

# Inclusive Energy Innovation Prize



U.S. DEPARTMENT OF ENERGY

## **End Poverty in California with Solar (EPICS): The Pippin Orchard Solar Project**

Impact Plan

February 2022

## Team Information:

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**Team Member 2:** Robert Stayton, Sustainable Systems Research Foundation

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**Team Member 5:** Robert Hymes, Mynt Systems

**Team Member 6:** Lee Barken, CollectiveSun

**Team Member 7:** Jim Faith, IN3 Capital Partners

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**Team Member 9:** Craig Lewis, Clean Coalition

**Team Member 10:** Wendy Boyle, Clean Coalition

**Team Member 11:** Maria Elena de la Garza, Community Action Board of SC County

**Team Member 12:** Dr. Ann Lopez, Center for Farmworker Families

**Team Member 13:** Nancy Faulstich, Regeneracion—Pajaro Valley Climate Action

**Team Member 14:** Joanna Carman, MidPen Housing Corporation

**Team Member 15:** Dr. Erin Pearse, Cal Poly San Luis Obispo

## Short Description:

Imagine a world in which disadvantaged communities' corporations owned and operated their own solar plus storage systems, sold low-cost electricity to their residents and generated enough revenue to fund a Guaranteed Basic Income (GBI) for low-income households. *Ending Poverty in California with Solar*, or "EPICS," seeks to do exactly that. EPICS resembles the Alaska Oil Dividend. By contrast, EPICS gets its energy from the sun, whose energy falls on everyone and everything, and is free for the taking. A GBI provides a fixed monthly payment to individuals and families who meet stipulated income requirements but, in contrast to welfare or unemployment insurance, comes with no strings or obligations attached. The EPICS team, which includes community-based organizations, other non-profits and for-profit companies, is designing a solar-GBI project for Pippin Orchards, a 126-unit low-income housing development in Watsonville, California. Pippin Orchard's household income limit is \$67,000 for a family of four, targeted to farmworker families, teachers, low-income workers, homeless transition aged youth and disabled individuals. EPICS is a project of the Sustainable Systems Research Foundation and its partners and is based on Robert Stayton's proposal in *Solar Dividends—How Solar Energy can Generate a Basic Income for Everyone on Earth* (2019).

**Video:** <https://youtu.be/6ScH4IMDiKg>



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## I. Project Overview

Poverty is an enduring problem around the world. One approach to ending poverty and improving the welfare of disadvantaged communities is “Guaranteed Basic Income” (GBI), which provides a fixed monthly payment to individuals and families who meet stipulated income requirements. In contrast to welfare or unemployment insurance, GBI comes with no strings or obligations attached.

Now, imagine a world in which disadvantaged community-based corporations own and operate their own solar plus storage systems, sell low-cost electricity to their customers and generate revenues to fund a GBI program for low-income households.

*Ending Poverty in California with Solar*, or “EPICS,” seeks to do exactly that.

EPICS is a project of the Sustainable Systems Research Foundation and its 11 partners, based on Robert Stayton’s proposal in *Solar Dividends—How Solar Energy can Generate a Basic Income for Everyone on Earth* (Santa Cruz, Calif.: Sandstone, 2019). EPICS resembles the Alaska Oil Dividend, which provides an annual payment to all Alaska residents from royalties generated by state-owned oil fields. By contrast, EPICS gets its energy from the sun, whose energy falls on everyone and everything, and is free for the taking.

GBI programs show that unconditional monthly payments to low-income families reduce poverty, encourage education, and improve the physical and mental health of recipients, without creating disincentives to work (see endnotes for references).<sup>1</sup> GBI programs are growing in popularity and are being launched around the United States and California.<sup>2</sup> Most of these programs are short-term and supported by tax-based funds or private foundations. The high costs of a truly comprehensive program stand in the way of making



GBI universal. EPICS overcomes the funding barrier by generating income from the sale of a commodity—solar generated electricity—and distributing revenues as a GBI.

The EPICS team, which includes community-based organizations, other non-profits and for-profit companies, is designing a conceptual solar-GBI project for Pippin Orchards, a 126-unit low-income housing development in Watsonville, California (Figure 1). Pippin Orchard's household income limit is \$67,000 for a family of four, targeted to farmworker families, teachers, low-income workers, homeless youth and disabled individuals.

The basic design of the Pippin Orchards Solar Project (POSP) is shown in Figure 2. A 5-megawatt solar plus battery system, sized to generate 7.5 million kilowatt hours of electricity annually, is proposed to be installed on-site and on adjacent land. A portion of that electricity is sold at a deeply discounted rate to residents, and the remainder sold at a negotiated tariff rate to neighborhood customers and businesses. After paying for system operation and management, the remaining revenues are put into a GBI fund that is distributed by a community-based non-profit to 80-100 qualifying low-income Watsonville households. Financials for POSP are shown in Table 1.

