. Helena
7. County of Sonoma
8. Marin Healthcare District
9. Marinwood Community Services District
10. Napa County Office of Education
11. Sonoma County Employees' Retirement Association
12. Sonoma County Water Agency
13. Southern Marin Fire Protection District
14. Town of Yountville

Lead Agency:

Q4 2012

- SEED team submitted an overview of the role and support provided. Held meetings with various interested agencies
- SEED team prepared an updated MOU for the Coordinating agency role (attached) and shared this with San Rafael for their consideration. San Rafael put this decision before their council and agreed to serve in this role.

4.5.3 Project Identification and Selection

4.5.3.1 Purpose

The purpose of this task was to conduct technical and economic feasibility analyses to identify at least 10 MW of viable sites of new solar potential for deployment, so partners better understand the potential benefits and costs of pursuing group procurement of Solar PV projects. SEED Fund team members utilized the latest in site analysis and economic modeling resources to rapidly determine site viability from both a technical and economic perspective. Through this process, 143 sites were pre-screened for viability, and from these, 41 sites had full feasibility studies performed. Pre-screening reports included both technical and financial considerations for each site, one-page summaries of all analyzed sites, and recommendations for how to prioritize development of sites based on a ranking of their technical and economic potential.

Identify Potential Sites: The SEED Fund team compiled a list of 143 potential PV sites owned and operated by participating municipal agencies, with data on size, performance expectations and qualitative ranking of priority for development.

Feasibility Studies w/ strategic bundle suggestions: The SEED Fund team conducted feasibility studies for pre-screened partner sites (41 sites) after the signing of the memorandum of understanding for participation in the program. Studies were developed by: mapping sites; performing on-site surveys of actual site conditions (e.g. constraints, shading, facility condition, electrical infrastructure, and alternative options); documenting performance expectations; developing financial analysis models for each viable site; interviews with stakeholders to determine goals and priorities. The team used this information, along with knowledge of solar costs, to provide: a summary of each site's potential; estimated ROI for development of each site; and a ranking of priority based on technical, economic and qualitative factors. As part of the feasibility studies, the team identified projects that, if developed, would yield 6.8 MW of new solar PV.

4.5.3.2 Activities

Identify Potential Sites:

Q3 2012

- SEED Team collected energy usage data and provided preliminary assessments of this data.
- SEED team developed a screening process for performing a high-level review of potential sites for solar that evaluates electrical usage, construction concerns, and

potential for financial benefit to provide participating agencies with a decision-making tool for pursuing solar at their facilities.

- Team reviewed potential usable areas with participants to better understand site limitations and opportunities and developed a reporting mechanism to present the data in a concise but thorough format.
- 13 municipalities, 9 special districts and 10 school districts had submitted site pre-screening information.
- By year end 2012, the team had identified 12.9 megawatts in 60 high technical and economic solar potential sites.

4.5.4 Solicit Proposals and Award Contracts

4.5.4.1 Purpose

The purpose of Task 5 was to develop an RFP that satisfied participant requirements, attracted qualified contractors, and resulted in award of contracts that realized cost savings for participants, efficiency for vendors, and integrated SEED Fund repayment criteria into contracts with vendors. For this task, the SEED Fund team facilitated development and distribution of a market leading RFP with the support of the Lead Agency, the City of San Rafael. The team provided technical expertise with developing evaluation criteria and in the evaluation of proposals and the selection of vendors.

Site #	Agency	Site	Recommended size (kW)
1	City of San Rafael	City Hall	310
2	City of San Rafael	Public Works Building	209
3	City of San Rafael	3rd & C Garage	120
4	City of San Rafael	Parkside Child Care Center	35
5	City of San Rafael	Parking Lot 925A	60
6	City of San Rafael	Albert J Boro Community Center	11 83
7	City of San Rafael	San Rafael Community Center	82
8	City of San Rafael	Terra Linda Rec Center	96
9	City of Mill Valley	Community Center	290
10	City of Mill Valley	Corporation Yard	35
11	City of Mill Valley	SASM Treatment Plant	430
12	City of Mill Valley	Public Safety Building	-
13	Sonoma County Water Agency	204 Concourse	153
14	Sonoma County Water Agency	Airport WWTP	-
15	Sonoma County Water Agency	Geyserville WWTP	57
16	Sonoma County Water Agency	Sea Ranch North TP	64
17	Marinwood Community Services Dist.	Community Center	35
		Pool	47
18	Town of Yountville	Wastewater Treatment Plant	203
19	Town of Yountville	Wastewater Pump Station	49
20	Town of Yountville	City Recreation Hall	50
		Community Center	57
21	Napa County Office of Ed	Administrative Office	307
22	Napa County Office of Ed	Napa Pre-School Program	62
		Court Schools	99
23	City of St. Helena	WT & R Plant - Meter 1	302
		WT & R Plant - Meter 2	23
		WT & R Plant - Meter 3	18
24	City of St. Helena	Stonebridge Wells	172
25	City of St. Helena	Water Treatment Plant	238
26	City of St. Helena	Library	109
27	City of St. Helena	Fire Hall	64
28	So Marin Fire Prot. District	Fire Station #9	40
29	City of Novato	Corporation Yard	-
30	City of Novato	Hamilton Pool	49
31	City of Novato	Lynnwood Park	-
32	County of Sonoma	Sonoma Valley Sheriff's Substation	33
33	Sonoma Co Employees' Retirement Assn.	Administration Building	105
34	Marin Healthcare District	Marin GH - Meter 2	337
		Marin GH - Meter 3	67
35	City of Cotati	City Hall	55
		Police Department	109

Figure 5: List of Sites Included in RFP

Review and selection of financing options: The SEED Fund team set up project participant meetings to outline financing options along with costs, benefits and risks associated with different options (e.g. lease, purchase, PPA). A summary of financial options was developed and shared with all participants so they were able to properly evaluate their financing options relative to their portfolio of feasible sites. Selection of financing options for inclusion in the RFP considered the following aspects: evaluating participant capital funding, debt capacity and rating, bond issuance capabilities, lending and leasing options with participant financial and operational staff availability. Based on evaluation of these variables, and in consultation with SEED Fund team members, public participants determined what financing options to pursue in contracting for PV.

Solicit Bids from Qualified Contractors: The SEED Fund Team drafted and refined an aggregated procurement RFP that included 6.8MW of new solar PV for public agencies. The RFP defined the strategic bundles of projects to optimize market response. The SEED Fund team worked with the lead agency, the City of San Rafael, to define RFP terms for each bundle of projects, incorporating specific contract terms for individual participants, required submissions for qualified bids, and scoring criteria for evaluating submitted bids. A final RFP was approved by the City of San Rafael and shared with all public participants for their approval. Once all participants had approved the final RFP, the document was released, published and marketed to the local, regional and national vendor community. The SEED Fund team managed the Q&A process, site walks, vendor meetings and addenda to ensure competitive interest and responses. Bids were evaluated based on responses and qualifications. The SEED Fund team put together a summary of proposals. A selection committee made up of SEED Fund team members and participating agency staff was formed and briefed on vendor proposals. Vendor interviews were scheduled and held. The selection committee selected winning bidders on the basis of ensuring best-value and least risk for participating agencies.

Negotiate and Approve Contracts: After selection of a preferred vendor for the project bundles (Marin Bundle and Sonoma/Napa Bundle), the City of San Rafael began contract negotiations. The SEED Fund team worked with the City and all public participants to negotiate contract terms and define final contractual requirements, including reimbursement of SEED funds (1.9% of project costs). The SEED Fund team made presentations to key staff and decision-makers about the projects, financing, contracts, and installation plans, and provided needed support to municipal staff to finalize approval from their respective elected officials.

4.5.4.2 Activities

Solicit Bids from Qualified Contractors:

- Q2 2013
    - SEED Team held the formal kickoff of the RFP development process with San Rafael and started working on participant webinars to share program details and information
    - Held two informational webinars for participants:
        - Webinar 1: Details on the solicitation and some of the legal considerations.
        - Webinar 2: RFP development news, and discussion of next steps for participants
- Q3 2013
    - The SEED Fund RFP was refined, and documents were collected from participating agencies to inform the overall bid package.
    - Held 3rd webinar
        - Webinar 3: Solar Procurement Financing
    - RFP Issued 9/12/2013
- Q4 2013
    - The SEED Fund Team guided site walks at all 13 participants' sites, and developed evaluation methodology and rubric.
    - SEED RFP responses were received 11/8/2013
    - SEED Team supported the Vendor Selection Committee to prepare for the interviews with potential vendors. SEED Team delivered preliminary bid analysis and commentary to the Vendor Selection Committee.
    - Interviews with potential vendors were held. SEED Team developed the consensus vendor scorecard for review and verification by the Vendor Selection Committee.

Review and selection of financing options:

- Q3 2013
    - SEED team developed summary of financing options.
- Q4 2013
    - SEED Team performed financial analysis on proposed financing options for select sites.
- Q1 and Q2 2014
    - SEED team held phone meetings with participating agencies to discuss financing options and issued updated pricing and analyses of financing options from preferred vendor to all SEED Fund Participants.
-

Negotiate and Approve Contracts:

- Q1 2014
    - SEED Team held phone meetings with members of the Vendor Selection Committee to finalize the choice for preferred vendor. SEED Team held phone meetings with participating agencies to discuss preferred vendor and next steps.
    - SEED Fund team worked with lead agency to request updated system sizing and pricing from the preferred vendor.
- Q2 2014
    - SEED Fund team met with vendor and Lead Agency to negotiate PPA terms on behalf of SEED Fund group.
- Q3 2014
    - SEED Team worked with vendor and Lead Agency to finalize bundle discounts .
    - The team provided edited exhibits for use in finalizing the PPA form and distributed final form PPA and the negotiated final terms of bundle discounts with vendor to all participating agencies.
    - SEED Team worked with the vendor to prepare updated document packets for issuance to participating agencies. The team provided PPA contract terms and language to City of San Rafael for inclusion into final documents for approval and execution.

Final Bundle Discounts:

*If Two (2) MWs or more are signed by **Sept 30**: An additional **10%** discount on starting rate/ kWh on those sites.*

2. *If between 1 and 2 MWs are signed by **Sept. 30**: An **8%** discount on starting rate for those, and any other agencies signing by **Oct. 31**.*

3. *If more than 1MW is signed by **Sept 30**, any agencies signing between **Nov. 1 and Nov. 30th** would have a **6%** discount on starting rate.*

4. *If more than 1MW is signed by **Sept. 30**, any agency signing a PPA between **Dec. 1st and Dec. 31st** would have a **5%** discount.*

*Furthermore, any agency signing a tax exempt Lease or Purchase will receive a 5% discount to quoted rates, if at least 1 MW of PPAs are signed up by **Sept. 30th**.*

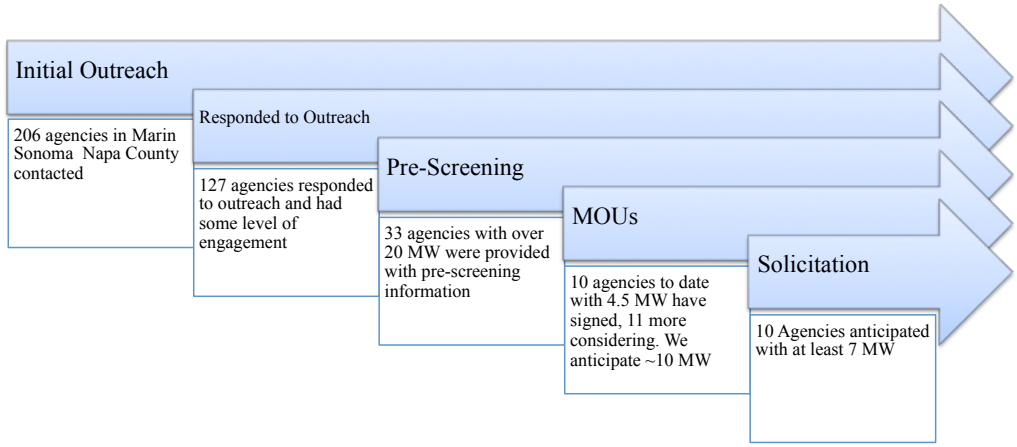


Figure 6: SEED Fund Solicitation Process

4.5.5 Establish SEED Fund Sustainability

4.5.5.1 Purpose

The Purpose of this task was to ensure that the approach and outcomes from this business model are replicable and scalable, including replenishment of SEED Funds, repayment to investors, and initiation of a second round of project development.

