



**Acterra**

**ACTION FOR A  
HEALTHY PLANET**

**CLEAN ENERGY  
ACCESS FOR ALL**

Whitepaper of Proceedings

**ABSTRACT**

On October 18, 2018 Acterra convened a “design sprint” workshop on the topic of how we can make the benefits of clean energy technology available in low-income communities. Forty-two experts from thirty-three organizations - including community leaders from East Palo Alto, CA - came together for a one-day intensive workshop. Findings suggest success will lie in removing policy barriers to use and distribution of clean energy; community ownership of decision-making and technologies; development of shared vocabulary and methodology among CBOs, funders, and communities about metrics for success; and shifting from competition to cooperation for funding.

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## Introduction

Climate change presents a monumental societal challenge to human health and welfare. The impacts of climate change fall disproportionately on low- to moderate-income communities, who have the fewest resources to deal with these impacts<sup>1</sup>. The 2018 Intergovernmental Panel on Climate Change report<sup>2</sup> indicates that we have only 7-12 years to make a 45% reduction in global greenhouse gasses to avert climate disaster, making it incumbent on all people to rapidly adopt low-emission and climate-resilient solutions. This enormous problem also presents an opportunity for an inclusive and transparent process. Drawing all players to a shared process presents the possibility of an economic, social and cultural transformation to a low-emissions and climate resilience with community empowerment at its core. This paper provides an overview of strategies and approaches that community-based organizations (CBOs) and those seeking to help finance the necessary transition can draw on to align priorities for maximal impact.

## Workshop Purpose

The Clean Energy Access for All: Design Sprint Summit, held on October 18, 2018, was a one-day workshop held in Silicon Valley, California. The workshop brought together 42 participants from 33 community-based organizations, non-profits, for-profits in community level renewable energy project finance, community leaders from local low-income and disadvantaged communities, foundations, philanthropists, and local government officials. The purpose was to prototype solutions to challenges outlined in the Giving Code,<sup>3</sup> which highlighted the challenges of connecting new tech philanthropists in Silicon Valley with critical work being done in the local area. We looked at this question through the lens of environmental CBOs who are working to make clean energy available to all in Silicon Valley, where low-income communities are especially vulnerable to environmental degradation due to the very high cost of housing combined with the effects of drought and sea-level rise.

## Workshop Participants

This whitepaper summarizes complex conversations and contributions of the following participants, led by sprint strategist and facilitator, Allen Gunn of **Aspiration**:

**Acterra** – Abigail de Aquino, Home Energy Outreach Specialist; Nicole Chitty, Development Director; Edith Eddy, Board of Directors; Ariane Erickson, GoEV Program Manager; Iliana

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<sup>1</sup> Shepard, Dan and Matsueda, Ken. *Report: Inequalities exacerbate climate impacts on poor*. Sustainable Development Goals. United Nations. October 3, 2016. <https://www.un.org/sustainabledevelopment/blog/2016/10/report-inequalities-exacerbate-climate-impacts-on-poor/>

<sup>2</sup> IPCC, 2018: Summary for Policymakers. In: *Global warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty* [V. Masson-Delmotte, P. Zhai, H. O. Pörtner, D. Roberts, J. Skea, P. R. Shukla, A. Pirani, W. Moufouma-Okia, C. Péan, R. Pidcock, S. Connors, J. B. R. Matthews, Y. Chen, X. Zhou, M. I. Gomis, E. Lonnoy, T. Maycock, M. Tignor, T. Waterfield (eds.)]. World Meteorological Organization, Geneva, Switzerland, 32 pp [https://report.ipcc.ch/sr15/pdf/sr15\\_spm\\_final.pdf](https://report.ipcc.ch/sr15/pdf/sr15_spm_final.pdf)

<sup>3</sup> Cortés Culwell, Alexa and McLeod Grant, Heather. *The Giving Code: Silicon Valley Nonprofits and Philanthropy*. Open Impact, LLC. 2016. <https://www.openimpact.io/giving-code>

Diaz Jacobo, Resilient Communities Associate; Nancy Grove, Board of Directors; Debbie Mytels, Special Projects Consultant; Julie Noblitt, Energy & Climate Program Director; Violet Saena, Resilient Communities Program Manager

**Bay Area Air Quality Management District** – Kristina Chu, Senior Public Information Officer, Community Protection; Rebecca Fisher, Staff Specialist, Technology

**Build It Green** – Amy Dryden, Director of Policy & Technical Innovation

**Center on Race, Poverty & the Environment** – Chelsea Tu, Senior Attorney

**Coltura** – Janelle London, Co-Executive Director

**Community Climate Solutions** – Lisa Altieri, Founder/CEO

**Co-op Power** - Lynn Benander, President/CEO

**Cross Pollinators** – Crystal Huang, xPollinator

**East Palo Alto Community** – Dee Uhila, Community Organizer; Senita Uhila, Community Organizer

**Ecology Action** – Susan Wright, Water Efficiency Program Manager

**El Concilio of San Mateo County** – Gloria Flores-Garcia, Associate Executive Director

**Elemental Excelerator** – Sara Chandler, Manager of Policy and Community

**Elevate Energy** – Angelina Benson-Glanz, Director New Market Initiatives

**42 Silicon Valley** – David Mendelovits, Student; Shanna Uhila, 42 Evangelist

**Green for All (Dream Corps)** – Michelle Romero, Deputy Director

**Greenlining Institute** – Stephanie Chen, Energy Equity Director

**GRID Alternatives** – James Cunningham, Outreach Manager

**Habitat for Humanity** – Erin Colton, Director of Construction

**Kristen Yawitz Consulting** – Kristen Yawitz, Principal

**Local Clean Energy Alliance** – Al Weinrub, Coordinator

**Menlo Spark** – Diane Bailey, Executive Director

**Pajaro Valley Climate Action** – Nancy Faulstich, Regeneración Project Director

**Rachel E. Golden Foundation** – Rebecca Garewal, Vice President

**Raise Green** – Franz Hochstrasser, CEO; Matthew Moroney, COO

**Re-volv** – Zak Federer, Senior Solar Program Manager

**Rising Sun Energy Center** – Jodi Pincus, Executive Director

**San Mateo County Office of Sustainability** – Jasneet Sharma, Climate Resiliency Specialist

**Sand Hill Foundation** – Ash McNeely, Executive Director

**Silicon Valley Clean Energy** – Pamela Leonard, Communications Manager

**Stanford Designership Institute** – Freedom Cheteni, Executive Director

**StopWaste** – Jennifer West, Heat Pump Water Heater Program Manager

## Workshop Approach

The workshop was structured in three parts:

- Part 1: “Exploring the Landscape” aimed at setting a common understanding of stakeholder contexts and factors within which subsequent design sessions could be situated.
- Part 2: “Mapping What We Know” drew from participant knowledge to map what is known about the many facets of clean energy access efforts in the region so that we could build out solution prototypes during the afternoon design sessions.
- Part 3: “Design Sessions” paired interested participants focused on prototyping ideas for facilitating collaboration, learning, and access to clean energy for all with a specific purpose of expanding the seeds of ten ideas for further development.