The POSP system will be owned and operated by Pippin-CollectiveSun LLC, a limited liability California B corporation. In collaboration with EPIC team members and the City of Watsonville, Pippin-CollectiveSun LLC will arrange financing through social impact investors willing to accept low interest rates, development loans and low-interest municipal bonds. The company will work with EPIC Team partners to handle vendor selection, construction management and commissioning. The company will arrange a power-purchase agreement with the housing development and, with the cooperation of PG&E (or the local CCA), will sell power to local customers and businesses. POSP's conceptual operating structure is shown in Figure 3.

By all measures, Watsonville is a disadvantaged community. Some 82% of the City's population is Hispanic (Figure 4), 36% foreign-born and 76% U.S. citizens. Median household income for the city was about \$55,500 in 2019, compared to \$75,000 for California and \$82,000 for Santa Cruz County, but 15% of the households are below the poverty line. Many farmworkers live in the area, in substandard housing and crowded conditions.



Figure 2.

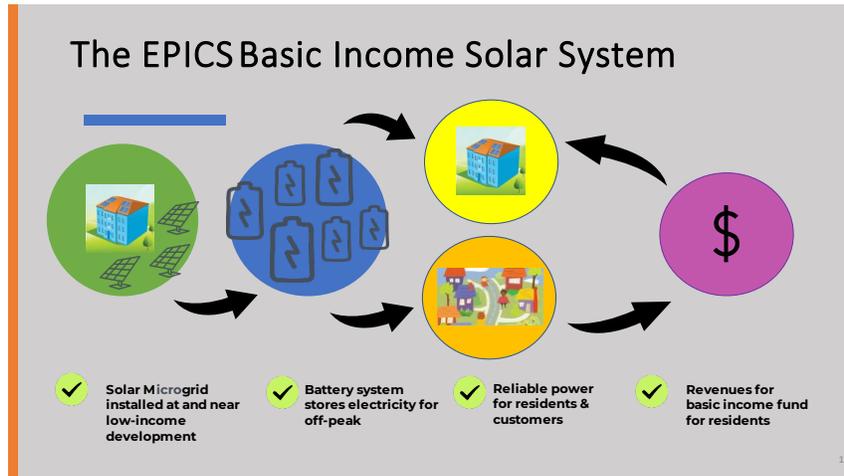


Table 1: Pippin Orchards Solar Project Financials

Solar Size (kilowatts)	5000
Solar cost @ \$1.60 per watt	\$8,000,000
Battery Size (kilowatt hrs.)	7,000
Battery cost @ \$0.70 per watt hour	\$4,900,000
Total Capital cost	\$12,900,000
Tax Credit	30%
Tax Credits @ 30% (solar ITC + others)	\$3,870,000
CapEx minus tax credits	\$9,030,000
Loan Interest Rate	2.50%
Loan Term (years)	20
Annual loan payment	\$579,249
Annual kWh generated	7,500,000
Avoided Cost of Energy	\$0.182
Total annual Savings (gen x ACOE)	\$1,365,000
O&M Costs	\$100,000
PPA Rate	\$0.154
Annual Revenue	\$1,155,000
Net Revenue for UBI (gross rev. minus annual cost)	\$475,751
\$ per Family per month	\$500
# of Families Served	79

Figure 3: Pippin Orchards conceptual operating structure

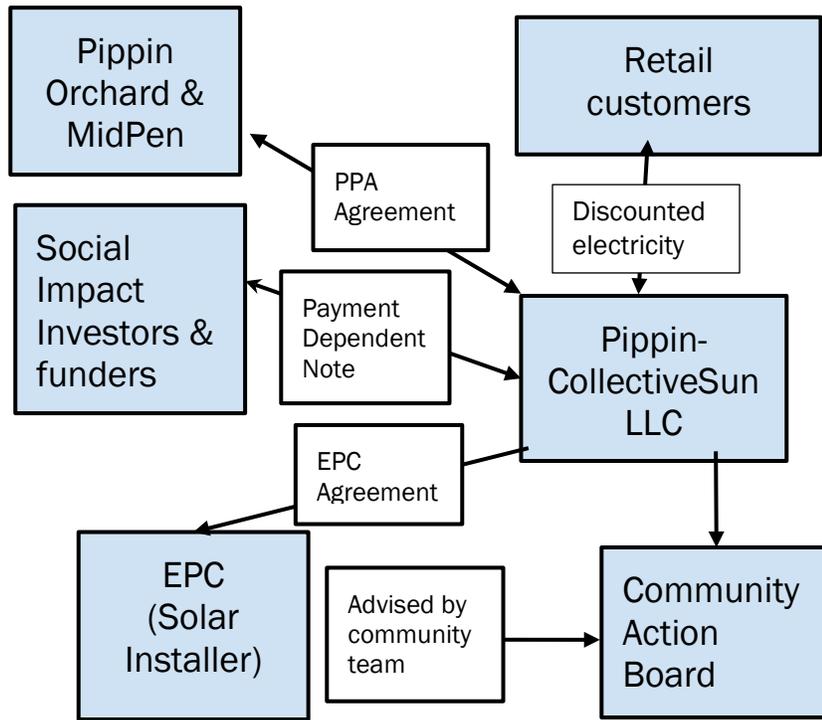
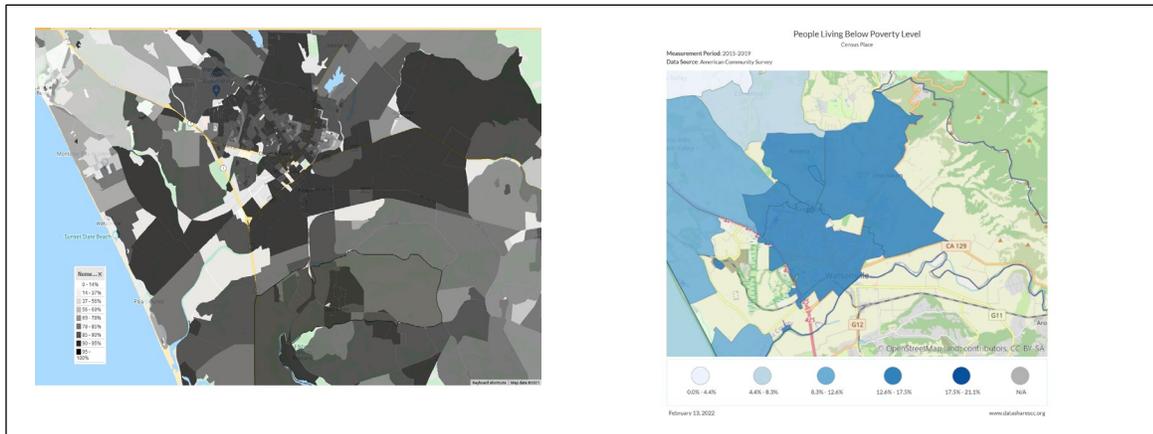