Engage new investors: The SEED Fund team approached potential investors to solicit funding support for completion of program management and start of the next round of procurement. Investors were provided with information on the financial and operational structure of the SEED Fund (as defined in task 2.0), and Round 1 contracts (with replenishment terms) were to be used to provide investor security of near-term repayment, After securing investments, the SEED Fund team intended to deposit funds and promissory notes reflective of SEED Fund fiscal terms that would be issued to investors.

Engage new public participants: SEED Fund team members conducted research and outreach to identify new potential partners and locations. The SEED Fund project website was updated to allow interested public participants to learn about the first round of successful projects and program outcomes, and understand how to participate in the second round. The team worked with University of Michigan Masters of Science candidate, Karly Zimmerman, to conduct research on supporting long-term sustainability of SEED Fund by developing a mechanism to identify suitable markets for future rounds of the SEED Fund. Marketing materials about the collaborative partnership were developed and disseminated by the SEED Fund team to new schools and local governments. The team sent surveys and held prospective stakeholder meetings about the approach and benefits of joining the collaborative procurement effort. The SEED Fund team members identified high probability participants in the California Central Valley, and moved to secure a Lead Agency for Round 2. All of the lessons learned from Round 1 are being applied to increase participant engagement for Round 2.

Determine outcomes for fund: As Round 1 projects are constructed; the SEED Fund team is overseeing vendor payments into the SEED Fund. The SEED Fund team also initiated program management for Round 2, following the sequence defined above (Tasks 3-5) for potential participants identified in Subtask 6.2. The SEED Fund team will write a summary report on SEED Fund financial performance and submit this report to CSI.

4.5.5.2 Activities

Q3 2012 – Q1 2013

- Q3 2012 – Q1 2013
    - The SEED Fund team worked with University of Michigan Masters of Science candidate, Karly Zimmerman, to conduct research on supporting long-term sustainability of SEED Fund, and developed methodology for identifying suitable markets for future rounds of the SEED Fund
    - SEED Team met with the company Solar Mosaic to learn about their crowd sourced financing model for Solar PV and its applicability for future SEED Fund activities.
- Q4 2013 – Q3 2014
    - SEED Fund team developed language and strategy around SEED Fund reimbursement.

5 Conclusions

5.1 Outcomes

The main obstacles for public entities to adopt solar energy are (1) financial issues, (2) lack of technical know-how, and (3) lack of time and workforce to support additional projects. The SEED Fund impressively demonstrated how to overcome these barriers by lowering the upfront costs to a minimum, reducing the administrative effort significantly by deploying the non-profit SEED Fund Team and maximizing the project outcome through professional technical site assessments.

As of August 31, 2014 the first round of SEED Fund has delivered an RFP including 13 public agencies, 32 potential solar installation sites, and 6.8 MW of high technical and economic solar potential sites. With reimbursement of 1.9% of total System price, the SEED Fund is expected to be replenished by about $200,000.

Indicator	Outcome
RFP	
Participating Agencies	14
Assessed Sites	143
Sites included in RFP	32
Size of Potential Solar Power included in RFP	6.8 MW
Revised Proposal of preferred Vendor (Sunetric)	
System Size	3,905.4 kW-DC
Year 1 expected output	5,775,620 kWh Yield 1,479 kWh/kW-DC
Purchase Price w/ 5% Bundle Discount	$ 13,448,266
Discounted Price	$ 3.44 /W-DC (estimated: $ 4 /W-DC)
Agency Actions and SEED Fund Reimbursement	
Financing types	Purchase, PPA, Pre-paid (40%) PPA
System Size	In progress: 4.32MW-DC
Year 1 expected output	6,378,704 kWh Yield 1,477 kWh/kW-DC
Purchase price w/ 5% Bundle Discount	$ 13,932,966
Discounted Price	$ 3.23 /W-DC (estimated: $ 4 /W-DC)
Estimated SEED Fund Reimbursement	$ 204,562

Table 7: Project Outcomes - Quick Facts

This table does not show the final figures, as the 1st round of the SEED Fund is still in progress. This is a snapshot in time, dated to the end of August 2014.

5.2 Lessons Learned

During the 1st round of the SEED Fund, the SEED Fund Team gained significant insight and experience about the process of developing a collaborative public agency solar procurement. To share this experience and, thus, improve the process of subsequent rounds, this section summarizes the Lessons Learned sorted by the different aspects of the project.

Because of our grant scope that predetermined certain approaches based on assumed receptivity in the region, we appear to have started our engagement too broadly, resulting in a more diffuse engagement rather than a more cumulative engagement of active participants. Although the collaboration engagement process has been longer and more drawn out than we had imagined, we have managed to engage a wide swath of public agencies in our target region, and are on track to realize many of our collaborative and business model goals. While this document highlights many granular "lessons learned", we can summarize the major takeaways from the first phase of the SEED Fund, which we feel can be addressed and will make future activity more efficient and successful:

- Start with the Lead Agency and work outward to target potential participants using the power of a regional network of increasingly engaged champions to build the program base
- Develop clear messages that are simple and compelling to our audience so we can build awareness quickly and move towards engagement without confusion
- Continue to refine the deeper technical, legal, and fiscal case for SEED Fund so when participants look at the program they see a strong value proposition that is likely to address multiple priorities.

<u>SEED mechanism development:</u>

During the SEED Fund development process, we identified many incentives to join the SEED Fund: Participants have the chance to reduce the cost of energy consumption while meeting GHG reduction goals, which must be incorporated into long-range development plans. Another incentive is the efficiency and time management improvement, which was seen to have the greatest impact on initially interested agencies. Public agencies are also able to enhance their

reputation with their community, neighboring jurisdictions, and their employees when they can satisfy their aspirations in terms of moral, ethical, and political considerations. Environmentally, public agencies can prevent significant amounts of air pollution and increase resource efficiency by joining the SEED Fund Program.

The SEED Fund team also identified several hurdles that could prohibit potential participants from joining. Most of the agencies already have a stretched staff, and are reluctant to join the SEED Fund Program or any program that requires time to conduct. Budget-wise, this program is low priority for most of the participants, whose current focus is on creating and retaining jobs. There is also the fear about community-required review periods for new solar installations. In terms of technical considerations, there is a remaining fear about solar equipment quality. Some participants are suspicious of the ongoing viability of solar manufacturers.

The developed business model was speculative, as it was new and innovative. At this time (August 31, 2014), we have evidence, but not yet proof, that this model is effective in the long-term. We will have proof of concept once all participants have entered into contract and reimbursed the SEED Fund. At that time we should demonstrate methodically the benefits of the program with supporting evidence for each claim. There are several options for how to do this, such as conducting payback or other financial tests, publishing case studies, and using graphs, figures, and calculations from independent sources.

Lead agency outreach:

Lead agency candidates were identified early in the project, however these did not come quickly to fruition, and recruiting for a lead agency took longer than expected. As a 1st step for the second round of collaboration, the initial outreach should focus on the lead agency. Starting with an organization that has a desire and elected support to be Lead Agency eases this process immensely by avoiding delays and providing support for recruiting participants. Much of the SEED Fund work could be done without a Lead, but much of the outreach and organization would have been easier and more impactful with an early-established Lead Agency. In terms of outreach to potential lead agencies, it is highly recommended to send out a survey to conduct high-level screening of potential participants. To support and expand the reach, regional bodies, like the Bay Area Air Quality Management District, could be very helpful. An additional incentive that was necessary for the first round of the SEED Fund was that the lead agency didn't have to pay the reimbursement fee. When necessary to stimulate acceptance into the Lead Agency role, this incentive can be deployed, but an ideal Lead Agency will have plans and budget for solar procurement that will not necessitate the use of this incentive.

It is also helpful when the lead agency does not take on the role ofa convener simultaneously. A truly effective convener will not have a direct stake in the procurement, but will have developed contacts and priorities that enable mass outreach through the most effective channels.

Potential Participant Outreach:

Locating possible participants was done through blanket Internet searching with lists of cities and school districts on-line. This worked fairly well to develop a preliminary list of contact organizations, but ended up missing some key potential participants. For example, Golden Gate Bridge Highway and Transportation District wasn't initially contacted. Though they didn't end up participating, they have great potential and would have benefited from earlier engagement. Perhaps getting them to attend some of the early workshops would have resulted in their participation. To be more systematic in the outreach, access to a list of municipal organizations and special districts would be very helpful. For subsequent rounds, state level sources or utility providers should be asked for such a list. It could also be useful to find political champions to help with the participant outreach.

Conducting face-to-face meetings with potential participants and group workshops seemed to work very well to engage them. Nearly every face-to-face meeting resulted in action, and usually quick action. Potential participants with whom we met may not have been more likely to ultimately sign up for the RFP, but were more likely to take next steps. An improvement could be planning for a higher budget to visit all possible participants and giving individualized presentations. When a larger budget is not available, outreach should be focused on in-person meetings that include several or many potential participants. The outreach team should plan on extra time after such presentations for meeting with as many attendees as possible, and should follow up personally with each promising lead.

In terms of approaching key contacts, we tried to reach out the most likely person at each agency but we often found that we needed to reach out to someone else. This is difficult to improve because of the variety of roles from agency to agency—in some agencies, the Facilities Manager is an appropriate first contact; at other agencies, the Human Resources Director or Environmental Analyst proved to be a better internal champion. A database of primary contacts to approach regarding energy-related issues could help, but developing and keeping the database up-to-date would not likely be worth the time and effort.

We also experienced an extremely long lead-time on getting agencies to participate if they were not already interested. To address this issue, an up-front hurdle, such as a solid deadline or an obligatory meeting, should be created that weeds out the slow-moving agencies.

Participant Outreach: Build up understanding

We continually ran into problems with potential participants not understanding the program or having misguided views. We consistently needed to explain solar and the program several separate times to stakeholders before they appeared to gain an understanding. The solution seems to center around providing general education about solar for key contacts at possible participating agencies to develop understanding of underlying concepts related to solar power, financing, technical considerations, and collaborative procurement. The maintenance of the website is also very important. These sources of information seemed to be used liberally after workshops and after newsletters were sent out. Out-of-date information is almost as bad as none at all. The idea of the revolving fund could have been tied more closely with projects that our contacts were working on, so that they could envision their projects receiving funding and see the value of the revolving fund concept.

It would be also helpful if the potential participants' staff or elected officials could have the chance to visit sites or agencies where they would be able to see the success of the collaborative procurement business model in person.

Participant Outreach: Financial Issues

Agencies seemed receptive to the idea of receiving assessment and procurement services at no upfront cost. In some cases, they did seem to think that the reimbursement fee was too high, particularly for agencies with large sites. Potentially these agencies felt that the reimbursement was a higher cost than they would have had to pay their own consultant to run the program. But since the reimbursement is a key aspect of the SEED Fund program, this issue is difficult to improve. However, it might be useful to illustrate where and when the savings would come into play, as well as how the reimbursement would compare to expected savings.

Some agencies had concern about the risk of signing the MOU, and getting into "debt" that was really an unknown. Others felt that the SEED Fund should be accepting liability for engineering of systems, which is really not possible with the intended scope (and budget!). Some agencies stated flatly that they operated with their own RFP's and didn't want to work with other agencies (Golden Gate Bridge Highway and Transportation District). Spending more time explaining the risks and benefits, and showing examples of previous projects, may have helped with this. We would expect that these issues would be less of an obstacle in a Round 2 with the same or nearby local agencies.

However, to improve these issues we should increase the awareness of purchasing options and financing to prevent questions such as "Where can we get free money?" or "Can payback periods be reduced?".

Participant Outreach: Timeline

Overall, using timelines seemed to work very well as an action-inducing strategy, as participants responded to deadlines.

But some agencies felt uncomfortable with the aggressive timeline because of other internal workloads that required staff bandwidth. They may have felt more comfortable with a more relaxed set of deadlines. To improve this issue, firmer timelines should be set earlier in program outreach to improve promptness among public agencies, while being more realistic about the actual time it would take to move from one project milestone to the next. Several agencies may still be dissuaded from participation by the required adherence to stricter deadlines, but this strategy would work to focus the group on equally fast-moving participants.