This approach invited and refined crowdsourced community knowledge from a wide variety of stakeholders. The broad intent of the design and approach taken by the workshop was to disrupt traditional methods of NGO theorization and to amplify the successful models to achieve clean energy access for all. Specifically, the workshop and this accompanying paper intend to provide community-based organizations, and those seeking to inclusively finance the clean energy transition, with approaches and guidance for aligning needs and expectations to accelerate collective goals. Ultimately, the aim is to connect frontline organizations with resources they need to strengthen their communities.

## Systemic Solutions

The goals of the workshop and this white paper are to build shared understanding about the range of approaches necessary to create equitable climate solutions and clean energy access for all. Themes that emerged can be characterized in four buckets, which require detailed metrics to understand their effectiveness and scope:

1. **Knowledge systems within communities:** storytelling and narratives, trust, education, shifting from climate change crisis to economic crisis, leveraging anchor institutions
2. **Policies:** distinct non-overlapping policies and programs

3. **Emerging technological solutions:** solar deployment, electric vehicles, battery storage, time-of-use electricity pricing, software enabled connections
4. **Finance:** business models, capacity development, fully funded programs, lowered barriers to entry, and flexible funding

Building shared understanding around these themes is essential for communities looking for economic development pathways toward a clean energy economy. Many of these resources already exist in the communities that CBOs serve. Others must be brought in from the outside. For any of these solutions to be effective, we must begin with the communities themselves, and that is how the design sprint began – with communities.

## Communities

CBOs and funders are challenged to evaluate, improve, and reframe their strategies to prioritize community determined solutions. Funders, nonprofits and the communities they serve may be at odds about which challenges and priorities to prioritize, and the desired end goal. Workshop discussion focused on empowering existing community networks, amplifying existing successful community initiatives and engaging community members as decision makers. The

## Community-Based Organizations

Community-based organizations have deep connections to their communities, but tend to be small and often under-resourced with large fluctuations in funding. What CBOs may lack in size and resources however, they make up for in their significant local knowledge and community trust, serving as powerful conveners with strong social capital. They create linkages between community members and align priorities with funders that seek to have local impact. CBOs are vital interconnectors for donors or investors seeking to have meaningful impact because they directly know and work with at-risk, disadvantaged, and low-to-moderate income populations. If philanthropy and impact investors want to have maximal impact with their funds, working with a CBO for guidance, partnership and direct implementation is crucial for successful programming.

## Building Trust

Engaging CBOs and community leaders is a core element of impactful giving because it builds trust. Low-income communities are burdened by systemic injustice, which can lead to a history of mistrust, uncertainty, and even resentment towards outside organizations and municipal government, even those with well-meaning intentions. Building and maintaining trust is a key component of fostering community-driven clean energy adoption. Connecting organizations through horizontal communication to families and community leaders creates momentum and social capital as they deploy and scale projects. However, these network effects occur if, and only if, the solutions are defined in collaboration with community members. Solutions can be looked at with skepticism if brought from groups outside a community. Program managers from nonprofits and CBOs can explore unconventional entry points to initiate trust building. For example, social services have proven a viable pipeline to refer community members to energy efficiency programs.

## Challenges

Communicating the benefit of clean energy and energy efficiency can be challenging in low-income communities, particularly before there is a groundwork of trusted collaboration. Misunderstanding creates a lack of trust and missed opportunities to harness the benefits of the clean energy transition. Communities can effectively hinder or block a business or nonprofit if they lack a social license to operate within the parameters of established local values. CBOs and funders sometimes use the vocabulary of technical experts which may not have meaning in the communities they are seeking to serve. The arena of renewable energy is science-based, so striking the right balance between accessibility and specificity when communicating is challenging. For example, advocacy groups would be better served using terms such as “cheaper power bill” rather than “kilowatt-hour savings.” Language barriers also lead to lack of understanding – messaging needs to be offered in the native language(s) of the community.

## Needs

One commonly cited barrier to clean energy adoption was an over-abundance of choice in a crowded field of nonprofit and government programs, which left individuals feeling overwhelmed by the choices and costs of different solutions presented in different ways. Competing outreach efforts on the part of CBOs and others can create the unintended consequence of decision fatigue for communities, preventing effective action from occurring.

A common thread that emerged through the workshop was the value of human stories: case studies of what works. Immediate and tangible personal benefits, such as saving money on a utility bill, are more motivating than broad appeals to support clean energy and reduce consumption. Some clean energy advocates in the workshop advocated health benefits – such as reduced rates of asthma - before financial benefits. Both are effective strategies to make the adoption of the clean energy technology easy, fun, and popular<sup>4</sup>.

## Opportunities

Community-driven communication channels can be used to deliver messaging by clean energy “ambassadors” in their native languages via local radio and cable TV broadcasts as well as community social media channels such as Facebook and NextDoor.

Workshop participants found that the most successful outreach takes the form of a conversation rather than a hierarchical, one-way communication channel. In order to lay the groundwork for this conversation, NGOs and CBOs are creating archetypal “personas” of target audiences, co-created with community members. This act of co-creation creates a new narrative that features people of color as clean economy solution-makers, not just individuals in need. These narratives can be

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<sup>4</sup> Maibach, Ed. *Increasing Public Understanding and Facilitating Behavior Change: Two Guiding Heuristics*. American Meteorological Society. Recorded presentation. January 9, 2018. <https://ams.confex.com/ams/98Annual/webprogram/Paper333677.html>



enhanced when presenting case studies in a historical context: championing the reversal of systemic injustice makes a success story even more worthy of celebration.

Simple, clear messaging, repeated often by multiple trusted voices from within a community is a well proven messaging approach to drive behavioral change<sup>5</sup>. It's effective to display information through infographics and "snackable" facts that can be easily repeated and shared. For CBOs, the feedback gathered through these communication methods can complement metrics reporting when reporting their impact to funders, providing additional qualitative context.

Competition for resources and prestige among advocacy organizations can get in the way of effective impact; this can be mitigated through strategic partnerships where there are clear shared objectives. Equitable energy access for all requires intersectional and systemic justice, which may in turn require us to redefine our public/private partnerships. CBOs can partner with for-profit startups and benefit corporations to help businesses perform better as well as provide advocacy tools. One idea is to create a "community caucus" model, as Acterra has done in the community of East Palo Alto, CA around climate change and sea level rise. We have an opportunity to create new coordinating structures to bring together all the CBOs across Silicon Valley, not just for environmental or energy focused groups, but also for health, housing, transportation, and education groups to collaborate and align their efforts.

### Questions for further discussion

- **For Funders:** How might we reduce funding competition in favor of collaborative models? How can we get money to CBOs faster using partnerships to concentrate efforts? How can we alleviate tensions between service delivery and social outcomes? How can we share knowledge so CBOs do not need to apply for additional grants in order to meet the goals of their initial grants? How can we get funders to pay for grassroots outreach? How do we know what the needs are in a community?
- **For CBOs:** How can we create CBOs for communities that do not already have them? How can we build trust across CBOs to form coalitions? What could be gained with a coordinating entity of CBOs? How can CBOs position themselves to work with larger nonprofits as partners in implementation and/or communication?