Fig. 4: Nonwhite population & poverty levels in Watsonville<sup>3</sup>



We recognize that, under California’s existing utility regulation and legal environment, this project is not feasible. We are optimistic, however, that this environment will begin to change, as private utilities encounter difficulties in financing transmission and distribution, retail rates—already the second highest in the United States—continue to rise, and the virtues of community-based energy systems become more evident.

## II. Experience in Engaging & Supporting Disadvantaged Communities

- 1. Mission:** The EPICS Team seeks to create a sustainable guaranteed basic income program through sale of discounted solar electricity to industrial, business and retail customers. POSP is a test-of-concept that addresses these goals of the Inclusive Energy Innovation Prize competition:
  - Enable development of a solar generation and basic income model that is replicable and scalable and delivers just and equitable benefits to disadvantaged communities;
  - Creates the first-in-nation sustainable guaranteed basic income program funded by solar energy;
  - Fosters grassroots innovation through inclusion of community members in developing and implementing bottom-up solutions to energy justice and the energy transition;
  - Helps disadvantaged communities tap into public funding and private financing and fosters a spirit of entrepreneurship, ownership and membership; and
  - Increases participation in clean energy and climate-smart job training in the professional and labor sectors.
- 2. Engagement experience:** The EPICS Team includes the Community Action Board of Santa Cruz County, which has a long record of engaging with and providing services to low-income and disadvantaged households in Watsonville, California; Regeneración—Pajaro Valley Climate Action which works with youth and adults to develop and pursue climate justice; and the Center for Farmworker Families organizes food banks and events for farmworkers.
- 3. Entrepreneurial activities:** Members of the EPICS Team have developed and taught environmental proposal design and entrepreneurial practice to college students and have worked with youth and high-school groups to support and encourage professionalization activities, internships and job training. POSP will offer opportunities for community members to learn solar analysis, design and deployment as well as business skills.
- 4. Funding activities:** The EPICS Team includes both for-profit and non-profit members, who have written numerous grants to municipal, state and federal funders and who have been funded through contracts for a number of energy-related projects. The Team is developing strategies to attract social impact investors and other private and public sources to finance the project.
- 5. Engagement strategies:** Team members have engaged with disadvantaged communities and their members through climate-related social media and direct communication, education and training, employment and social services provision, K-12 and college education and collaborations, and a variety of workshops, seminars and group activities. Engagement strategies are described under “Proposed Activities” below
- 6. Experience in addressing climate & justice issues:** Several of the Team’s non-profit, community-based members work directly with disadvantaged communities to assess and prepare for the impacts of climate change, to generate activism on climate justice issues and to provide social services. The project proposed here fosters both energy and climate justice, through provision of low-cost renewable electricity and emissions reductions.



7. **Insights from experiences:** The Team has a proven track record of working on energy projects, collaborating with partners and negotiating the bureaucratic maze. Moreover, by designing POSP in collaboration with a community working group, community members will be engaged in all stages of the project, from design to turning it on.<sup>4</sup>
8. **Evaluation practices:** Team members have applied a variety of project evaluation practices, including surveys, interviews and focus groups at the beginning and end of projects, participant evaluations, external assessors and metrics to measure progress and completion of critical tasks. Team members have also worked with external, independent evaluators to review and assess project design and success.