Participant Outreach: Organization

Good intentions are frequently thwarted by organizational inertia, risk avoidance, politics and process. Trying to build support within an organization that is oriented to the status quo was very difficult. Identifying the potential barriers and actual procedural hurdles within an organization helped the team to plan appropriately for success and overcome issues, when possible. For subsequent rounds, agencies need to have a commitment to the environment, particularly with respective to clean energy sector economic growth. They also must have time and budget for moving forward with the SEED Fund program. Legal and procurement considerations tend to take the bulk of the time and effort to address. The figure below shows this context.

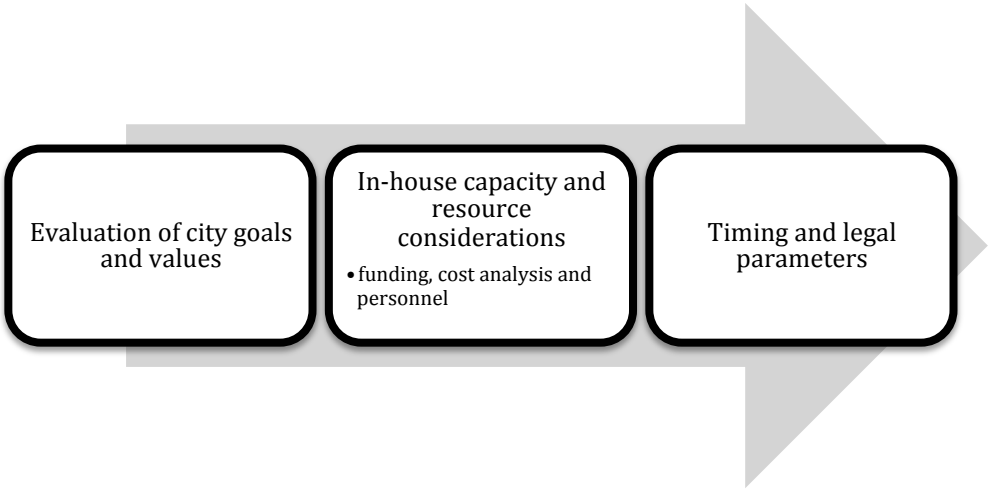


Figure 8: Public agency criteria for participation in SEED Fund

Participant Outreach: Regional Focus and Size of Collaboration

In terms of regional considerations, the outreach to participants should focus on a regional cluster of large-potential participants ideally surrounding the lead agency. As contrasted with engaging all possible participants, this approach reduces logistical effort and increases the average project outcome per agency. The survey (please refer to Lead agency outreach) eases the screening

and rating of potential participants to find the best possible cluster in a defined region. The 1st round of the SEED Fund project has shown that it is more useful to concentrate on fewer agencies with larger potential. The size of participants influences potential discounts, administrative and logistical effort, and many other factors. The remaining question is what the ideal size of a collaborative procurement is. The SEED Fund team intends to explore this question by evaluating the second round with a different size pool of potential participants.

Drafting of MOU:

If possible, the content of the MOU should be simplified to have more plain English, as several potential participants had difficulty understanding the details of the program.

The drafted Memorandum of Understanding used in the 1st round of the SEED Fund didn't include language about how the SEED Fund would be repaid in terms of the triggers and the reimbursement process, because this subject had not been developed to a final state at the time the participants signed the MOU. Afterwards, there were some clarifications necessary to update the participants on these terms. As a Lesson Learned, the drafting of an MOU for succeeding rounds of the SEED Fund should include language about the reimbursement triggers and process.

The upcoming results of reimbursement to the SEED Fund will show if the developed MOU was sufficient to realize estimated outcomes.

Project identification and selection:

We spent a lot of time on project identification and selection and had a lot of losses from the final pool. For future rounds of procurement, outreach should focus on potential participants with high levels of interest and with significant numbers of high-potential sites. Focusing on this "low-hanging fruit" would reduce time spent on sites and agencies that would be unlikely to be good participants for the collaboration.

RFP:

In terms of discounts, the vendors who respond to the RFP should be required to include language about a time-based discount in their proposal. In the 1st round of the SEED Fund, successful negotiations about a time-based discount with the preferred vendor had the outcome of driving most of the participating agencies to try to meet the time limit by moving forward strongly. This helped greatly to accelerate the whole SEED Fund project.

Fund replenishment mechanism:

The replenishment of the 1st round is still in process. We expect the last reimbursement payment to be received by the end of the year 2014. The expected reimbursement timeline was delayed by about half a year, resulting in a budget gap that prohibits the launch of the 2nd round of the SEED

fund. Fortunately, we were able to move forward with launching Round 2 before the SEED Fund had been entirely replenished because we were awarded a second grant by CSI RD&D to begin Round 2 activities. CSI's renewed support of the SEED Fund program demonstrates their confidence in the program's success. With this additional grant, the SEED Fund Team is already conducting outreach in the Central Valley for Round 2 development.

Private Sector Attraction:

The SEED Fund Program was not as appealing to the private sector as planned for. We spent a lot of time to attract private investors but had no outcomes that made our effort worth the time. The SEED Fund team will continue to approach the private sector, using the results from the first round of procurement as evidence of the viability of the model.

Project management:

The pipeline that leads to final contracted projects needs to be better understood so that we can forecast attrition and accurately estimate total costs and total potential payback to make the project workable with the given budget.

6 Public Benefits to California

Contribution to California State's energy goals

The SEED Fund Program enabled public participants such as cities, counties and special districts to adopt solar energy in an efficient way. An estimated 4-5 MW of new PV systems amongst 13 public agencies will be contracted and installed by the close of the program. These systems will yield a solar energy net increase of 60-75% for public agencies in the region of Napa, Marin and Sonoma Counties. This is a great contribution to California's energy goals because, by stimulating the deployment of solar energy systems, the SEED Fund Program helps reduce greenhouse gas emissions (CA's Goal: GHG level of 1990 in 2020) and increases renewable energy in California's utilities' power mix (CA's Goal: 33% in 2020).[12]

The SEED Fund Program has demonstrated the strong benefits of utilizing the collaborative procurement approach coupled with leveraging a revolving fund mechanism. By using this

[12] http://www.energyupgradeca.org/en/learn/california-state-energy-goals

financial model, the SEED Fund program is able to launch additional rounds in other regions, thereby extending the impact of CSI's grant and its contribution to California's energy goals.

Free accessible research data

Detailed in this report is research conducted by the SEED Fund team to show how a revolving fund mechanism can be leveraged to extend the benefits of collaborative procurement efforts. This information, freely accessible to California rate-payers and anyone viewing our webpage[13], can be utilized to great effect for other stakeholders.

Publicly accessible technical data on site assessments

All technical data collected over the course of the SEED Fund program is publicly accessible, provided by SEED Fund partners, Optony Inc. Our assessments of public sites can serve as preliminary examples and comparisons for other stakeholders' sites. Ultimately, this data can be used to indicate solar adoption potential across California's public entities.

Advancing Solar Education

The SEED Fund team has educated California stakeholders (including public agencies and solar market players) on financing, the technical aspects of solar systems, and project management by conducting workshops, sending newsletters and performing site tours.

Demonstrating effective outreach approaches

In terms of engaging potential participants in the SEED Fund, the team developed a working strategy, which was detailed in the "Lessons Learned" section of this report.

[13] http://www.solarroadmap.com/regional-initiatives/seed/

7 Glossary

Lead Agency	The Lead Agency is the designated city or public agency responsible for issuing the Solicitation (as defined herein) on behalf of itself and the Other Cities / Agencies (as defined herein) for the purposes of purchasing renewable energy
Participants	Participants are all other public entities (local governments and schools), except for the Lead Agency, who participate in the Solicitation to purchase renewable energy.
SEED Fund	The SEED Fund is the Sustainable Energy and Economic Development Fund, a California Limited Liability Corporation.
Solicitation	Solicitation is defined as a request for qualifications and/or a request for proposals and related actions to purchase renewable energy on behalf of the Lead Agency and Other Cities / Agencies.
Vendor(s)	Vendor is defined as company or companies who respond to the Solicitation to provide renewable energy proposals
Fiscal Partners	Fiscal Partners are partners in SEED Fund who provide financial resources for specific implementations of the SEED Fund by geography or technology but who have no management responsibilities.
Managing Partners	The Managing Partners are Optony Inc. and Strategic Energy Innovations who collaboratively manage all aspects of the SEED Fund

Private Funds	Private Funds are funds added to SEED Fund for specific geographic or technological procurement projects for which there is principally an expectation of reimbursement.
Public Funds	Public Funds are funds added to SEED Fund for specific geographic or technological procurement projects but for which there is limited expectation of reimbursement.
Power Purchase Agreement (PPA)	PPA is a third-party financing model where customers pay for generated power rather than purchasing a system outright.
Service Providers	Service Providers are subcontractors who SEED Fund contracts with to deliver the procurement services for a given territory or technology.

8 Appendices

1. SEED Fund Agency Memorandum of Understanding - Overview
2. Marketing materials: SEED Fund Overview Presentation
3. Marketing materials: SEED Fund Press Release
4. Marketing materials: SEED Fund FAQ Handout
5. Collaborative Development Lessons-Learned Report

Sustainable Energy & Economic Development Fund (SEED Fund™)
Agency Memorandum of Understanding Overview

This summary describes the major elements of the Memorandum of Understanding (MOU) between SEED Fund participants and the SEED Fund administered by Strategic Energy Innovations. The full document has all terms and conditions and should be consulted for further information and details.

Purpose:

The SEED Fund's purpose is to fund regional sustainability projects that create new economic activity while improving the regional environment. The focus is on supporting renewable energy and energy efficiency deployment for municipalities, schools and public agencies to help reduce costs while demonstrating leadership in clean energy. The SEED Fund also provides resources and training for stakeholders to build understanding, internal capabilities and support interaction across the community.

Services Provided by SEED Fund:

- Coordination with participants to provide professional services and template documents and other services necessary to assist them in participating in the collaborative purchase of renewable power.
- Training and resources to participants as needed to build understanding and support the project.
- Detailed feasibility studies of renewable energy systems including both technical and economic viability under realistic financing scenarios with recommendations key staff and decision makers.
- Professional expertise to perform procurement management services, reference checks, evaluation of vendor(s), technology reviews and financing option analyses.

Participant Responsibilities:

- Participants will be actively engaged in the project by providing information necessary for due diligence and feasibility studies on its behalf, including site surveys, site access and utility information, and a timely solicitation for aggregated procurement to realize the best terms.
- Throughout the term of this agreement, Participants are responsible for satisfying their individual legal, procedural and other requirements necessary for participation in this MOU.
- Participants are expected to act in good faith to evaluate offers, but may withdraw from the process at any time. However, after Feasibility Studies have been completed through the full procurement and contracting process, reimbursement will be expected as described below.
- The term of this MOU is the later of 2 years from the MOU date, or 1 year after the completion of the procurement process.

Reimbursement of SEED Fund:

- Participants may request support from the vendor to reimburse the fund and model language is provided.
- Participants are obligated to reimburse SEED Fund under the following conditions 1) If participants receive a feasibility study but decide not to participate in the Solicitation, yet they install a PV system on a building assessed in the feasibility study within the term period of the MOU, and 2) If participants include projects in the solicitation and enter into a final contract between a vendor and the participant.
- If no viable projects are identified through the feasibility study, or the Participant chooses not to install solar on the evaluated sites during the term of the MOU, the Participant has no reimbursement obligation to SEED Fund.
- In all cases where reimbursement is required, participants are only obligated to pay 1.5% to 2% of installed project value. The final percentage will be provided to participants prior to the release of the Solicitation.