### Policy

Policy support is a crucial component of bringing clean energy access to all. Workshop participants identified policy gaps which, if remedied, could lead to more access to clean energy in low-income communities and communities of color. Public funding is one important aspect of policy. In order to combat the nationwide trend of income inequality, programs should focus on lifting up the disadvantaged among us rather than reward the already privileged.

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<sup>5</sup> Myers, Teresa A. et al. "Simple Messages Set the Record Straights about Scientific Agreement on Human-Caused Climate Change: The Results of Two Experiments." *PLOS One*. March 26, 2015. <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0120985>

Participants identified factors that need to be taken into account when creating renewable energy policy designed for effectiveness in low-income communities:

- **Accessibility:** Make solar, storage, and EVs affordable and available so that they can be enjoyed by all.
- **Affordability:** Aim for universal clean energy, similar to a free universal healthcare model. Create policies limiting the percentage of income spent on housing and utilities using public revolving loan funds for community energy.
- **Alignment:** Standardize eligibility requirements.
- **Capacity:** Provide resources for communities to found, own, and operate their own LLCs. Grassroots ownership will incentivize community leaders and CBOs to expand their capacity to lead education and development of clean energy projects.
- **Clarity:** Make regulations simple to understand to increase trust.
- **Climate uncertainty:** Take into account changing weather profiles due to climate change; for example, providing air conditioning in some areas may become more important for comfort and health than in the past.
- **Housing:** Make quality, energy efficient housing a right. Ensure landlords that retrofit buildings do not displace low-income tenants.
- **Support of new models that democratize energy distribution:** Provide easy-to-understand information about how public agencies like Community Choice Aggregators work.
- **Remediation:** Overturn policies based in the history of exploitation and racism by prioritizing the home energy needs of low-income groups through increased funding to those communities.

## Effective Policies

Participants identified effective existing policies at the municipal, state and national level. These policies can serve as useful starting points for CBOs, examples for advocacy groups to highlight as success stories, as well as models for enhanced policies by municipal and state governments across the country. California has one of the best clean energy policy environments in the country. However, across all of these programs and policies, getting the funds to CBOs and local governments has proven challenging, with tight deadlines, and geographic restrictions on disbursement. Bridging these challenges with technical and financial assistance through partnerships with state or national level NGOs or funders could accelerate mutual interests.

## Municipal Level

Cities are taking action to advance and experiment with policies for clean energy access. Menlo Park recently passed a city ordinance requiring new commercial and multi-family developments to have

conduits and wiring for electric vehicle charging<sup>6</sup>. Palo Alto requires multi-family residential construction to have one charging outlet for each housing unit<sup>7</sup>. The City of Los Angeles committed to an all-electric bus fleet by 2030<sup>8</sup>. Mayors and city council members could use or adapt these approaches in their jurisdictions while advocacy groups could support their local officials in adopting local ordinances and ballot initiatives.

## State Level

California continues to lead the nation in implementing innovative climate policy to address energy equity and renewable energy deployment. The most prominent and recent is SB 100 requiring 100% clean energy by 2045 and an executive order from Governor Brown that the state achieve net-neutral carbon emissions by 2045<sup>9</sup>. In 2017, the California legislature extended its carbon cap-and-trade system through 2030 along with an accompanying measure that expands air pollution monitoring and protections<sup>10</sup>. The accompanying air pollution bill, AB 617, was a “community focused” strategy to improve air quality by increased monitoring and implementation plans in areas highly affected by air pollution. However, some workshop participants expressed concern that the funding is constrained and siloed. All of these state-level policies are pursuant to California’s Climate Change Scoping Plan<sup>11</sup> for achieving a 40% reduction in greenhouse gases below 1990 levels by 2030. These policies are augmented with financial compensation from the Volkswagen diesel scandal settlement that provided California and other states with additional climate funding<sup>12</sup>.

The Regional Climate Collaborative Program (SB 1072) builds capacity in low-income communities using funds from the cap-and-trade program to implement regional resources to build partnerships and develop project ideas combined with state-level technical assistance and efforts to align

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<sup>6</sup> Bradshaw, Kate. “Menlo Park council plugs into ordinance to boost EV charging stations.” *The Almanac*. August 30, 2018. <https://www.almanacnews.com/news/2018/08/30/menlo-park-council-plugs-into-ordinance-to-boost-ev-charging-stations>

<sup>7</sup> City of Palo Alto “Palo Alto Municipal Code.” In *California Green Building Standards Code*. Ch. 16.14. May 1, 2017. <https://www.menlopark.org/DocumentCenter/View/14341/Staff-Handout---H6>

<sup>8</sup> Linton, Joe. L.A. “City Approves Full LADOT Transit Electrification by 2030.” *StreetsBlog LA*. November 9, 2017. <https://la.streetsblog.org/2017/11/09/l-a-city-approves-full-ladot-transit-electrification-by-2030/>

<sup>9</sup> Office of Governor Edmund G. Brown Jr. “Governor Brown Signs 100 Percent Clean Electricity Bill, Issues Order Setting New Carbon Neutrality Goal.” *CA.gov*. September 10, 2018. <https://www.ca.gov/archive/gov39/2018/09/10/governor-brown-signs-100-percent-clean-electricity-bill-issues-order-setting-new-carbon-neutrality-goal/index.html>

<sup>10</sup> Whitcomb, Dan. “California lawmakers approve landmark extension to climate policy.” *Reuters Politics*. July 17, 2017. <https://www.reuters.com/article/us-california-carbon/california-lawmakers-approve-landmark-extension-to-climate-policy-idUSKBN1A224Z>

<sup>11</sup> California Air Resources Board. *California’s 2017 Climate Change Scoping Plan: The strategy for achieving California’s 2030 greenhouse gas target*. November 2017. [https://www.arb.ca.gov/cc/scopingplan/scoping\\_plan\\_2017\\_es.pdf](https://www.arb.ca.gov/cc/scopingplan/scoping_plan_2017_es.pdf)

<sup>12</sup> VW Mitigation Trust. “Volkswagen Environmental Mitigation Trust for California.” California Air Resources Board. Undated. <https://www2.arb.ca.gov/our-work/programs/volkswagen-environmental-mitigation-trust-california>

resources and programs statewide<sup>13</sup>. California's gasoline tax (SB 1) provides \$20 million to local and regional agencies for climate change adaptation planning and will continue to do so now that voters have defeated a ballot measure aimed at overturning it<sup>14</sup>.

Green Tariff Shared Renewables (SB 43) expands access to renewable energy for those unable to generate it on-site by supporting community renewable energy programs with voluntary ratepayer surcharges that purchase a share of a local solar project. Solar on Multifamily Housing (AB 693, SOMAH) provides \$100 million annually from the GHG cap-and-trade program to develop energy efficiency and solar on multifamily affordable housing. The Single-Family Affordable Solar Homes (SASH) program, established by AB 217 (2013) and managed by the non-profit GRID Alternatives, has spent \$119 million for roughly 8,000 PV installations by providing fixed incentives to offset the upfront cost. Furthermore, updates to California's Title 24 require solar on new construction as well as on building renovations under three stories, starting in 2020<sup>15</sup>. While providing for a few exemptions, these standards require homes to access community solar or other clean energy if solar is impossible.