### III. Proposed activities during Phase One of the Prize

The goal of EPICS-POSP is to launch at the end of Phase One. The objectives of Phase One of POSP are focused on creating a “social license to operate” for POSP-type projects by working with residents of Watsonville in design, siting and development through consultations, community meetings and a community working group.

1. **Project activities & objectives** (time requirements are estimates)
  - i. **Outreach to community members & organizations** (March-May 2022): A draft framework for POSP is presented to Watsonville organizations and the public in a series of in-person meetings (if permitted) and on-line webinars and meetings (if necessary). Meetings are publicized, in Spanish and English, via radio, social media, newspapers, bulletin boards and flyers. Meetings and walk-throughs take place at Pippin Orchard, other potential sites (e.g., Buena Vista Landfill, due to be closed) and operating microgrids. The Team also begins to reach out to public agencies, PG&E and California Central Coast Energy to introduce and discuss the project.
  - ii. **Working group education, planning & design charette/workshops** (June-August 2022): A community working group (WG) is established to review, refine and develop the framework, in collaboration with the EPICS Team. To prepare for this, a series of seminars focused on the technical and regulatory aspects of the proposed project are offered to working group members and the public. These seminars provide professionalization opportunities to the community and WG members and prepare them for roles in energy analysis, climate education and action and regulatory interventions. Next, the WG meets for charette workshops with the EPICS Team to survey the site, identify locations for PV panels, sketch out the operational details of the site, develop the operational architecture and investigate funding and financing options. If public sources of funding are identified, the Team and WG prepares grant submissions and also solicits support from local businesses and private foundations.
  - iii. **Present project to relevant public & private entities** (September-October 2022): The Team and WG prepare materials and presents the project to City and County officers, offices and agencies, to local businesses, civic groups, classes and other interested parties. The WG and Team develop collaborations with these parties, which including verbal and written support, commitment of materials and equipment, and funding.
  - iv. **Meet with funders, financiers and investors** (November-December 2022): The Team and WG identifies potential funding mechanisms, including public funds, private grants and donors, social impact investors and development bank loans, and gives



presentations to them (and writes grant proposals). The Team's financial experts meet with potential funding and financing sources to present the case for the project and the general GBI concept and elicit support.

- v. **Present of project to PG&E, 3CE, California Energy Commission, California Public Utilities Commission** (January-February 2023): When project plans are sufficiently detailed, vetted and polished, the Team and WG presents it to Pacific Gas & Electric and Central Coast Community Energy, both of which could play roles in the project, and the California Energy Commission and California Public Utilities Commission, in order to elicit views, reviews, recommendations and support.
- vi. **Project launch** (March 1, 2023): The project is officially launched at a public event.

**2. Strategies for trust and partnership building:** Many low-income households have received financial, medical and food support during the COVID pandemic, although some are reluctant to engage in activities that could raise questions about immigration status of household members. Although virtually everyone has a cell phone and access to social media, reaching and working with these community members requires personal and peer-to-peer contact. Members of the Team and WG will organized teams of two individuals (at least one bilingual) to speak directly with community residents and businesses about the project, describe potential benefits associated with its successful development and implementation, and the discuss long-term need to deploy community-based distributed energy systems to introduce greater equity in access to solar and to address the climate crisis. These efforts offer the opportunity for safe participation in civic activities, without fear of being reported to the authorities.

**3. Outreach and engagement activities:** See points 1 and 2 above under Project Activities.

**4. Fostering grassroots innovation:** EPICS represents the highly innovative idea of funding GBIs through sale of a commodity, solar electricity. It can provide access to solar energy to disadvantaged communities—especially renters—who cannot otherwise afford rooftop solar. In addition to community ownership and return of solar benefits to the community, the project engages community members and groups in new forms of public-private partnerships and integrates them more deeply into local politics and the local economy. EPICS and the WG can reach out to high school and college students to teach them basic entrepreneurial and professionalization skills, job training opportunities in offices and in the field, and develop potential employment with renewable energy companies, public agencies and non-profits.



## 5. Evaluation of project progress

SMART Goals	Objectives	Evaluation metrics & measures of success
1. Reach out to the community & engage residents	Conduct a broad range of effective media, webinars, meetings, and workshops	# of meetings & notices Meeting attendance Workshop evaluations
2. Create communication teams to speak to friends and neighbors	Solicit individuals to generate community support	# of communication teams # of outreach contacts made # of supportive commitments
3. Create working group, conduct seminars, educate on solar basics	Instruct & work with community members to design & develop plan	# of working group members # of working group meetings Completion of initial design
4. Conduct charette workshops & present results to the community	Conduct community workshops to review & critique	# of workshop participants # of comments on process # of comments on design
5. Have proposal vetted & revised	Submit for community & peer review & revise project plan	# of reviews & comments Completion of revised design
6. Present project to public & private entities	Presentations to city & county agencies, local businesses, etc.	# of presentations # of attendees # of comments received
7. Identify funding & financing options	Contact & work with social impact investors, state agencies, bond financing, legislative bills	# of meetings with funders # of sources identified Commitments received & amount of funding
8. Present plan to utility, CCA & public agencies	Present revised plan to PG&E, Central Coast Community Energy, CEC, CPUC, legislators, city council	# of presentations Responses by agencies Partnerships created
9. Project launch	Begin the process of contracting & building	That it actually happens