SEED Fund

Sustainable Energy & Economic Development Fund

March 2013

SEED FUND

Strategic Energy Innovations

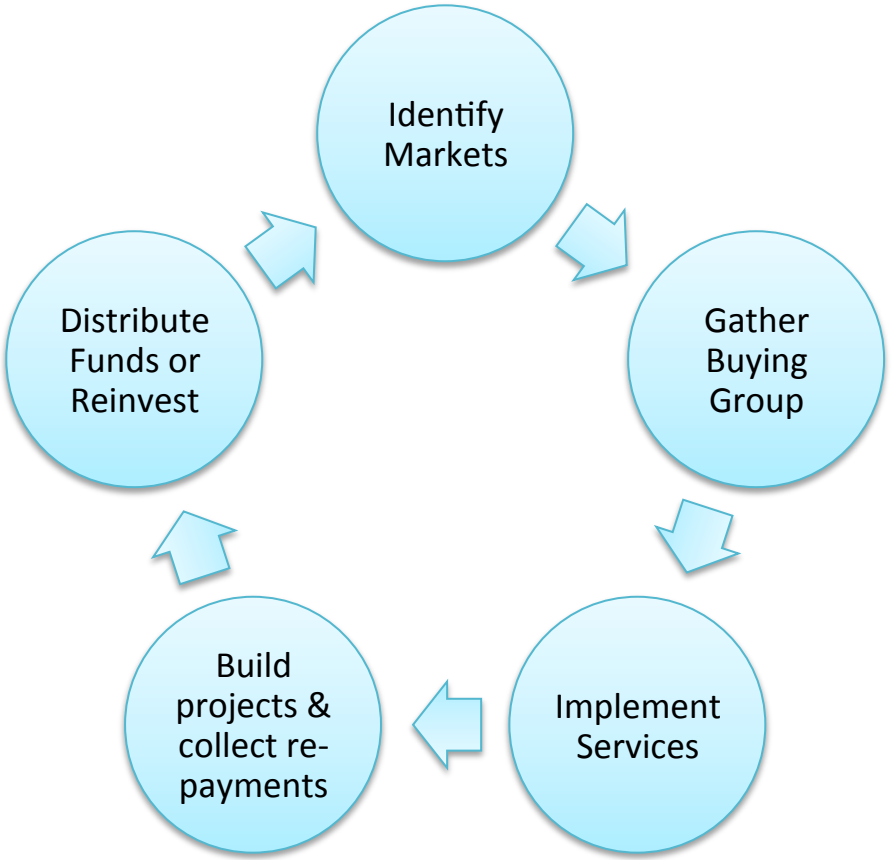
GO solar CALIFORNIA

Itron CSI RD&D Program Manager

OPTONY

What is SEED Fund

- Model
  - A revolving fund to defer upfront costs for public sector solar PV or energy efficiency project analysis and procurement
  - Built on a proven collaborative approach
- Municipal Benefits
  - Realize 10-12% in total project cost savings
  - Reduce transaction costs by 50-70%



Who is SEED Fund

- SEED Fund NP LLC
  - Wholly owned subsidiary of Strategic Energy Innovations, a California 501c3
    - Founded in 1997, Strategic Energy Innovations (SEI) is a non-profit that develops and delivers solutions customized to help communities accomplish their sustainability goals.
  - Optony Inc.: SEED Fund Technical Service Provider
    - Optony Inc is a global research and consulting services firm focused on enabling government and commercial organizations to bridge the gap between solar energy goals and real-world results.
  - Established with California Solar Initiative Research Design and Development Business Innovation grant of $300,000
    - Grant is supported by PG&E and California Public Utilities Commission, and is implemented by Itron

Background
Silicon Valley Regional Project

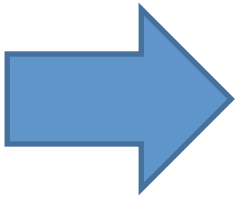
- Included 43 sites
  - Collaboration across 9 jurisdictions
  - 14.4MW of combined solar PV
- Multiple Site Types:
  - Carports
  - Rooftops
  - Ground mounted
- Largest multi-agency effort to date
  - County of Santa Clara
  - 6 Cities
  - 2 Special Districts
- LESSONS:
  - Aggregated purchase discounts 12%+
  - Reduced admin and transactions costs 50%+
  - Better negotiated contract terms & conditions

Background:
Major Solar Industry Changes

SEED FUND

Recent Changes

- Dramatic Drop In Panel Prices
- Consolidation In The Industry
- New Financial Players In The Market
- Maturing Industry
- US Markets Are The New Focus
- Excess PV Capacity Coming Online
- Grid Parity Accelerating (without incentives)



Major Impact On:

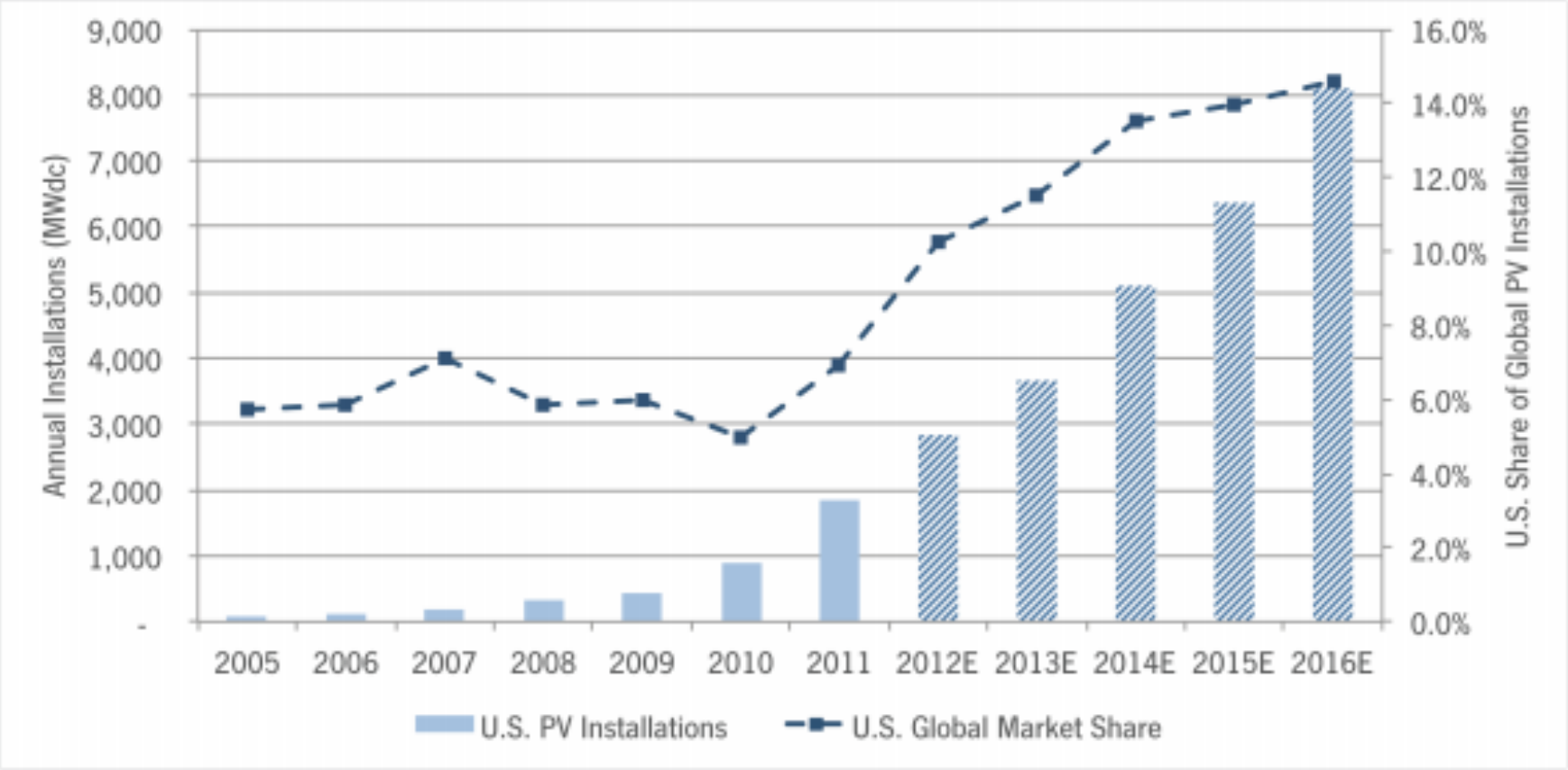
- Better Project Economics
- Few, Stronger Players
- Lower Cost Of Capital
- Better Results For Clients
- PV Mfrs Must Lower Cost
- Must Seek Long-Term Stability
- Mass Adoption Of Solar

Strategic Energy Innovations

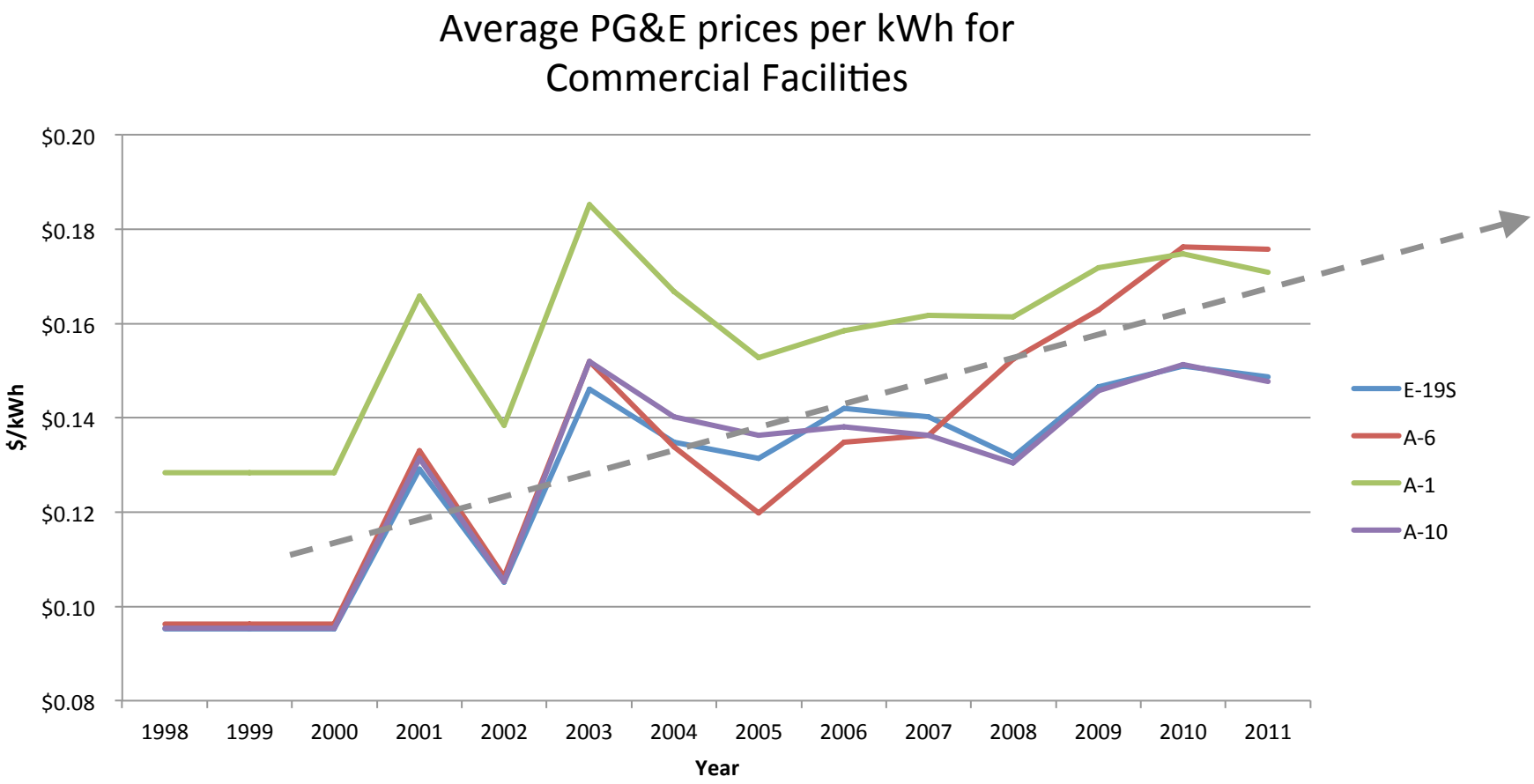
OPTONY

Background:
Solar Project Trends

SEED FUND



Background:
Electricity Pricing Trends



Goals of SEED Fund

- Bring at least 5 MW of new public renewable energy on line
- Realize 10-12% in total project cost savings
- Reduce transaction costs and administrative effort by 50-70%
- Deliver collaboration & technical support for 1.5-2% of total contracted solar project costs
- Create an economically sustainable revolving fund