Community Choice Aggregation (CCA) allows communities to purchase electricity from renewable sources. AB 117 created the opportunity for CCAs in 2002, but the first program was not launched until 2010, with amendments following from SB 790 in 2011. CalCCA, a trade association to support the emerging network of CCAs, was formed in 2016. By 2019, there were 19 CCAs (also known as Community Choice Energy agencies, or CCEs) operating in California, serving more than 2.5 million customers. Another approach allowed by California policy is on-bill financing programs which enable utilities to help their customers invest in energy efficiency improvements, such as upgrading to a high-efficiency air conditioner or adding insulation.

Many states have followed California's Community Choice Aggregation model – California, Illinois, Massachusetts, New Jersey, New York, Ohio, Rhode Island and Virginia have fully deployed programs<sup>16</sup> with many others in the processes of creation. Connecticut's Department of Energy and Environmental Protection created a pilot program for shared clean energy, facilitated with a price cap and a low-middle income quota of 20% of the subscribers.

Community solar programs are growing nationwide. Shared solar projects are operational in 31 states, amounting to 1,147 megawatts in 2018, according to Wood Mackenzie Power & Renewables.

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<sup>13</sup> Wang, Emi. "Closing the Climate Gap: Capacity Building, Technical Assistance and SB 1072." The Greenlining Institute. May 17, 2018. <https://greenlining.org/blog/2018/closing-the-climate-gap-capacity-building-technical-assistance-and-sb-1072/>

<sup>14</sup> Johnson, Nathanael. "Voters hate gas taxes. Here's how California beat the odds." *Grist*. November 12, 2018. <https://grist.org/article/voters-hate-gas-taxes-heres-how-california-beat-the-odds/>

<sup>15</sup> Pyper, Julia. "Everything You Need to Know about California's New Solar Roof Mandate." *Greentech Media*. May 21, 2018. <https://www.greentechmedia.com/articles/read/everything-you-need-to-know-about-californias-new-solar-roof-mandate>

<sup>16</sup> Lean Energy U.S. *CCA by State: Local Energy Aggregation Network*. 2019. <http://leanenergyus.org/cca-by-state/>

The bulk of that community solar capacity, accounting for 810 megawatts, is in Minnesota, Massachusetts and Colorado. Another 600 megawatts are planned in Massachusetts and Minnesota by the end of 2018. The 2018 midterm elections swept seven new Democratic governors into office, many of whom ran on platforms supporting clean energy policies. As new Governors implement these policies, this will translate into gigawatts of new solar and wind deployment and more rigorous renewable energy portfolio standards<sup>17</sup>. Virtual Net Metering has also increased access to community solar in several states (e.g. MA, NY, MN, CA).

## National Level

The bedrock of national policy incentives for clean energy is the Federal Investment Tax Credit (ITC), which provides a tax credit of 30% of the installed cost of a solar array or other qualifying clean energy investment. The credit can be obtained when the residential or commercial organization purchases a solar or clean energy generating unit and has the requisite tax burden<sup>18</sup>. Unfortunately, this prohibits nonprofits from claiming the ITC, as well as any organization or individual that does not owe enough in taxes to claim it, including most renters and low-to-moderate income populations. The ITC is scheduled to remain in place for projects that have begun construction and are completed by 2023<sup>19</sup>.

There are also a host of federal financing programs for various forms of clean energy deployment<sup>20</sup>. However, the latest guide to these was last updated in 2016, and several of the programs have either been defunded or are no longer in operation due to current federal-level attempts to boost domestic fossil fuel production<sup>21</sup>.

## Challenges

The introduction of Community Choice Aggregation (CCA) programs has been largely successful at including a broader set of stakeholders. However, this success is jeopardized by increases in the Power Charge Indifference Adjustment (PCIA)<sup>22</sup> fee. The California Public Utilities Commission allows the Investor Owned Utilities (IOUs) to charge this fee to CCA customers in an attempt to recoup the IOUs' costs for adding the additional distributed energy to the grid. A key challenge for clean energy access is to leverage the success of CCAs and protect the innovative system that they

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<sup>17</sup> Smith, Colin. *US state-level renewable policy implications of midterm elections*. Wood Mackenzie Power & Renewables. November 21, 2018. <https://power-and-renewables.woodmac.com/reportaction/35298/Toc>

<sup>18</sup> Solar Energy Technologies Office. "Residential and Commercial ITC Factsheets." U.S. Office of Energy Efficiency & Renewable Energy. March 2015. <https://www.energy.gov/eere/solar/downloads/residential-and-commercial-itc-factsheets>

<sup>19</sup> Solar Energy Industries Association. "Solar ITC Factsheet." Undated. <https://www.seia.org/initiatives/solar-investment-tax-credit-itc>

<sup>20</sup> U.S. Department of Energy. *Federal Financing Programs for Clean Energy*. 2016. <https://www.energy.gov/sites/prod/files/2016/05/f32/Federal%20Financing%20Programs%20for%20Clean%20Energy.pdf>

<sup>21</sup> Merchant, Emma Foehringer. "Trump's Reversal of Clean Power Plan Won't Hurt Renewables, but It May Boost Coal." *Greentech Media*. August 21, 2018. <https://www.greentechmedia.com/articles/read/trump-clean-power-plan#gs.zWWK2go>

<sup>22</sup> Marin Clean Energy. PG&E Power Charge Indifference Adjustment Rates and Franchise Fees. May 31, 2016. [https://www.mcccleanenergy.org/wp-content/uploads/2015/11/PCIA\\_FF\\_Fees-Residential.pdf](https://www.mcccleanenergy.org/wp-content/uploads/2015/11/PCIA_FF_Fees-Residential.pdf)

have created. An imminent collision course between CCAs and the IOUs needs to be resolved to carry forward the momentum of the CCAs.

A major dilemma that faces advocates of energy efficiency is the split between owners and tenants, in which tenants have little incentive to upgrade property they do not own, and owners have little incentive to install energy saving measures when they do not pay for utilities. Improving conditions for renters, in addition to providing resources for upgrading buildings, would be extremely helpful. Improving buildings without assisting tenants has the unfortunate effect of increasing the risk of gentrification and dislocation of low-income communities. One beneficial policy would be flexible shut-offs for utilities; one workshop participant noted that every week 5 to 6 families in their community lose electricity service, and 61% of low-income households polled in California had experienced a shut-off in the last three years. These shut-offs are not simply an inconvenience – they have significant health and economic repercussions.

Electricity rates and surcharges will continue to provide necessary financial support to utilities during the transition to clean energy. But, without thoughtful and clear communication, ratepayers - especially in low-income neighborhoods with limited English and low levels of education – will continue to be perplexed by the variety of fees and charges on their utility bills. Time-of-use pricing will increase mystification for the customer. Confusion about feed-in tariff rates will cause some customers to forgo renewables. Lastly, renters, low-income homeowners, and non-profits cannot benefit from net metering. This lack of customer clarity perhaps reflects an overreliance on the policy for renewable energy economics, but is also a reflection of the lack of public/private partnership set up to harness these benefits on a grassroots level.

As California moves to phase out fossil fuels for electricity generation, we must encourage data-driven policy insights such as those from [WattTime](#), Opinion Dynamics, and the [Urban Environmental and Social Inclusion Index](#). To identify problems in their community during the transition to clean energy, this may require CBOs to develop research initiatives with educational and corporate partners.