## 6. Phase One Deliverables

Deliverable	Description	Target Date
Periodic progress reports	Project newsletter; social media postings	Every two months
Project design—draft	Document providing rationale, technical details, results outreach,	July 2022
Community & working group report	Report on workshops & events, attendance, audience evaluations	August 2022
Funding report	Report on meetings & consultations with potential funders, business proposal & grant submissions	December 2022
Utility & agency report	Report on meetings with PG&E, 3CE, CEC, CPUC	February 2023
Project Phase 1 report	Compilation of other reports plus status at end of Phase 1	February 28, 2023

## IV. Resources & Capabilities to Execute Prize Goals

### 1. Proposed budget

Budget category	Number of units	Cost per unit	Total
<b>Salaries</b>			
Project director (25% time)	520 hrs.	\$50	\$26,000
Community engagement director (50% time)	1,040 hrs.	\$50	\$52,000
Community engagement associates (25% time)	520 hrs.	\$40	\$20,800
Taxes & Benefits @ 15%			\$14,820
<b>Total salaries &amp; benefits</b>			<b>\$113,620</b>
<b>Contractors &amp; consultants</b>			
Engineering design	100 hrs.	\$100	\$10,000
Legal & regulatory assistance	100 hrs.	\$100	\$10,000
Community engagement consultant	100 hrs.	\$100	\$10,000
<b>Total contractors &amp; consultants</b>			<b>\$30,000</b>



<b>Communications &amp; outreach</b>			
Publicity via print & social media (page equivalent)	9,600 pp. equiv.	\$0.25	\$2,400
Space rental & refreshments for workshops	6 meetings	\$500	\$3,000
Working group meetings	10 meetings	\$100	\$1,000
Travel in California	500 miles	\$0.50	\$250
<b>Total communications &amp; outreach</b>			<b>\$6,750</b>
<b>Stipends for participation in working groups, outreach &amp; engagement, meeting organization</b>			
CBO staff working on engagement	325 hrs.	\$75	\$24,375
Working group community participants	500 hrs.	\$50	\$25,000
<b>Total stipends</b>			<b>\$49,375</b>
<b>Total budget</b>			<b>\$199,745</b>

**Budget explanation** (these are estimates)

**Salaries:** One quarter-time director; one half time outreach coordinator, two community engagement specialists to organize and conduct Phase I activities. Hourly rates for non-profit employment

**Contractors & consultants:** Three to work on technical design, regulatory and legal obstacles, advise on appropriate community engagement strategies. Low hourly rates for consultants on community projects

**Communications:** Estimated cost equal to 9,600 pp of copying

**Space rental:** Estimated cost of spaces for community meetings (@\$350) plus refreshments for 40 attendees (@\$150)

**Stipends:**

Community based organization staff with outreach and engagement experience to compensate for time spent on project  
WG participants compensation for time spent in WG meetings.

**This budget will be revised as necessary and appropriate.**



**2. Participant resources & experience:** The EPICS Team includes individuals from a broad range of non-profit organizations and for-profit companies. The Team is a broad, interdisciplinary group of engineering, development, policy, regulatory and financing experts with extensive experience in designing and deploying solar systems for individual homes, businesses and company campuses. The EPICS Team includes non-profit organizations that partner and work with disadvantaged communities to eliminate poverty and deliver essential services.