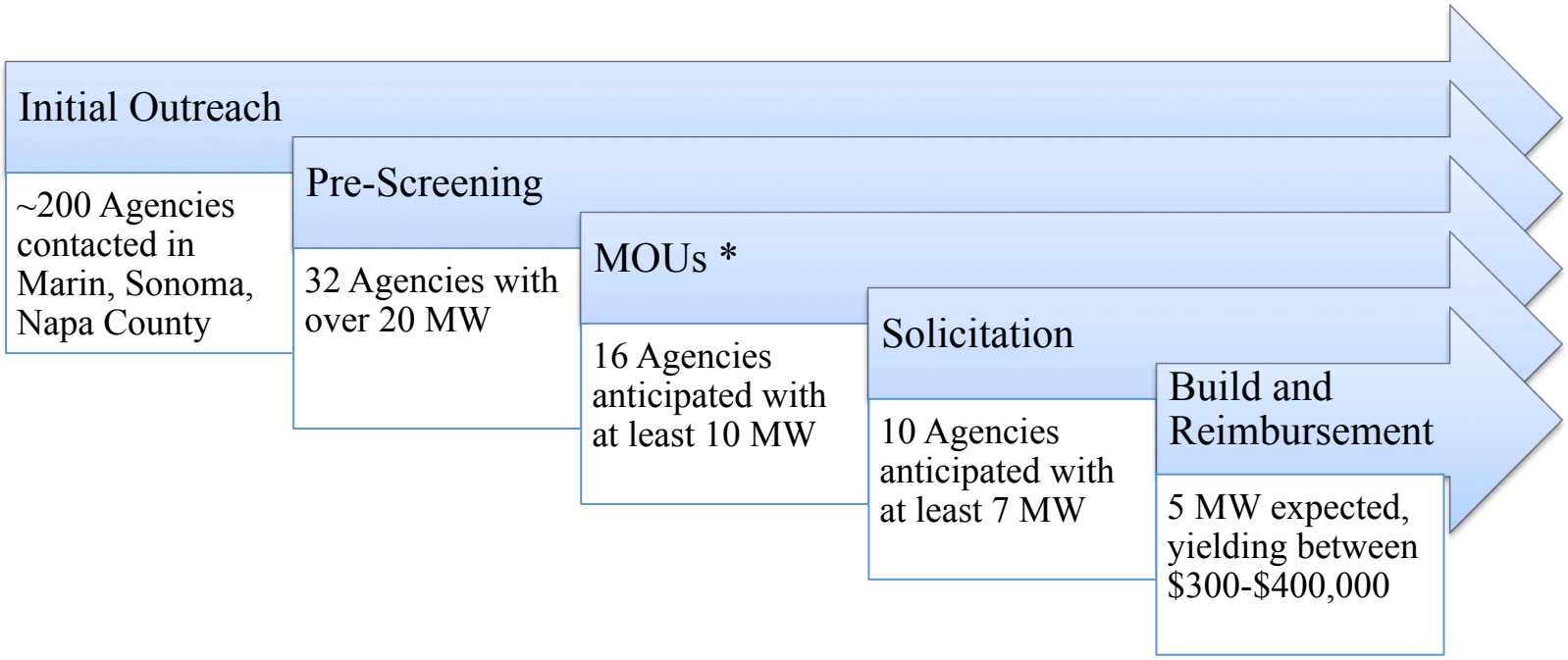
Timeline For North Bay Project

- Engage public agencies
- High level review of sites

- Conduct feasibility studies
- Develop RFP
- Issue RFP
- Evaluation of responses

- Council / Board approval
- Build projects
- Reimburse SEED Fund

Current Program Pipeline



***Where we are currently**

Status of Current Participants

MOU in progress or received	Total "A" PV (kW)
City of Mill Valley	361
Marinwood Community Services District	84
Napa County Office of Education	478
San Rafael	1055
Sonoma County General Services	45
Sonoma County Retirement Employee Association	71
Sonoma County Water Agency	1290
South Marin Fire Protection District	49
St. Helena	927
Yountville	202

Currently Under consideration	Total "A" PV (kW)
City of Cloverdale	1043
City of Novato	49
Marin County Office of Education	230
Sausalito	201
Sonoma County Library	882
Tamalpais Union High School District	2445
Town of Windsor	146
Wilmar Union School District	39

Total	9597

"What you are proposing is very creative and seems like a great opportunity for Mill Valley to be involved in. I like the fact that there are stopping points along the way, where we are actually making a specific decision on a specific project. What I like is this is getting us in the pipeline and getting us in that collaborative spirit without necessarily over committing…To me this feels like a no-brainer and it fits right within our city goals and values."

Shawn Marshall, Vice Mayor
City of Mill Valley

Coordinating Agency

- TBD (City of San Rafael?)
- Role:
  - Serve as primary governmental point-of-contact for participants
  - Perform legal review of bid documents
  - Issue bid documents
  - Serve as primary point-of-contact for potential bidders
  - Lead evaluation of proposals
  - Make bid award or notification of short-list
  - Lead contract negotiations
- All of the above responsibilities to be performed with significant SEED Fund support and guidance

MEA role

- Support Coordinating Agency:
  - Legal and business review of procurement documents
  - Assistance with responses to Requests for Information from potential bidders
  - Evaluation of vendors and proposals
- Spread public knowledge of SEED Fund program

Questions & Discussion

Thank you!

For Immediate Release:

June 21, 2014

Contacts:
Jonathan Whelan
Optony, Inc
Senior Project Manager
(415) 450-7032
jonathan.whelan@optony.com

Karly Zimmerman
Strategic Energy Innovations
Associate Program Manager
(415) 507-1430
karly@seiinc.org

ACCELERATING PUBLIC SOLAR PROCUREMENT IN MARIN, SONOMA AND NAPA COUNTIES

The City of San Rafael and 13 other Public Agencies Participate in Solar Collaborative Procurement Project: Sustainable Energy and Economic Development (SEED) Fund

SEED FUND

SAN RAFAEL, Calif. –

The City of San Rafael is leading a three-county effort to install up to 5.2 MW of solar panels on public facilities. San Rafael and 13 other public agencies in Marin, Sonoma, and Napa Counties have banded together to bring more solar power to the region through participation in a collaborative procurement program: the Sustainable Energy and Economic Development Fund (SEED Fund). The SEED Fund is implemented by San Rafael's Strategic Energy Innovations (SEI) and its partner, Optony Inc. of Santa Clara, with third-party consulting from Marin Clean Energy. The program is support by California Solar Initiative's (CSI) Research Design & Development Program.

"The goal is that by adding solar to City buildings, it would increase the use of the City's renewable energy and reduce our greenhouse gas emissions," said San Rafael City Council Member and Marin Clean Energy Board Chairman, Damon Connolly.

The effort began in 2012 when SEI and Optony received a grant from CSI to design a collaborative procurement program for public agencies in the North Bay. The City of San Rafael took on the project as a coordinating agency, issuing an RFP in September 2013. San Rafael and other participating agencies are now in contract negotiations and hope to realize projects by the end of the year. Sustainable San Rafael and Organizing for Action will highlight the program during a rally at San Rafael's

-more-

City Plaza this Saturday, June 21, at noon. The groups timed the event to coincide with the Summer Solstice and with actions nationwide encouraging towns, businesses and individuals to "Put Solar On It." The public is invited to post photos of their houses or other buildings where they would like to see solar to the Twitter hash-tag #PutSolarOnIt.

“As a public entity, we want to see increased solar deployment,” said Liz Yager, Energy and Sustainability Division Manager for Sonoma County. Increased solar power deployment is what Bay Area communities are asking for, but it’s a great challenge for Cities and Counties to find the time and resources to implement solar installations. “Our County is facing significant challenges in terms of limited technical capacity to evaluate current options, and limited resources to undertake this effort. SEED Fund provides an innovative and replicable model for public agencies to collaborate on Solar PV implementation,” said Liz.

SEED Fund demonstrates an innovative solar procurement business model that utilizes a public-private revolving fund to create a durable mechanism for enabling public participants to overcome adoption barriers with technical support that delivers significant reductions to overall project, transaction and administration costs. This program is designed to leverage close to $500,000 in public and private support for the region to enable over $20,000,000 of solar related economic activity.

Collaborative procurement is emerging as a powerful means to tackle the costs and technical barriers to public PV investments. The SEED Fund program demonstrates that a 1-2% upfront investment in collaboration results in better pricing (10-12% total project cost savings), lower project risks with higher returns, reduced transaction costs and reduced administrative effort (resulting in 50-70% admin cost savings for participants)[1].

“Because upfront costs are still prohibitive for many public entities, the SEED Fund offers the potential to greatly extend the market potential of collaborative procurement in order to reduce the cost of solar investments.” said Cyane Dandridge, Executive Director for SEI.

“By launching a revolving fund mechanism that will defer upfront costs for public partners and provide expert independent technical support, the SEED Fund will attract private investment to support this model in an ongoing manner, greatly expanding the deployment of distributed solar in California.” said Senior Vice-President for Optony, Ben Foster.

[1] http://www.wri.org/publication/purchasing-power

SEED Fund Solar Sites As of 06/21/2014	
Potential Sites	**PV Installation Type**
City of San Rafael: City Hall	Carport & Roof
City of San Rafael: Public Works Building	Carport & Roof
City of San Rafael: 3rd & C Parking Garage	Trellis
City of San Rafael: 925 A St. Parking Garage	n/a
City of San Rafael: Albert J Boro/Pickleweed Cmnty Ctr	Roof
City of San Rafael: San Rafael Community Center	Roof
City of San Rafael: Terra Linda Rec Center	Carport
City of Mill Valley: Community Center	Carport & Roof
City of Mill Valley: Corporation Yard	Roof
Sewerage Agency of Southern Marin: Wastewater Treatment Plant	Ground, Roof & Carport
Marinwood Cmnty Svcs Dist: Community Center/Pool	Roof and Trellis
Southern Marin Fire Protection District: Fire Station #9	Roof
City of Novato: Hamilton Pool	Groundmount
SCWA: Geyserville WWTP	Groundmount
SCWA: Sea Ranch North WWTP	Groundmount
County of Sonoma: Sonoma Valley Sheriff's Sub-Station	Carport
SCERA: Administration Building	Roof
Town of Yountville: Wastewater Treatment Plant	Groundmount
Town of Yountville: Wastewater Pump Station	Groundmount
Town of Yountville: Recreation Hall/Community Center	Carport
Napa County Office of Ed.: Administrative Office	Carport & Roof
Napa County Office of Ed.: Pre-School/Court Schools	Carport
City of St. Helena: Water Treatment & Reclamation Plant	Groundmount
City of St. Helena: Stonebridge Wells	Ground & Carport
City of St. Helena: Water Treatment Plant	Ground & Roof
City of St. Helena: Library	Carport
City of St. Helena: Fire Hall	Carport & Roof
City of Cotati: Civic Center	Carport & Roof
City of Cloverdale: Wastewater Treatment Plant	Ground-mount
City of Cloverdale: Water Treatment Plant	Ground-mount

Strategic Energy Innovations *(www.SEIinc.org) is a non-profit organization established in San Rafael in 1997, committed to actions that sustain our planet. SEI offers a broad spectrum of sustainability services to support communities as they design and pursue innovative approaches that leverage clean energy and resource efficiency while building local economies and a trained workforce. Our method is multifaceted and comprehensive, starting with collaborative strategic planning that seeks to unlock the potential of critical, yet often under resourced groups - such as local governments, schools and universities, small businesses and affordable housing providers and their residents - to serve as integral agents in their community's response to our collective climate challenge.*

Optony Inc. *(www.optony.com)* Optony Inc. is a global research and consulting services firm focused on enabling government and commercial organizations to bridge the gap between clean energy goals and real-world results. Optony's core services offer a systematic approach to planning, implementing, and managing commercial and utility-grade clean power systems, while simultaneously navigating the dramatic and rapid changes in the industry. Optony has participated in dozens of patent filings and continues to explore next-generation technologies, policies and programs in collaboration with leading institutions in the USA and China.

For more information on The California Solar Initiative's Research Design and Development Program, please visit: www.calsolarresearch.org/

Itron CSI RD&D Program Manager

GO solar CALIFORNIA

-###-

Solar Energy & Economic Development Fund (SEED Fund)
Frequently Asked Questions:

SEED Fund Structure & Program

1. What financing or purchase options will be available through this process?

Multiple financing options will be pursued, including both a Direct Purchase price and at least one financed option (most likely options include a PPA, lease or loan). Participants are then able to select the option that is best suited for their needs.