## Needs

There are systemic needs that CBOs and those seeking to finance the transition to a clean energy economy must be aware of with regard to policy. Workshop participants brainstormed policy barriers they have encountered that need to be addressed to achieve inclusive clean energy access for all. The ultimate barrier is political participation, political will, and ensuring that individuals can read and understand the legislation. Two common themes emerged:

**System delays that prevent or slow forward progress.** Slow, bureaucratic processes take too much time given the urgency of the problem. Delays are compounded by city staffing limitations which prevent adequate support to CBOs. Successful programs are hampered by grant funding cycles shorter than the time needed to do the work.

**Power imbalances between governments, businesses, and communities.** The fundamental structure of utilities as natural monopolies gives them disproportionate power. Tighter building standards are resisted by real estate agents fearful of slowing down sales and development.

Property owners do not readily distribute carbon fee and dividend proceeds to their tenants. Traditional economic engines perpetuate subsidies for the fossil fuel industry and delay new requirements for energy efficiency being developed by tech industries (such as requiring electric shuttle commuter buses). New policies and relationships tend to be formed through the traditional networks of power, which prevent low-to-moderate income communities from getting the same level of influence.

## Opportunities

New pathways for policy initiatives are being forged today. California's cap-and-trade program could include a higher price on carbon that would return more to low- and moderate-income communities. Building on successes of the cap-and-trade bill provides momentum to revisit the appropriations bill used to allocate California state funds for the Greenhouse Gas Reduction Fund. Increasing energy access may require advocating for an update to the legislation that allows for a progressive cash dividend or tax-rebate payment dependent on income bracket. There are also bipartisan pushes for a carbon fee and dividend bill at the Federal level<sup>23</sup>.

Electric vehicles (EV) and transportation planning are an essential part of clean energy future and must be advanced concurrently alongside solar and storage. EV permitting needs to be streamlined for rapid deployment to reduce burdens on low-income individuals. Policies that encourage creative placement of EV chargers on utility poles and other system nodes represent encouraging steps. Requirements for charging equipment could be paired with "EV first" policies in public fleet purchasing. Deployment of EV could be accelerated through modules in driver's education and reduced vehicle licensing fees. EV policies must be complemented with a sunset policy on internal combustion engines like those in Ireland and India which ban all sales of new diesel and gasoline cars by 2030. Single-use vehicle policies need to be combined with versatile urban planning policies that accommodate electric scooters, electric motorcycles, and electric bicycles.

Building codes can be a powerful tool to increase equity in energy efficiency and distributed generation. Many guidelines can be drawn from inspirational models, such as Rocky Mountain Institute's Zero Energy Homes<sup>24</sup> and Architecture 2030 Zero Code<sup>25</sup>. Drawing from the success of the 100% solar installation mandate in California, building codes can be expanded to require energy storage and electric vehicle charging infrastructure alongside parking requirements for new buildings. These stricter building standards should be paired with removal of barriers, such as permit fees and other soft costs. Deployment of energy efficient construction can be accelerated by exempting affordable housing developments from city permitting fees if they build clean energy features or increase energy efficiency.

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<sup>23</sup> Citizen's Climate Lobby. "The Bipartisan Climate Solution: H.R. 763." *Energy Innovation and Carbon Dividend Act*. Undated. <https://citizensclimatelobby.org/energy-innovation-and-carbon-dividend-act/>

<sup>24</sup> Corvidae, Jacob et al. *The Economics of Zero-Energy Homes*. Rocky Mountain Institute. 2019. <https://www.rmi.org/insight/economics-of-zero-energy-homes/>

<sup>25</sup> Architecture 2030. *Zero Code: The Future Has Arrived*. April 2018. <https://architecture2030.org/zero-code/>

Another Federal policy development that would rapidly accelerate clean energy access for all is the Green New Deal proposal, outlined in H.Res.109, which passed the House of Representatives in the 116th Congress (2019-2020). This sweeping resolution calls for a Green New Deal to be developed through transparent and inclusive collaboration and partnership with frontline and vulnerable communities, labor unions, worker cooperatives, civil society groups, academia, and businesses to craft legislative solutions to achieve net-zero emissions by 2050, and 100% clean energy for the entire United States, among other goals. The goals demand that projects and goals:

*“provid(e) and leverag(e), in a way that ensures that the public receives appropriate ownership stakes and returns on investment, adequate capital (including through community grants, public banks, and other public financing), technical expertise, supporting policies, and other forms of assistance to communities, organizations, Federal, State, and local government agencies, and businesses working on the Green New Deal mobilization”<sup>26</sup>.*

The theme of inclusive, community-determined climate solutions is identified throughout the resolution, and while this would still need to be codified, the concept has broad bipartisan support among the public, with 81% of registered voters saying they either “strongly support” (40%) or “somewhat support” (41%) this plan<sup>27</sup>.

### Questions for further discussion

- **For Funders:** How might funders leverage their organizational capacity to help reduce administrative burden of policy advocacy? What programs might help correct power imbalances between community and municipal groups? How might we leverage existing policy to get funds directed toward communities most in need? How might we help influence policy design to benefit low- to moderate-income communities?
- **For CBOs:** What partnerships might help more organizations access program support more readily while also correcting power imbalances? How might we most readily connect community leaders and member with policy and program support? How could we partner with funders to leverage policy and program support for maximum impact?

### Emerging Technology Solutions

Innovation has been coined the “fourth wave of environmentalism:” a combination of technology, policy, and advocacy approaches<sup>28</sup>. Silicon Valley has made trillions of dollars developing “disruptive” technologies that have potential to overcome traditional barriers for low-income communities. However, these very communities are often hesitant to support experimental

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<sup>26</sup> Ocasio-Cortez, Alexandria. H.Res. 109 – “Recognizing the duty of the Federal Government to create a Green New Deal.” 116<sup>th</sup> Congress. Congress.gov. February 7, 2019. <https://www.congress.gov/bill/116th-congress/house-resolution/109/text>

<sup>27</sup> Gustafson, Abel et al. “The Green New Deal has Strong Bipartisan Support.” *Yale Program on Climate Change Communication*. December 14, 2018. <http://climatecommunication.yale.edu/publications/the-green-new-deal-has-strong-bipartisan-support/>

<sup>28</sup> Krupp, Fred. “Harnessing the Fourth Wave of Environmentalism.” Medium. March 20, 2018. <https://medium.com/the-fourth-wave/harnessing-the-fourth-wave-of-environmentalism-c71afa14eb11>



technologies, which can be seen as “one-off” projects deployed by organizations that “parachute” in without understanding the full history and context of the local community, only to disappear again after their pilot program is complete. The challenge is twofold: First is how to harness the Bay Area braintrust of technical innovators for clean energy brilliance. Second is how to successfully vet the emerging innovative technologies so they can be effectively introduced to low-income communities where they can make the most positive impact.

The goal is to welcome Silicon Valley tech companies, cultivating excitement for using their disruptive processes in a new domain. The tech world can apply agile, iterative, and user-centered design to engage local communities with clean energy tools. However, we must be cautious and not race ahead with rapid technological deployment of, for example, IoT devices, without addressing systemic barriers such as the need for broadband access and smartphone data availability. These solutions can assist funders and CBOs in more efficiently and effectively deploying clean energy for all.