Organization	Members	Status	Focus/specialization/contact info
Sustainable Systems Research Foundation, Santa Cruz	Ronnie Lipschutz, <a href="https://www.linkedin.com/in/ronnie-lipschutz-b6043271/">https://www.linkedin.com/in/ronnie-lipschutz-b6043271/</a> ; Kevin Bell, <a href="https://www.linkedin.com/in/kevin-bell-28561213/">https://www.linkedin.com/in/kevin-bell-28561213/</a> ; Robert Stayton; <a href="https://www.linkedin.com/in/bobstayton/sustainablesystemsresearch@gmail.org">https://www.linkedin.com/in/bobstayton/sustainablesystemsresearch@gmail.org</a> 831-588-7625	Non-profit	Community solar project incubator; <a href="https://sustainablesystemsfoundation.org/">https://sustainablesystemsfoundation.org/</a>
Environmental Innovations, Santa Cruz	Brooke Wright; <a href="https://www.linkedin.com/in/brookewrightink/">https://www.linkedin.com/in/brookewrightink/</a> ; <a href="mailto:bwright@environmentalin.com">bwright@environmentalin.com</a> ; (831) 471-7394	For-profit	Community outreach strategies <a href="https://environmentalin.com/">https://environmentalin.com/</a>
Mynt Systems, Santa Cruz	Robert Hymes; <a href="https://www.linkedin.com/in/robert-hymes-0802a112/">https://www.linkedin.com/in/robert-hymes-0802a112/</a> ; <a href="mailto:rhymes@myntsystems.com">rhymes@myntsystems.com</a> ; 408-426-5420	For-profit	Solar system design, development, deployment; <a href="https://www.myntsystems.com/">https://www.myntsystems.com/</a>
CollectiveSun, San Diego	Lee Barken; <a href="https://www.linkedin.com/in/leebarken/lbarken@collectivesun.com">https://www.linkedin.com/in/leebarken/lbarken@collectivesun.com</a> ; 888-980-2786	For-profit & non-profit	Solar financing, project development, construction management for nonprofits and mission driven organizations <a href="https://collectivesun.com/">https://collectivesun.com/</a>
IN3 Capital Partners, Santa Cruz	Jim Faith; <a href="https://www.linkedin.com/in/jimfaith1/">https://www.linkedin.com/in/jimfaith1/</a> ; <a href="mailto:jifaith0814@gmail.com">jifaith0814@gmail.com</a> ; 888-222-4733	For-profit	Financing for mid-market renewables; <a href="https://in3capital.net/">https://in3capital.net/</a> ;
CHERP Solar Works, Pomona	Devon Hartman <a href="https://www.linkedin.com/in/devon-hartman-45b8341/">https://www.linkedin.com/in/devon-hartman-45b8341/</a> ; <a href="mailto:Devon@cherp.net">Devon@cherp.net</a> ; 909-721-8631	Non-profit	Solar panel assembly; <a href="https://www.cherplgp.org/">https://www.cherplgp.org/</a> ;
Clean Coalition, Santa Barbara	Craig Lewis <a href="https://www.linkedin.com/in/craig-lewis-81b0521/">https://www.linkedin.com/in/craig-lewis-81b0521/</a> ; <a href="mailto:craig@clean-coalition.org">craig@clean-coalition.org</a> 650-796-2353; Wendy Boyle, <a href="https://www.linkedin.com/in/wendyboyle1/">https://www.linkedin.com/in/wendyboyle1/</a> ; <a href="mailto:wendy@clean-coalition.org">wendy@clean-coalition.org</a>	Non-profit	Solar microgrid designer; <a href="https://clean-coalition.org/">https://clean-coalition.org/</a> ;
Community Action Board of SC County, Watsonville	Maria Elena de la Garza; <a href="https://www.linkedin.com/in/mariaelena-de-la-garza-0a808925/">https://www.linkedin.com/in/mariaelena-de-la-garza-0a808925/</a> ; <a href="mailto:mariaelena@cabinc.org">mariaelena@cabinc.org</a> ; 831-763-2147	Non-profit	Social services agency; <a href="https://cabinc.org">https://cabinc.org</a>
Center for Farmworker Families, Watsonville	Ann Lopez; <a href="https://www.linkedin.com/in/ann-lopez-5b113895/">https://www.linkedin.com/in/ann-lopez-5b113895/</a> ; <a href="mailto:ann@farmworkerfamily.org">ann@farmworkerfamily.org</a> ; (831) 216-8772	Non-profit	Support & services for farmworkers; <a href="https://farmworkerfamily.org/">https://farmworkerfamily.org/</a>



<b>Regeneración, Watsonville</b>	Nancy Faulstich; <a href="https://www.linkedin.com/in/nancy-faulstich-400709144/">https://www.linkedin.com/in/nancy-faulstich-400709144/</a> ; <a href="mailto:nancy@regenerationpajarovalley.org">nancy@regenerationpajarovalley.org</a> ; 831-288-7755	Non-profit	Climate justice & resilience; <a href="https://www.regenerationpajarovalley.org/">https://www.regenerationpajarovalley.org/</a>
<b>MidPen Housing, Watsonville</b>	Joanna Carman & Luis Preciado, <a href="https://www.linkedin.com/in/joanna-carman-7855796/">https://www.linkedin.com/in/joanna-carman-7855796/</a> ; <a href="mailto:joanna.carman@midpen-housing.org">joanna.carman@midpen-housing.org</a> ; 831-761-7215	Non-profit	Affordable housing developer; <a href="https://www.midpen-housing.org/">https://www.midpen-housing.org/</a> ;
<b>Cal Poly San Luis Obispo Climate Initiative</b>	Erin Pearse, <a href="https://www.linkedin.com/in/erin-pearse-a6272823/">https://www.linkedin.com/in/erin-pearse-a6272823/</a> ; <a href="mailto:epearse@calpoly.edu">epearse@calpoly.edu</a> 805-756-5558	Non-profit	Public university climate research center; <a href="https://climate.calpoly.edu/">https://climate.calpoly.edu/</a> ;

**3. Outreach engagement strategies & platforms:** See detailed descriptions in Section III.

Engagement strategy/platform	Description
<b>Direct engagement</b>	In-person community meetings & public reviews Working group instruction, seminars & design sessions Community review sessions & focus groups Neighborhood outreach teams
<b>Media</b>	Radio shows, news articles, TV interviews Webinars, podcast, website, social media Flyers, monthly printed & digital reports
<b>Public presentations</b>	Civic organizations, businesses, school classes Public officials and agencies

**4. Other resources including technical ones**

**i. Project incubators:** The Sustainable Systems Research Foundation is the initiator of EPICS. It brought together the EPICS Team through outreach to solar activists, organizations and companies. Environmental Innovations specializes in community outreach and engagement. It manages the state’s Green Business Program on California’s Central Coast and in parts of the Central Valley.