2. If we go through the SEED Fund process and get feasibility assessments and then choose not to move forward, can we then later go into contract with vendors on our own using the feasibility studies? Would the SEED Fund have to be reimbursed?

The SEED Fund agreement requests reimbursement to cover costs of providing independent assessments and procurement services, within a specified amount of time, for any PV projects that move forward to contracting on a site that is part of the SEED Fund initiative. The benefits of this collaborative approach for all participants are achieved through vendor selection and contracting as a group, rather than individually. However, the flexibility to procure individually exists to address individual agency requirements.

3. What is the SEED revolving fund?

The SEED Fund creates and deploys a starting pool of money to cover project evaluation, procurement and contracting costs for technical assistance and the deployment of expert resources. This pool gets reimbursed through payments from participants or vendors to cover these costs after projects are contracted. These funds are then used for future rounds of project activity.

4. Who are the vendors?

Specific vendors are evaluated and selected for the participating agencies through an independent procurement process to ensure the best value by project type.

5. Where did the initial seed money come from?

The SEED Fund team received a grant from the California Solar Initiative (CSI) for a project designed to stimulate clean energy project development in the North Bay Area, and to create a replicable model for other areas and project types.

6. Are the procurement and contracting documents standardized?

Industry-leading templates and contracting documents are available and used as a basis for customizing to the specific requirements for the participants and their project types.

7. Can you opt out if you don't like the chosen vendor for your bundle?

We ask that you make a good faith effort to pursue a contract with the chosen vendor for your bundle. If an agreement cannot be reached, other responsive vendors may be approached and the SEED Fund can help with that process. However, reimbursement will be requested if the projects are contracted.

8. When will project construction start?

The intent of the program is to have contracts signed and construction start by the summer of 2013. As always, the final schedule of construction depends upon multiple factors, including City Councils, financing entities, City staff, operational schedules, and other variables.

9. What is the turnaround time for a site assessment?

Initial site screenings usually take 2-4 weeks, depending on the availability of facility data and agency responsiveness. Full, investment-grade feasibility studies usually take 4 weeks depending on site availability and review time with staff and stakeholders.

10. Can any of the funds be put toward an external management position? Can reimbursement of project management position be set into contract?

This is possible, but would need to be worked out in the final contract between participant and vendor, and is not in the scope of the SEED Fund project.

11. How much staff time will it take for us to get to an initial decision to proceed?

Staff time will depend somewhat on the number of potential sites and any work that has already been completed to date. Overall, the time needed is not significant and includes the effort to gather and provide site data, discuss proposed locations for solar installation, and then review the Solar Screening Report internally.

12. Will auditing or reporting be required?

The SEED Fund will not require any auditing or reporting, other than the expected interaction to complete the described project activities. We do not anticipate any requirements from the CSI program administrators other than potentially a follow-up survey.

13. Will all sites be publicly-owned?

For the first round of the SEED Fund program, municipalities, schools and public agencies are the only participants. For future rounds, community or commercial solar programs may be considered.

14. How will schools fit into the program?

The SEED fund program is focused on the public sector so schools and school districts are welcome to participate.

15. What is the anticipated size of the overall project?

The first-round project goal is to contract for at least 5 MW of solar power, depending on participant involvement and site characteristics.

16. What are the estimated time and effort requirements of the lead agency?

In addition to the staff-time needs for all participating agencies in the SEED Fund project, the Lead Agency will need to provide extra legal staff time and expertise for vetting procurement documents, along with project staff time for issuing the RFP, overseeing the process and evaluating vendor proposals. The SEED Fund team will provide direct support to the Lead Agency to minimize the impact on their resources, but additional effort will be required.

17. What are the benefits for the lead agency?

By aggregating regional projects together, the Lead Agency sees benefits from lower volume pricing, better vendors, more options for solar financing, stronger negotiating power, and the ability to demonstrate leadership regionally and nationally. They also receive industry-leading support and resources from the SEED Fund team with no initial out-of-pocket costs.

18. How can we engage with our stakeholders so the process is more effective for all participants?

Communication among all participants and stakeholders early and often is a key to success. The SEED Fund supports the outreach, training and communication needs of the lead agency, participants and regional stakeholders to help facilitate interaction and engagement.

19. How do you determine the projected group savings?

Actual pricing from multiple prior projects was consolidated and analyzed to compare individual pricing with group pricing. This econometric analysis showed that the incremental benefit from group pricing was in the range of 10% to 15% on average. In addition, transactional savings from avoiding duplication of efforts and the independent creation of assessments, documents, evaluations, staff reports and educational resources was calculated by Joint Venture: Silicon Valley and showed a savings of between 50% to 70% in staff time and related costs.

20. How are energy efficiency and other technologies included in the project?

Energy efficiency is an essential component in reducing overall energy needs. While the first round of the SEED Fund program is focused on solar power systems, future rounds will be available for other energy efficiency and renewable projects. In addition, participants are requested to review opportunities for energy efficiency at potential solar sites, and to undertake those projects as appropriate to improve the energy profile at those buildings.

21. Where/when will staff time be required?

Different agencies take different approaches to staff time allocations and participation in group projects. The SEED Fund has experience in estimating staff-time requirements and the team is available to build out an agency-specific estimate, upon request.

22. What experience does Optony have with this type of project?

Optony served as the Technical Advisor on the successful Collaborative Solar Procurement in Silicon Valley, led by the County of Santa Clara. Since the development of that project, Optony has co-authored a Best Practices Guide on collaborative solar procurement, and has provided similar services in the Washington DC area and for the second-round Bay Area regional renewable energy project. Overall, Optony has worked with more than 100 municipal agencies to support their clean energy projects from feasibility studies and procurement management services to project commissioning.

23. What makes the SEED Fund program unique?

The SEED Fund program represents the 4th generation of collaborative regional projects and builds on the successes and lessons learned from prior efforts. The most unique aspect is the funding mechanism for initial project costs that have traditionally been the barrier to faster public

sector adoption. The SEED Fund requires no up-front participant cash investment for independent technical assistance, feasibility assessments, and procurement management services. Rather, it uses a revolving fund model where the program is reimbursed only when cost-effective projects are contracted, creating a new pool of funds to develop additional clean energy-related projects.

Financial & Construction

1. Is financing option information available on our website?

Information about various financing and ownership options is being provided through a series of workshops and program materials. Relevant resources will be available on the program website.

2. Can participating sites be in different utility territories (ex. PG&E and MCE)?

Participants can have facilities that are served by different electric utilities. Feasibility assessments and vendor proposals will be evaluated to determine financial benefits of each facility based on the utility provider's rates schedules and available solar programs.

3. Who operates and maintains the solar PV system?

With a Direct Purchase, Lease, Loan or bond program, the buyer (Municipal Agency) is responsible for Operations and Maintenance (O&M). With a Power Purchase Agreement (PPA), the 3rd-party owner of the system is responsible for O&M.

4. Is over-production or a Feed-In-Tariff attractive for participants?

Feed-In-Tariffs are possible, but may be unlikely to generate a net economic benefit for the participants. For most facilities that will be considered in the SEED Fund project, on-site use of solar generation will be the most financially beneficial option. However, potential locations for over-generation or FIT production will be considered.

5. What is the anticipated pricing for systems?

The solar market has experienced a significant decrease in costs over the past few years for both purchased and financed systems. As a group purchase, these costs can be significantly lower than with individual purchases. Specific anticipated cost ranges will be discussed with participants based on their site types, facility requirements and financing options before procurement and after vendor proposals are received.

6. What are the other associated operating costs?

Annual Operations and Maintenance (O&M) may be required for purchased systems, which would be provided by external vendors or by internal staff. Typically, Power Purchase Agreements (PPAs) have O&M costs included, so no additional costs would be required.

7. Who will file for rebates?

The SEED Fund team will provide guidance for all available rebates and reservation processes. The participating agency will be responsible for completing forms and paying for any required application fees.

8. What kind of warranty will there be for installed systems?

This will depend on components proposed by bidders, but typical requirements are 25 years for module performance, 10 years for inverters, and 10 years for workmanship. Depending on the financing and ownership model, some full system output warranties may also be offered for up to 20 years.

9. What is the typical roof load for solar PV and wind load?

There are two main load conditions to consider – the dead load (weight of the array) and the wind load (uplift caused by wind catching the solar modules).

A typical module weighs between 2.5 and 3.5 lbs/sqft. The weight of additional components depends on whether the system is mechanically attached to the roof or held in place by ballasting. For a mechanically attached system, the total system weight is typically between 3.0 and 4.0 lbs/sqft. For ballasted systems, the typical system weight is 5.0 to 8.0 lbs/sqft. Note this applies under the footprint of the array, not to the whole roof. This assumes that the inverters, which can weigh several thousand pounds for large PV systems, are not located on the roof.

The wind load depends on the tilt of the array, wind design speed in your location, building height, and wind exposure category of the building (which depends on the shielding effect of trees or other tall buildings nearby). The wind load varies widely depending on these factors and requires structural analysis to properly determine.

10. What are the criteria for a suitable building for solar PV in the SEED Fund?

For the purposes of the SEED Fund project, annual energy usage of 50,000 kWh or higher is suggested. The un-shaded and structurally sound space available for solar should be at least 3,500 square feet (rooftop, parking garage, parking lot, ground) for physical installation of the modules.

11. How are construction requirements included in the process?

The SEED Fund will provide template construction specifications based on industry best practices for discussion with the participants. Based upon feedback from staff, the specifications will be updated and issued with the procurement documents to potential vendors.

12. Do you have to change PG&E equipment?

Typically, no change is required. In cases of very old switchgear equipment or where a line-side interconnection is unfeasible, a change in PG&E equipment may be required. Additionally, for large facilities, a change in PG&E equipment may increase financial benefits and could be considered.

13. Are parking garages good candidates?

Parking garages and parking lots can be good sites for solar using elevated carport structures. However, structural engineering review is often used to determine any limitations of post-tension construction for garages.

14. What will a solar carport structure look like?

Installation example photos are available on the SEED Fund website. Other than during construction, parking spaces are typically unaffected, or minimally affected by carport installations.

15. Who pulls the building permits for solar PV systems?

Many municipal agencies require a normal building permit process driven by the vendor; others perform an internal process on municipal facilities. Participants are encouraged to determine their requirements for this project in advance so that they can be included in the procurement documents.

16. Can we install floating solar on our reservoir?

Floating solar is uncommon but solutions do exist and may be considered, if there is enough participant interest.

17. Can you combine solar PV with a wind farm?

Yes, but the system design, environmental review and interconnection process may be more complex.

18. How much energy/GHG impact can we expect for each kW of solar installed?

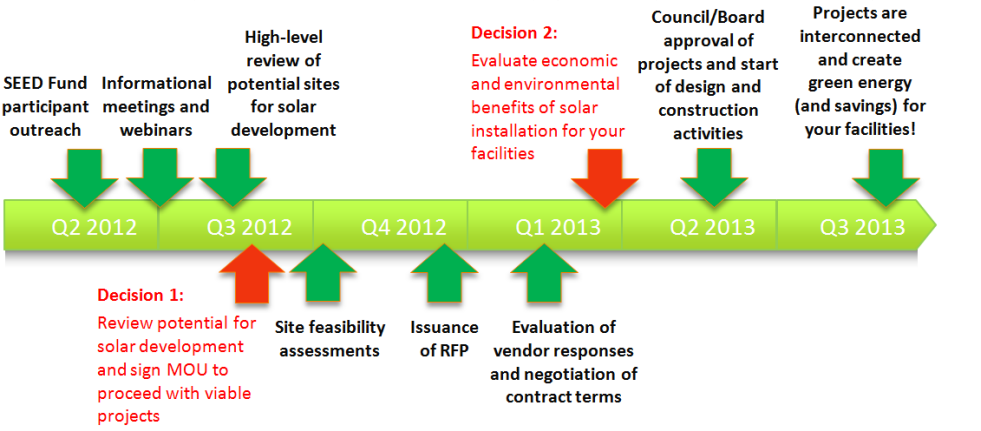
According to PG&E and NREL estimates, each kW of solar capacity can lead to the reduction of approximately one metric ton of CO2 emissions per year.