## Software Solutions

Apps are crucial interaction points for individuals that can have large system-wide benefits. Workshop participants identified many needs that could be met with the development of intuitive apps, which fell into three categories: accessing benefits, electric vehicles, and home energy management.

- Energy concierge app - identifies customized benefits and opportunities. A coordinating energy access app could serve as a one-stop shop that lists and aggregates all the available benefits to low-income customers, providing both awareness and easy access to financing where applicable.
- EV app - helps customers navigate the multitude of permits, studies, and incentives for charging stations, along with charging rates that vary based on income.
- Home energy management app - helps prevent shut-offs and high utility bills.

Grid management software is increasingly needed as distributed and intermittent resources are added to the power generation mix. The clean energy grid will require increasingly complex, software-driven loads. These loads need to be maintained transparently, providing open-source data to researchers and CBOs. Software controls for load management will become common to help with load balancing for reduced energy costs. As these technologies come on line, having CBOs poised to introduce demand-side management technologies to low-income populations can increase their payback time, reduce their risk of facing shutoff events, and help them manage their energy burden.

Distributed ledger technologies (also known as blockchain) offer opportunities for security, transparency, and consensus. The first benefit is increased public access to data about energy generation and use that allows open-source software projects to be created. A second benefit is the verifiability of behind-the-meter, virtual power plants like microgrids, peer-to-peer energy sharing systems, demand-side management approaches, or community or shared energy systems. A third is

smart contracts for power purchase agreements that flexibly change rates and ownership over time to ensure community continuity and benefit.

Data visualizations are increasingly useful communication tools for policy targeting, business outreach, and CBO engagement. IoT devices like Aclima's mobile air quality sensors provide opportunities for real-time response to environmental pollution, as well as the ability to gauge the effectiveness of policies and CBO initiatives over time. Smart utility software has the potential to provide vital information about energy efficiency to consumers. This is a key leverage point, as sessions at the Design Sprint revealed the importance of "information richness" in decision-making on energy. In deploying new energy-related software, strong data privacy protections are needed. This requires transparency and is necessary for trust-building among low- to moderate-income customers.

## Hardware Solutions

Transportation is undergoing rapid changes in mobility, variety, and access. EVs are the often-cited example, but other forms of personal transit like electric scooters, motorcycles, and bicycles will be increasingly present in urban areas. Rapid implementation is needed for public charging, which will need to be set up between distributed suppliers and large generators. The increased battery supply of electrified transportation will add grid buffering using EVs as home battery storage. Home storage from EVs of the future will play into every form of distributed solar programs. Recycling programs for battery producers will be required to redeploy batteries unfit for vehicles as portable grid storage. For example, one Design Sprint participant suggested using a bank of old EV batteries to reduce food truck emissions during festivals.

Residential buildings create approximately 7% of California's carbon emissions. This can be reduced through low-tech solutions such as foam weather stripping, as well as higher-tech solutions like smart appliances, thermostats, and fully automated homes. Placing IoT devices in inefficient buildings can identify opportunities and allow partners to finance and retrofit more structures for more energy savings.

## Needs

Energy software and hardware is undergoing a gold rush due to a favorable business climate and state-wide carbon emission reduction targets. Technology ownership needs to be structured to benefit all communities. Ongoing support is needed to maintain the variety of experimental technologies. However, emerging and existing technical knowledge is not effectively transferred to low-income communities. Knowledge transfer must connect with technical and research experts whose job is to measure the effectiveness of different public policies related to clean energy access. One example is research by Bollinger and Gillingham analyzing how social interaction affects the diffusion of photovoltaic installations in California<sup>29</sup>. Partnerships between technical experts, nonprofits, and CBOs can best identify the most appropriate technology to choose and deploy. CBOs

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<sup>29</sup> Bollinger, Bryan and Gillingham, Kenneth. "Peer Effects in the Diffusion of Solar Photovoltaic Panels." *Marketing Science*. Vol. 31, Issue 6. September 20, 2012. <https://pubsonline.informs.org/doi/abs/10.1287/mksc.1120.0727>

can then provide targeted assistance by developing workforce capacity for new technologies within their community. A large need remains to connect those with funds to those who need funds for clean technologies. An open solar finance database would lower barriers for lower-income residents who struggle with complicated and expensive legal documentation such as power purchase agreements, tax equity issues, and incentive structuring.

## Opportunities

New hardware and software present opportunities to empower low-income communities to own, build, operate, and benefit from climate solution projects. Realizing the potential of these opportunities, however, requires a tech education pipeline, such as offered by [42 Silicon Valley](#) to support deployment and operations to support the deployment of renewable energy. After graduation, students can be encouraged to found and manage their own businesses, creating jobs within their communities, creating a virtuous cycle of jobs, knowledge and local capital. This education and startup pipeline can be coordinated by a coalition of nonprofits to coordinate, share resources, and create replicable programming across California and the country. These vocational training programs should lower the barrier to entry for low to moderate income individuals looking to get into the clean-energy workforce, much in the way that GRID Alternatives offers vocational training for solar installers.

There is also an emerging opportunity to collaborate on an Open Solar platform. This effort is underway, will be fully open sourced, and is being designed to enable rapid circumvention of traditional financing and project development friction. By digitizing and automating much of the contract and project development pathway, rapid and more inclusive project development is possible, allowing for deployment of clean energy technologies for and by communities that may not otherwise have been able to afford the risk and overhead of deployment.

## Questions for further discussion

- For Funders: How might funder organizations' in-house technology solutions support grant seekers? Can funders' professional expertise be brought to bear in advancing acceptance, proliferation, and understanding of technology solutions?
- For CBOs: What resources could be made available to advance technology adoption and acceptance in under-resourced organizations? Is it possible for technologies used by CBOs to interface with technologies that are most suitable for the populations served? What resources and training would be needed in order to adopt those technologies? How can we discover and share technologies that are most helpful to achieving maximum impact in the clean energy transition for low-income communities?

## Business Models and Financing

Workshop participants reviewed the models required for the success of financing clean energy technologies in low-income communities. Increased community ownership to empower economic development was a key theme. The fundamental concern is how best to finance and own experimental business models that lack historic precedents. Workshop participants also explored the role of for-profits in low-income communities.

## Effective Business Models

Energy cooperatives are one business model that could be deployed in low-income communities and elsewhere. Cooperatives have a long tradition in the United States and Western Europe and have successfully operated since the nineteenth century in the form of credit unions, cooperative dairies, and member-owned grocery stores. Community Choice Aggregation programs (CCAs) and community solar programs are a modern twist on this structure: democratized choice for energy self-determination that creates fiscal and climate resiliency. The workshop revealed modern repurposing of cooperative structures to deploy renewable energy, provide energy efficiency, and train for green energy jobs. In many states, such as Massachusetts and New York, energy cooperatives benefit from public finance in their ownership structure which provides discounted loans for low-income communities. Innovative combinations of methods such as public financing, “slow money” private financing (seeking sustainable and responsible investments such as foundations and donor-advised funds), and grants are being employed to establish cooperatives. Community organizations like [Uprose](#) and [SolarOne](#) in New York City are looking to renewable energy to provide economic revitalization, education, and efficiency improvements with increasing recognition that ownership interests in these projects can be a community empowerment tool. Challenges remain in capturing tax incentives for cooperative projects and creating opportunities for renters to join energy cooperatives.