**ii. Solar design & engineering:** Mynt Systems is a highly respected solar design and engineering firm engaged in deployment of solar systems across California. CollectiveSun works with non-profit organizations to design solar systems through innovative design and financing strategies. Clean Coalition helps community agencies, housing developments, school districts and others to build solar microgrids. CHERP Solar Works operates a solar assembly plant in Pomona, California.



**iii. Community engagement:** The Community Action Board of Santa Cruz County seeks to eliminate poverty and create social change through partnerships with individuals, organizations, businesses and communities. It is exploring a local GBI program in collaboration with other CBOs in Santa Cruz County. Regeneración works with youth and adults in the Pajaro Valley on climate education and climate justice issues. The Center for Farmworker Families provides education and assistance to local farmworkers and their households. MidPen Housing builds affordable housing in Northern California, combining beautifully designed communities with life-transforming services for the residents who live in them.

**iv. Financing:** In pursuing its solar collaborations with non-profits, CollectiveSun identifies and works with a variety of funders and investors and has procured financing for a number of projects. IN3 Capital Partners originates and completes mid-market (\$10-750 million) clean energy project development and financing.

## V. Vision & long-term impacts

**1. EPICS Team’s role in fostering a just & equitable transition:** One of the great challenges of the transition to a clean solar energy-based economy is achieving social equity and energy justice. Utility-scale renewable generation in “wide, open spaces” (often environmentally sensitive) can provide low-cost electricity—although in California, transmission and distribution represents more than half of retail electricity prices—but does not offer disadvantaged communities and households any direct access to the benefits of rooftop or community solar. Furthermore, for the most part, profits from the sale and transmission of solar electricity accrues to large private utilities, energy companies and their shareholders.

The EPICS Team is committed to:

- Bringing the social and economic benefits of local solar to those who are unable to afford the costs of rooftop solar.
- Creating and testing an innovative model of energy provision that is small-scale, community-based, and accessible by disadvantaged communities.
- Contributing to the state’s decarbonized energy future by jumpstarting local generation and fostering replication of our model in other towns and cities across California.
- Supporting disadvantaged communities taking control of their energy futures through local ownership and operation of solar generation and storage.

## 2. Anticipated impacts after 2-5 years

**i. Bring the benefits of solar electricity to disadvantaged communities & households:** Provide disadvantaged communities with access to solar and its benefits through community-owned and operated generation and storage systems. Replication of this entrepreneurial model would do much to bring energy and income to “solar energy deserts” across the United States.



**ii. Provide a basic guaranteed income to low-income households, resulting in:** Improved quality of life through financial security; flexibility for child or elder care; better nutrition for children; financial stability despite seasonal work for many (e.g. farmworkers).

**iii. Generate GBI revenues via sale of a commodity rather than funding through taxes, public grants or private foundation sources.** GBI programs will become self-sustaining and will not rely on other funding sources that may be time-limited or generate political opposition.

**iv. Pilot a community-based distributed energy microgrid model that can be replicated elsewhere.** Successful deployment of POSP will provide technical regulatory, economic and social templates that can be copied around the United States.

**v. Benefit the local economy.** Local energy production boosts the local GDP, energy dollars remain in local circulation, solar construction provides local employment, customers and businesses receive discounted and reliable energy; greater local resilience.

**vi. Bring environmental benefits:** Reduction in climate impacts, including almost no greenhouse gas emissions; greater energy efficiency; less pollution in air, water and the ocean; lower exposure to air pollution.

**vii. Bring social benefits.** POSP-type projects will not only improve many lives and bring the benefits of solar to disadvantaged communities, they will also foster energy democracy and local control, increase the role and representation of these communities in the well-being of their cities, and bring people closer together through participation and collaboration.

**viii. Transform finance and technology.** Because POSP does not follow the investor-owned utilities profit model (guaranteed rate of return on infrastructure development), it will accelerate transformative financial and technical changes that would not otherwise happen.

### 3. Future funding strategies:

**i. Public funding:** The California Energy Commission periodically funds microgrid projects. The State and municipalities could issue low-interest, tax-free Green Bonds. Municipalities could create their own utility districts which could raise capital through bonds. Community Choice Aggregators could issue bonds, provide startup funding and enter into co-financing arrangements with project owners.

**ii. Utility funding:** California's Investor-Owned Utilities (IOUs) are funding pilot microgrid projects in disadvantaged communities. This project could apply for partial financing from them. IOUs may be willing to lower local distribution charges to support such projects.



**iii. Social impact investors:** There is a growing number of private investors seeking to put funds into projects with clear social impacts, and to accept low rates of return on their investments. Each individual project is relatively small, so the entry requirements are low.