There are many resources available for participants, so please visit the SEED Fund website (www.solarroadmap.com/SEED) to learn more about project specifics, team background, solar financing, and case studies. If you would like to be a part of this exciting program, please contact us:

Kif Scheuer—Program Director
Strategic Energy Innovations
kif@seiinc.org
(415) 507-1433

Jonathan Whelan—Sr. Project Manager
Optony Inc.
jonathan.whelan@optony.com
(415) 450-7032

SEED Fund Project Timeline (with key participant decision points)



**This program is funded through a grant from the California Solar Initiative to enable sustainable development of solar projects in the North Bay and serve as a statewide demonstration of innovative business models.*
***Strategic Energy Innovations (SEI), is a non-profit organization dedicated to reducing pollution and saving money through energy and resource efficiency. Optony is an independent solar consulting firm specializing in supporting public and private solar programs and projects.*

Collaboration Engagement: Lessons Learned

March 2013

OPTONY
Solar for Life™

Strategic Energy Innovations

Sustainable Energy and Economic Development Fund (SEED Fund): Collaboration Engagement Lessons Learned

1. INTRODUCTION

The Sustainable Energy & Economic Development Fund (SEED Fund) initiative seeks to greatly extend the market potential of the collaborative procurement model by employing a revolving fund mechanism. The SEED Fund recognizes upfront costs for high-quality project evaluations often prohibit public agency investment in solar. The program is designed to help public agencies get expert technical and financial information first prior to making a decision to install solar, with no upfront cost. If participants determine not to install solar, reimbursement to the SEED fund is not required.

The SEED Fund is designed to allow participants to defer the 1-2% upfront solar procurement cost that can be prohibitive for many public entities. By overcoming that upfront cost barrier, participants will be able to engage in collaborative purchasing that results in better pricing (10-12% total project cost savings), lower project risks with higher returns, reduced transaction costs and reduced administrative effort (resulting in 50-70% admin cost savings for participants).

The objective of this document is to provide a mid-term review of SEED Fund's engagement efforts with public agencies in Sonoma, Napa, and Marin Counties. In the following, outreach methods are described, followed by current participation results. We then discuss lessons learned by identifying main challenges and providing recommendations for improvement.

1.1. Approaches to Outreach

This first round of SEED Fund is regionally focused on Sonoma, Marin and Napa counties. A total of 206 public agencies – 98, 78, and 30 public agencies in Sonoma, Marin and Napa counties were identified, respectively. This compromises 72 school districts, 71 special districts and 49 municipalities. See Figure 1 for an illustrative breakdown of public agencies identified within the three counties and Table 1 for a summary of SEED Fund's outreach audience.

Figure 1. Distribution of Public Agencies Identified

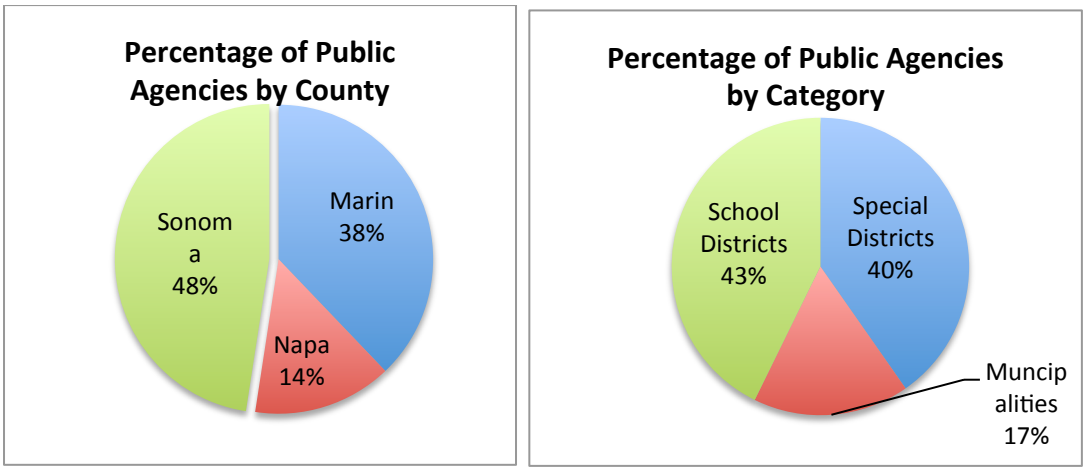


Table 1. Example focal points for outreach

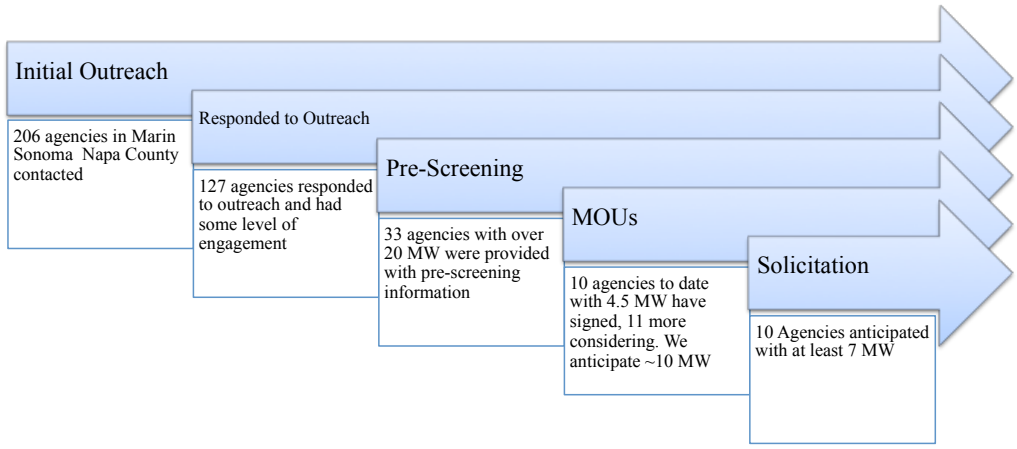
	Municipalities	Schools	Special Districts
Examples	City, Town, County governments	School Districts, Office of Education	Airport, libraries, hospitals, fire departments, water, waste management, transportation
Public agency staff focal points	• Sustainability Coordinators • Facility Managers • Staff Engineers • Public Works Managers • City Managers • Finance Directors	• Superintendents Principals • Business and Financial Officers • Directors of Maintenance and Operations	• Staff Engineers • Project Managers • Environmental Managers • Fire Chiefs • General Managers • Construction Managers

1.2. Participation Outreach Results

Of the 206 public agencies identified between the three counties, we received response from 127 agencies. Figure 2 illustrates the pipeline of our engagement outcomes. The following summarizes participation results as of March 31st 2013

- A total of 33 agencies received pre-screening reports covering 167 specific sites.
- To date, 10 agencies have signed the MOU (4.5 MW of A-site solar potential)
- Another 11 public agencies are still considering participation.
- To date, an average of 20% of responsive public agencies are still active in the pool of potential participants.

Figure 2. Pipeline of Engagement in SEED Fund



2. CHALLENGES AND LESSONS

Over the period of SEED Fund outreach, we identified four core challenges to effectively recruiting public agencies.

2.1. Making the connection: Finding and accessing public sector decision makers

2.1.1. Summary of Challenge

At the outset of outreach, potential participants were compiled into a preliminary list through address books and blanket Internet searching. This worked well to develop a database of contact organizations, but did not include key potential participants, specifically from special districts that were unknown or overlooked. For example, the Golden Gate Bridge Highway and Transpiration District was not initially contacted. Though they did not choose to participate, this district has great potential and would have benefited from earlier engagement.

From this list cold calls were made to identify appropriate focal points in each respective agency to discuss participation in the SEED Fund program. For many organizations, multiple calls and explanations of the SEED fund were exchanged before the correct contact person was identified. Communicating and connecting with organization staff effectively while providing clear and concise content about the SEED Fund was a balancing act. With limited budget, SEED Fund team members could not spend as much time "in the streets" meeting with individuals and hosting meetings. Where we could directly engage potential participants such as at the 6 workshops held early one, or at pre-arranged group meetings, such as at the Marin Climate Energy Partnership or Sonoma County's Regional Climate Protection Authority we were able to forge effective relationships.

Additionally, initial outreach efforts were focused on sustainability coordinators only or community-based non-profits. These yielded much interest and excitement, but the project could not proceed until municipal decision-makers and elected officials were brought up-to-speed on the program.

Navigating operational responsibilities of each agency and mapping local jurisdictional relationships also proved challenging at times. Organizational characteristics and decision-making procedures differ among municipalities, special districts and school districts.

In California, special districts in may operate under an independent local board of directors or operate dependently under a city council or county board of supervisors. However, in most instances, special districts are able to approve items such as the SEED Fund MOU independently. Independent governing structures between special districts and municipalities, local municipality participation was a prerequisite for special district consideration of SEED Fund. Special districts frequently asked the SEED Fund team whether the local municipalities were already participating in SEED Fund. For example, Sonoma County Water Agency did not want to consider participation until Sonoma County General Services issued approval, in which both agencies are now

considering a joint MOU agreement to participate in SEED Fund.

Conversely, school districts primarily maintain relationships between local school districts and the state government. School districts rely on revenue bond approval to install solar panels on school sites. Some school districts expressed a delay in confirming participation until after November elections until bonds were passed. School districts also expressed curiosity in each other's participation prior to committing to the SEED Fund MOU.

Presenting in face-to-face meetings and at group workshops or meetings with peers resulted in positive outcomes. Presentations at Marin Clean Energy Partnership and Regional Climate Protection Authority were effective, particularly in Marin. Nearly every face-to-face meeting resulted in action, and usually quick action. Potential participants with whom we met may not have been more likely to ultimately sign up for the RFP, but were more likely to take next steps. City of Novato, City of St. Helena, City of San Rafael all got more engaged after personal meetings.

2.1.2. Lessons Learned for this Challenge

- Identify public sector champions immediately and work through them to engage the region
- Leverage regional organizations that have environmental and/or economic initiatives to build support and help accomplish existing goals.
- Developing the message for key public officials to get their interest and tap into existing community-wide priorities to create organizational willpower.
- Work with governments or utility providers to gather contact information on potential participants.
- Establish database of regional energy-related contacts.
- Outreach via building officials and planning officials to attract support and understanding.
- Initiative early conversations between a region's special districts and local municipalities.
- Target outreach to school districts with potential bond funding and align outreach with bond proposal and election timelines.
- Host additional preliminary informational workshops and targeted meetings, and work with government partners to extend the invitation to all public entities.
- With higher budget, visiting all possible participants and giving individualized presentations probably would be more effective.

2.2. Establishing the value proposition: Messaging SEED Fund and Educating participants

2.2.1. Summary of Challenge

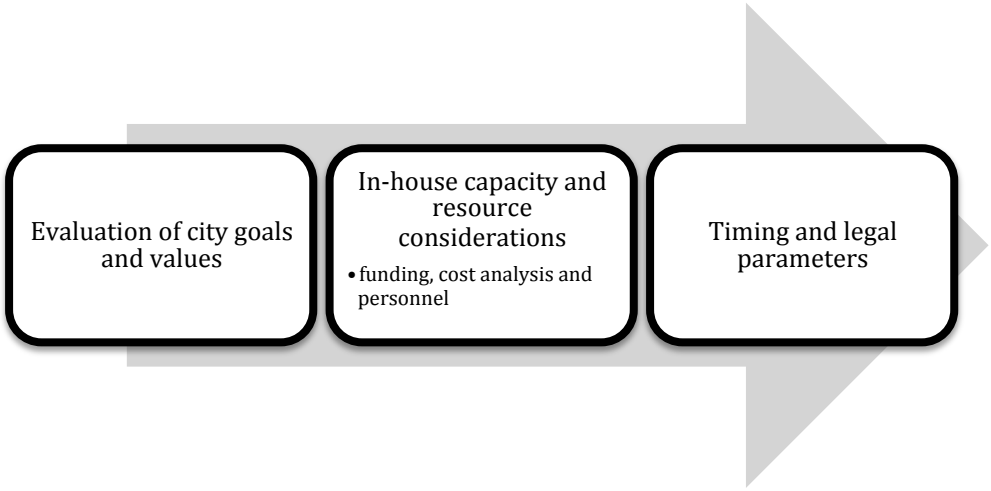
Several participation obstacle themes emerged throughout the outreach process.