Crowdsourcing is a tool that has been used to build renewable energy by aggregating funding from many individuals to support a project. Most crowdfunding is donation-based. For example, [Re-volv](#) finances solar for nonprofits through donations. Another donation-based crowdfunding model is [GRID Alternatives](#), which builds solar in underserved neighborhoods and recruits local individuals for workforce development to do solar installation.

Tax-exempt organizations struggle to monetize the tax benefits from the Investment Tax Credit and Opportunity Zone Funds. With the emergence of the 2012 Jobs Act and the resulting SEC regulations in 2016, equity crowdfunding has emerged as an option to generate capital through shared ownership, and capture tax benefits to serve CBOs and LMI communities. [New Haven Community Solar](#) has demonstrated a model to use crowdfunded equity investments for distributed solar ownership to benefit [Columbus House](#), a non-profit dedicated to serving the homeless. This approach of inclusively financed clean energy and climate solution companies that are set up to benefit community organizations has been dubbed “Community Climate Cooperatives,” a modern version of the New Deal’s ‘CCC’ (Civilian Conservation Corps), but updated for the Green New Deal. [Raise Green](#) - a green financial technology platform to connect community-led climate solution projects that create positive social and environmental impacts with inclusive financing - seeks to provide a service to empower CBOs to create these cooperatives.

Public/private partnerships can be an effective tool to deploy renewable energy. Non-profit CBOs are sometimes skeptical of for-profit entities because of concerns about motives — are they primarily concerned with community benefit or primarily concerned with profit? However, many success stories emerged from workshop participants. For example, Habitat for Humanity successfully uses public/private partnerships in many counties where they work. Strong examples are the [California Infrastructure Economic Development Bank](#) and the [Connecticut Green Bank](#).

Utility-driven programs use on-bill fees, such as Public Purpose Program funds, to finance renewable energy. Transformative approaches to community energy needs can also be fostered by startup accelerators and incubators. Community-driven models, such as Watsonville’s El Pajarao CDC Community Kitchen, can provide both business development and technical training to develop neighborhood-scale community solar projects. Community Choice Aggregators (CCAs), such as [Solstice Power](#) and [Groundswell](#), provide access to renewable energy using aggregation software and community education to drive solar adoption in low-income counties without credit scores. Other business models involve organic agriculture, such as the [Straus Family Creamery](#) that uses distributed family farms and electric transportation, including new mobility solutions, such as Jump electric bicycles and Bird electric scooters.

## Challenges

Problems abound in adopting new business models for low-income renewable energy. Renters face difficulties in making home upgrades and accessing programs like Habitat for Humanity or GRID Alternatives. Income qualifications for public programs fail to consider a family’s expenses and can disqualify them from enrollment. People who qualify for enrollment in helpful programs are not always aware that such help is available, or they may fear making themselves known to agencies. Rebate programs require an up-front capital investment which a low- to moderate- income resident may not have. Public grants often require more information than smaller organizations can provide.

The cost of capital is what most often stands in the way of energy access, rather than the availability of finance. Debt issuers like banks and large financial institutions insist on a guaranteed risk-adjusted return. Even impact investors are often not willing to take the risks that are required to finance clean energy and climate solution projects that expand energy access.

## Needs

There is a need for more inclusive forms of finance to provide new investment pathways for low-income individuals. Innovative models for broader renewable energy access are being pioneered. One example is venture philanthropy, where non-profits create a for-profit arm. A successful example is [Habitat for Humanity’s Re-store](#). Other innovative models include equity crowdfunding for mission-driven companies and benefit corporations to democratize ownership of energy infrastructure. By funding power purchase agreements, crowdfunding investors are able to receive the wealth-generating benefits of solar deployments rather than having reduced personal utility rates. Enhanced community ownership provides empowerment by putting money into local projects thereby promoting self-efficacy and self-agency.

On the policy side, there is a drastic need for a “one-stop” energy funding resource for communities. This could take the form of a “common application” — an online, clean energy loan or grant application that provides easy access to multiple sources of financing regardless of location. A centralized application could be complemented financing options that make it easy for people to donate or invest. Listing additional sources of community investments would allow foundations and high-net-worth individuals to contribute to communities at a larger scale. Innovative structures should incorporate public/private partnerships with community entities forming the private portion of the arrangement.

Lastly, more low-cost debt is needed for low-income communities. There are examples of public/private financing, such as Beneficial State Bank, which gives concessional loans for EVs. The public purpose program surcharges administered by the CPUC have also been used for this purpose. All income groups should be included in such programs, which should be tiered to allow smaller amounts of funding for middle-income customers. Flexible income scales could help create critical mass and encourage reinvestment in CBOs and other organizations serving LMI communities in the program (for example, an opt-in donation of a certain percentage of savings).

## Opportunities

Participants brainstormed a wish list of business models to increase energy access. The first was a break from traditional tax-based incentives to increase access for non-profits. CBOs could develop and operate their own energy services using project companies such as Community Climate Cooperatives, or even help create EV lending programs at libraries and religious organizations. These cooperatives could own various assets including community and shared solar, wind, geothermal or other renewable energy generating sources, electric vehicle charging stations and sharing programs, land trusts, land or forest conservation projects, community gardens and common spaces and facilities like commercial kitchens, wetland mitigation banks, etc. Anything with a predictable or contractible cash flow could be collectively owned through crowdfunded investment, and managed to mutual benefit of those with an ownership stake or subscription/membership. Increasing CBO ownership models would reduce reliance on private energy developers and increase self-determination within low-income communities.

Participants also desired a “one-stop” public energy bank for consumers and CBOs to provide streamlined applications for financing solar, EV, storage, and other climate solutions. A centralized benefit repository would help create a more consistent aggregated pool of investment capital by coordinating public, private, and non-profit foundation capital. Aggregating these financial resources into a comprehensive package would increase the funding of systemic solutions to help avoid the phenomenon of “pollution leakage,” whereby the environmental damages and burdens inflicted on one community are shifted to another when the initial community disallows or otherwise ameliorates the situation. New businesses can serve as a restorative source of economic and social capital as communities self-determine, self-finance, and benefit from their own local set of climate solutions.

## Questions for further discussion

- **For Funders:** Which business models support or ease adoption of clean energy solutions that are optimized for low-income communities? What cost structures are necessary to truly democratize adoption? Can investments or donations be done in partnership with social impact enterprises? Can the financing be supplemented by small equity-sharing investment opportunities for communities to develop new investment pathways?
- **For CBOs:** What governance systems can help low-income communities adopt new business models? Is it possible to for CBOs to engage with social impact enterprises to optimize ownership of solutions by low-income communities themselves?

## Metrics

How do funders, CBOs, and communities know that any given initiative is having its desired effect? Metrics are core to understanding the impact of what we do, and yet in the social impact space knowing what and how to measure can be tricky. Measuring the number of kilowatt hours of renewable energy generated is easy, but how do you make “home comfort” into a metric? How do you properly value and convey the risks for *not* acting on climate change?