**iv. Loans:** If the project is successful in repaying its investment in a timely fashion, banks may be more willing to make loans to future projects. While interest rates would be significantly higher than from other sources, this option should not be ruled out.

**v. Self-generation of funds:** It may be possible for a portion of revenue streams to be diverted into a fund for financing projects in other locations.

**4. Progress possible with additional funding:** The Pippin Orchards Solar Project is a followup to an EPICS project in development in Watsonville. That project is based on an EPICS GBI pilot in development in Watsonville, which will sell electricity through a PPA to an industrial customer at a discounted rate. This system will provide 80 farmworker families with a \$500 per month GBI. After the loan is paid off, revenues will support 225 families at the same level.

Phase I funding will increase the credibility of the EPICS concept, especially in terms of its role in social equity and energy justice. Phase II funding would allow the Team and its community partners to actively begin the process of bringing the Pippin Orchards project, or a similar local one, to fruition. It would generate broad interest in the concept of linking GBI to sale of solar electricity, and in the potential of disadvantaged communities to engage in and benefit from innovative, entrepreneurial local startups.

## **VI. Concluding remarks: EPICS' role in meeting California's climate, energy and social justice objectives**

While the POSP is a conceptual proposal, the need for community energy systems to address climate change, electrification, energy justice and poverty is not. Host communities must play a role in project design, development and operation,<sup>5</sup> as this project will do. POSP and EPICS systems also address the following state and local concerns and goals—which also apply to the United States as a whole:

- California's commitment to electrification will require somewhere between 50 and 100 additional gigawatts of generation capacity. Distributed energy systems, such as the one proposed here, could make significant contributions to this capacity, reduce the need for costly additions to and hardening and undergrounding of transmission and distribution lines, and increase local resiliency.
- California is funding a Basic Income pilot program to provide grants to "eligible entities...that serve California residents who age out of the extended foster care program at or after 21 years of age or who are pregnant individuals."<sup>6</sup> This project will be a leader in the GBI field.
- The California Public Utilities Commission is developing an "Environmental and Social Justice Action Plan."<sup>7</sup> The State and its public agencies are concerned that low-



income households cannot afford to invest in rooftop solar. POSP offers an alternative model for providing the benefits to disadvantaged households and communities.

- The state’s investor-owned utilities (IOUs) have been mandated by the CPUC to build microgrids in vulnerable and disadvantaged communities.<sup>8</sup>
- Proliferation of community energy systems serving disadvantaged communities offers them the opportunity to seize and control their energy futures and achieve energy equity.

This is a project worthy of support!

## Endnotes

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<sup>1</sup> Stacia West, et al., “Stockton Economic Empowerment Demonstration—Preliminary Analysis: SEED’s First Year,” 2021, at: [https://static1.squarespace.com/static/6039d612b17d055cac14070f/t/603ef1194c474b329f33c329/1614737690661/SEED\\_Preliminary+Analysis-SEEDs+First+Year\\_Final+Report\\_Individual+Pages+-2.pdf](https://static1.squarespace.com/static/6039d612b17d055cac14070f/t/603ef1194c474b329f33c329/1614737690661/SEED_Preliminary+Analysis-SEEDs+First+Year_Final+Report_Individual+Pages+-2.pdf).

<sup>2</sup> Jason Lalljee, “33 basic and guaranteed income programs where cities and states give direct payments to residents, no strings attached,” *Business Insider*, December 16, 2021, at: <https://www.businessinsider.com/how-many-ubi-guaranteed-basic-income-programs-us-cities-states-2021-12>. Stanford Basic Income Lab, “Map of Universal Basic Income Experiments and Related Programs,” at: <https://basicincome.stanford.edu/experiments-map/>.

<sup>3</sup> <http://www.justicemap.org/>;  
<https://www.datasharescc.org/indicators/index/view?indicatorId=347&localeTypeId=39&periodId=4523>

<sup>4</sup> Dominique Coy, Shirin Makelpour, Alexander K. Saeri & Roger Dargaville, “Rethinking community empowerment in the energy transformation,” *Energy Research & Social Science*, 72 (2021): 101871, at: <https://doi.org/10.1016/j.erss.2020.101871>,

<sup>5</sup> Dominique Coy, Shirin Makelpour & Alexander K. Saeri, “From little things, big things grow: Facilitating community empowerment in the energy transformation,” *Energy Research & Social Science* 84 (2022): 102353, <https://doi.org/10.1016/j.erss.2021.102353>.

<sup>6</sup> California Department of Social Services Guaranteed Income Pilot Program, at: <https://www.cdss.ca.gov/inforesources/guaranteed-basic-income-projects>.

<sup>7</sup> <https://www.cpuc.ca.gov/news-and-updates/newsroom/environmental-and-social-justice-action-plan>

<sup>8</sup> Ellison Schneider Harris Donlan, “CPUC Orders Actions to Support Microgrid Development,” Jan. 2021, at: <http://eslawfirm.com/blog/cpuc-orders-actions-support-microgrid-development/2021/01>.