Among them, providing sufficient and clear information to establish credibility and earning public agency trust were important lessons. We consistently needed to explain solar power, related technical and economic considerations, and the program structure several separate times to stakeholders before they appeared to gain an understanding.

Public agencies require significant levels of oversight and accountability prior to new program commitments. Accountability is not only directed towards the expenditure of pubic funds, but agencies are accountable for critical and balanced investigations of new business. Approval among financial, engineering, legal staff to proceed with SEED Fund were often integrated into consideration prior to becoming signatory to SEED Fund's MOU, despite SEED Fund's risk-free feasibility assessment policy. See Figure 4 for typical public agency decision-making criteria for SEED Fund participation.

Despite SEED Fund's MOU agreement and non-profit status, SEED Fund engaged in continuous clarification of joint expectations and program implications. Limited case studies of collaborative procurement also caused skepticism. Where SEED Fund conveners had positive local government ties, participation recruitment was prompter. Many of SEED Fund's "early adopters" were agencies that held pre-existing professional relationships with SEED Fund conveners.

Figure 4. Public agency criteria for participation in SEED Fund



Collaborative solar procurement also involves numerous intermediate steps and technical dimensions (e.g. physical solar siting, financial analysis). Participants demanded a wide range of written program education products from simple program teasers to full project scheduling examples. SEED Fund encountered some difficultly in balancing too much and too little information; outreach efforts were simultaneously appraised in feedback as sounding too complex or insufficient in detail. Occasionally SEED Fund was unprepared to meet immediate knowledge needs or unable to respond with standardized informational materials given staff time limitations devoted for resource creation. Instead, an internal FAQ database was created to respond to participant concerns on a question and answer basis.

SEED Fund also employed a bottom-up approach to outreach, seeking skilled internal sustainable energy champions in form of facility managers, sustainability coordinators and other public agency employees that could make a case for SEED Fund. In retrospect, combining bottom-up and peer-to-peer high-level outreach may have been more advantageous. An interview with a past government collaborative procurement officer indicated peer-to-peer communications between high-level decision makers can be an efficient and influential approach to outreach. For example, a Board of Supervisors member may submit a letter advocating the program to a City Manager and Mayor, while keeping internal agency advocates debriefed.

2.2.2. Lessons Learned for this Challenge

- Provide general education about solar power, and technical and economic considerations, and collaborative procurement for key contacts at possible participating agencies through targeted group trainings for like stakeholders.
- Prepare a library of written outreach materials catered to specific audiences – namely, engineers, legal staff, and financial officers.
- Conduct discussions with legal and business contacts on SEED Fund mechanism, impacts, savings, and costs.
- Create simple, memorable, consistent messaging in written and oral outreach efforts. For example, one participant coined SEED Fund benefits as being a "staff saver," helping agencies reach "solar low-hanging fruit," while "aligning with city goals and values."
- Establish greater credibility and proof of concept by methodically demonstrating SEED Fund benefits. This may come in the form of improving informational materials related to payback periods and other financial tests, gathering endorsements and testimonials, and providing a larger array of example calculations demonstrating benefits.
- Simplify the MOU to have more plain English.
- Tie the idea of a revolving fund more closely with projects our contacts were working on, so they could envision their projects receiving funding, and therefore, see the value in the revolving fund concept.
- Expect lots of questions because of the unfamiliarly with many concepts and data related to the industry and approach.
- Ensure web content is up-to-date and accessible and newsletters are sent regularly. These sources of information were used liberally after workshops and after newsletters were sent.
- Experiment with other methods of outreach, such as mailings, event booths, targeted surveys, pre-recorded webinars, and high-level peer-to-peer program advocacy.
- Set firmer timelines earlier in program outreach to improve promptness and responsiveness among public agencies.

2.3. The triple bottom line: Fiscal, legal and timing constraints for public agencies

2.3.1. Summary of Challenge

Economics is often the strongest driver in selling solar PV systems. Where public agencies faced significant fiscal limits and staff cuts, resource designation to pursue solar PV was often reported as a low priority. Staffing and resource shortages were reported among many public agencies. Numerous agencies conveyed that participation in SEED Fund would be conditional on finding complementary funding opportunities, despite SEED Fund's significant cost savings benefit. The need to shorten solar payback periods and lack of additional financial incentives and rebates were occasionally reported as critical to considering solar in the first place.

Meeting public agency timeline requirements is a core challenge to SEED Fund participation. Public agencies react with variable speed and flexibility in their willingness and ability to participate in new, innovative programs. Public agency timelines were often contingent on the size and complexity of procedural hurdles required to approve participation. Despite alignment with public agency goals and priorities, solar installation is often not considered a time-sensitive priority compared to other community needs. Several public agencies also expressed a desire to move faster with program efforts while others preferred a significantly delayed timeline. The County of Marin and the County of Sonoma had problems with the timing of the project due largely to internal reasons related to SMART and other infrastructure projects that will absorb staff bandwidth over the next year.

Agency responses to the SEED Fund's financial mechanism benefits varied. Some agencies seemed receptive to the idea of receiving assessment and procurement services at no upfront cost. Some agencies thought the reimbursement fee was too high, particularly agencies with large sites. The County of Marin had approximately 1 MW in sites, which at $4/W, would have led to a total project cost of $4M. This would have resulted in a SEED reimbursement of $60,000-$80,000. The County may have felt this was a higher cost than paying their own consultant to run the program for them.

November elections also negatively and positively affected interest and participation in SEED Fund. For example, following the election of a new fire district chief, one administrative assistant expressed renewed interest in the program provided the change of leadership. In other organizational circumstances, re-education of SEED Fund to newly elected officials delayed participation approval.

Solidifying SEED Fund's timetable and deadlines were also important to incentivizing participatory action among agencies. SEED Fund outreach launched in May 2012 and a deadline to submit pre-screening data was not announced until mid-November 2012. SEED Fund intentionally resisted setting a bound timetable to enable sufficient flexibility for slower-moving public agencies to participate. However, last-minute psychology surprisingly played an effective and important role in ushering participation forward. For example, as one public agency participant expressed in an email three days prior to the pre-screening information submission deadline, he replied, "Sorry for the delay. We love

deadlines! Anyway, I've attached a couple of forms…"[1]

Legal considerations also pose a challenge to SEED Fund engagement. Some agencies had concern about risk of signing the MOU, and getting into "debt" that was really an unknown. Others felt that the SEED Fund should be accepting liability for engineering of systems, which is not possible with the intended scope and budget. Some agencies stated flatly that they operated with their own RFP's and did not want to work with other agencies.

2.3.2. Lessons Learned for this Challenge

- Develop educational materials on financing and funding, distribute easy to digest targeted information to potential participants at the onset of communication.
- Demonstrate success from related projects to help get buy-in.
- Identify potential funding opportunities in upcoming legislation.
- Explain the risks, benefits, and legal ramifications of the SEED Fund effectively with educational materials and group discussions to reduce time and cost. We expect concerns related to debt and liability will be less of an obstacle in a Round 2 with demonstrated success from Round 1.
- Work with agencies that have a commitment to the environment and/or lean sector economic growth, in addition to budget and time to pursue the SEED Fund.

2.4. Leading with a lead: Engaging a Lead Agency in SEED Fund

2.4.1. Summary of Challenge

A Lead Agency is selected amongst the SEED Fund participating entities to help solidify engagement among participants and shoulder some of the administrative burden. The Lead Agency is of critical importance to collaboration. It is their role to assist in the coordination of public partners and lead the issuance of the RFP for public participants. Starting with a Lead Agency that has a desire and elected support, to be the Lead Agency eases the outreach and organization process immensely.

The SEED Fund team works with the Lead Agency to define RFP terms for each bundle of projects, and to incorporate specific contract terms for individual participants, required submissions for qualified bids, and scoring criteria for evaluating submitted bids. A final RFP will be approved by the Lead Agency, and shared with all public participants for their approval.

The Lead Agency is expected to be the first of participant to sign the MOU; they are already oriented to pursue of solar PV development and/or have the largest potential for site development. Lead Agency candidates were identified early in the project; however these did not pan out ultimately and recruiting for a new lead agency took longer than expected.

The SEED Fund team approached a number of agencies to consider the lead agency

[1] Mike Grant, Marin County Office of Education

role. After several months of deliberation, and revisiting the incentives the program can offer a lead agency, the City of San Rafael finally agreed to play this role. What ultimately swayed them to participate seems to be a combination of an increased direct incentive, a documentation of the value of the support SEED Fund is providing to the City, a waiver of the reimbursement to SEED Fund, and support from Marin Energy Authority to provide additional technical support to the City. Securing a committed lead agency has been labor intensive for the team, and left the team without strong public sector champion for most of the outreach period of the program. A summary of public agency perspective on the Lead Agency is summarized in Table 2 below. From this table, it is clear that public agencies have different administrative proficiencies, individual government protocols, timetables, and a wide variety of other competing community needs that affect their outlook on the lead agency role.

Table 2. Public Agency Concerns about Lead Agency

Public Agency	Responses to Lead Agency Role
Marin County	• Being lead agency will slow our own development timeline down. • Competing critical public works projects take precedence over solar right now • Budgeting solar would be better later when could be folded into 5 year capital improvement plan • Participation is strongly linked to the fiscal quarter schedule; staff budgeting is already pre-mapped • Public review and community approval is required prior to siting solar on specific public sites • Benefits of collaboration are not that strong.
San Rafael	• In-house staff time and expertise in solar procurement is lacking • Need political push from council to move forward • Want to be a leader but are unsure what the costs for this role will be
SCWA / Sonoma County GSA	• The quantity of solar to be installed requires confirmation prior to participation. • Unless directive is received from elected officials, no commitment can be made until the full investment grade feasibility assessment is completed • Internal costs for the Lead Agency role poses constraint. A greater financial incentive is required (e.g. increased stipend).
Santa Rosa	• Approval and crafting of a Design-Build ordinance is required prior to considering participation • Legal staff held reservations about SEED Fund liability for feasibility studies

On reflection, it could have been better to identify a Lead Agency during the proposal development stage. It may have been easier for elected officials to support a grant application that may or may not be awarded, and that requires no direct budget

allocation, than trying to approach staff with a project that is so real as to be intimidating, in terms of time and expertise needs. Even without a lead agency in hand from the start, it is clear now that outreach and engagement for the region as a whole would have been more effective if we had started by identifying a lead agency and focusing the whole program on the region from which a lead agency emerged. Having seen now, how much more activity is coming out of the recent agreement with San Rafael, we are confident that having a lead agency on board early on is critical to building a successful and efficient program in the future.

2.4.2. Lessons Learned for this Challenge

- Get the lead agency early in the process to avoid delays and to help in recruiting participants.
- Work through political leaders to secure engagement, staff rarely has the capacity to take something like SEED on without higher-level endorsement. If you start with political engagement, the details will be much easier to resolve.
- Secure a lead agency who is 1) committed to developing their own solar, 2) sees value in being a leader in the region by sharing their effort with other agencies. For such an agency, SEED becomes a carrot to enhance their momentum, rather than the driving force for their decision to act.
- Establish the target region based on the lead agency. Have the lead be prominent advocates pushing for the collaborative to reduce their costs. Lead agency messaging may be more trusted by fellow public agencies.
- To secure engagement, SEED Fund must relate well to the potential lead agency's overall mission, economic capacity, and environmental goals.

3. CONCLUSIONS

Because of our grant scope that predetermined certain approaches based on assumed receptivity in the region, we appear to have started our engagement too broadly resulting in a more diffuse engagement rather than a more cumulative engagement of active participants. Although the collaboration engagement process has been longer and more drawn out than we had imagined, we have managed to engage a wide swath of public agencies in our target region, and are on track to realize our collaborative and business model goals. While this document highlights many granular "lessons learned", we conclude with an emphasis on the major takeaways from the first phases of the SEED Fund, that we feel can be addressed and will make future activity more efficient and successful

- Start with the Lead Agency and work outward to target potential participants using the power of a regional network of increasingly engaged champions to build the program base
- Develop clear messages that are simple and compelling to our audience so we can build awareness quickly and move towards engagement without confusion
- Continue to refine the deeper technical, legal, and fiscal case for SEED Fund so when participants look at the program they see a strong value proposition that is likely to address multiple priorities.