### Effective Metrics

A standardized set of metrics could be created, similar to [Iris](#), to create uniform impact statements for clean energy access. Sustained usage metrics are important to measure the long-term effectiveness of a policy, not just its effectiveness at a fixed point in time: the rate of change of metrics over time is an indicator of its usefulness.

Lower value metrics are comparatively easy to measure. The following list includes examples of what participants imagined as lower value yet essential metrics:

- **Communication:** Frequency of community presentations & number of attendees, number of newsletter subscribers, number of families engaged in ongoing communication, number of homes touched by a program
- **Education:** Number of youth programs that teach clean tech energy and efficiency, number of adult education programs, geographic dispersion of educational events
- **Technical:** Number of installed solar and smart meter units, number of carbon offsets purchased, amount of energy cost, number of kilowatt-hours saved and generated, level of carbon dioxide reduction
- **Health:** Changes in air quality, reduction in asthma rates, reduction in repeated doctor or ER visits.
- **Transportation:** reduction of miles traveled by burning fossil fuels, the number of clean mobility choices, reduction in traffic, and the number of EV users

Higher value metrics are indicators of systemic change that are difficult to measure, yet often reflect the core motivations of the program. Examples of such metrics include: how much money families have saved on average and in aggregate, increased ability to afford food or healthcare, reduction in missed work or school days, increased housing affordability, and the economic value of assets owned by the community. “Heat maps” can show all government, corporate, and nonprofit resources available to a community based on aggregated data. This is a challenge that presents opportunities for Silicon Valley’s user interface design experts to get involved in creating tools that can lead to a just and inclusive clean energy transition.

Workshop participants brought up more abstract metrics that require further research to clearly articulate and compare between policy efforts.

- Economic improvements such as quantifying co-benefits and family retention of generational wealth
- Geographically-based improvements such as clean tech adoption rates (EV, solar, etc.) relative to other places and including those related to Project Drawdown research or planetary boundary frameworks
- Community based such as number of clean energy leaders from communities, levels of personal empowerment, and level of community pride
- Ecological benefits such as ecological health in urban areas and community appreciation for connection between living beings

## Challenges

Economic metrics can be among the most important measure in order to win support from funders and also the most challenging to track and collect. These metrics include the number of clean tech jobs created within target beneficiary group, the number of living wage jobs created, or the number of minority-, women-, and veteran-owned businesses served or created.

There are also questions also about how to identify and measure any unintended consequences of success. For example, as the economic empowerment of a community grows, are there metrics for gentrification that should be incorporated? Is there a risk of displacement of the very communities nonprofits are trying to help? How is “neighborhood character” properly measured and addressed? Participants emphasized the value of local ownership in stabilizing communities and suggested that measurements for local empowerment include stability of community (i.e. minimization of gentrification) as part of the measure of success.

## Needs

There is sometimes a disconnect between the data funders would like to have and the data that nonprofits are able to collect. From non-profit strategy to community deployment, too often the low-income community is framed as being a consumer of CBO services rather than as a partner and participant in solution identification and creation. To help address this, it would be very helpful for there to be flexibility in the creation and reporting of success metrics in order to allow for adaptive program implementation. Rigidity in metrics reporting may also hinder co-discovery with the community of what outcomes and solutions would be most effective.

The issue of climate change impacts on low-income communities and equal access to clean energy, CBOs and the communities they serve are engaged in problem-solving for the long term – it’s not a sprint, it’s a marathon. For this reason, non-profits working on this issue are in especially critical need consistent, long-term capital in order to carry out work that is likely to require many years of capacity building in low-income communities where people work multiple jobs, change homes frequently, and are not fluent in English. Workshop participants expressed frustration that funders may see capacity building as “unnecessary overhead.” A shift is needed: funders need to see increased community capacity to identify priorities and solutions as a desirable outcome.



Nonprofits are sometimes held to unreasonably high standards disproportionate to their capacity. Their costs should be compared with typical corporate overhead rates.

## Opportunities

In building frameworks of common understanding to establish metrics, participants expressed interest in knowledge sharing. There is a need for distributed and transparent databases that record past successes and failures so that CBOs can learn from each other. This knowledge would save valuable time and resources for nonprofits, as well as reduce the burden on non-profit staff and such metrics would be easier to adopt.

## Questions for further discussion

- **For Funders:** How can we align success metrics needed for program outcomes evaluation with the vision, mission and goals of the CBOs that are working in low-income communities? Is it possible to build flexibility into the metrics collection model to allow for community input as projects progress?
- **For CBOs:** How might we partner with other organizations to share tools that would make it easier to track impact of programming in low-income communities?

## Conclusion

Climate change, income inequality, and air pollution are among the biggest challenges of our age. Solutions themselves must be un-siloed to remove redundancy and cover more problems simultaneously. For example, we are now reaching a point where all new solar systems need to have storage to be of significant marginal benefit. Yet it is difficult to scale up battery production without stimulating the electric vehicle market and providing widespread access to electric vehicles in low-income communities.

Systemic problems demand systems change. Innovation is required to create a just transition. Participants in the workshop emphasized that this requires moving beyond simple access to clean technology in low-income communities. What is required is ownership of solutions and empowerment of community members to effect change in ways they serve their communities best. Many funders and philanthropists hope to have a global impact, but sometimes overlook the impacts that are possible in their own back yards. Following the leadership of the Giving Code, local technology philanthropists have enormous potential to improve the health, equality and well-being of the communities that they reside within and drive through every day to and from work. Community-based organizations look for their support to effectively advocate for clean energy and climate solutions. Together, shoulder-to-shoulder with the frontline communities we serve, we can create the transformation required for a regenerative, healthy, low-carbon future for us all.

During the follow-up webinar to the sprint (see <https://youtu.be/yELaxLbP244>), Acterra proposed the creation of four working groups to further extend climate solutions and clean energy for all into actionable next steps. Two of the four groups – the Policy Working Group and the Metrics Working Group - met approximately once per month from January to June 2019 and produced reports on outcomes which are available for download at [www.acterra.org/clean-energy-for-all](http://www.acterra.org/clean-energy-for-all). The other two

groups – the Storytelling Working Group and the Business Models Working Group – remain opportunities for future convening.

The groups were intended to evolve with collaboration as they examine the landscape and identify the highest value leverage points.

**1. Metrics Working Group:**

- Desired Goal: Make it easier for CBOs and funders to measure what impact clean energy is having in the communities they serve.
- Proposed Product: Resource guide developed by funders and CBOs with framework of high-value metrics with tips and best practices for collecting those metrics.
- Outcomes Report: Available at <https://www.acterra.org/clean-energy-for-all>

**2. Policy Working Group:**

- Desired Goal: Faster implementation of clean energy access for all by reducing policy impediments.
- Proposed Products: Identification of policies that impede progress on the establishment of clean energy access for all in California.
- Outcomes Report: Available at <https://www.acterra.org/clean-energy-for-all>

**3. Financing/Business Models Working Group**

- Desired Goal: Make it easier for CBOs and community members to identify funding methods optimized for clean energy access in their communities.
- Proposed Products: Resource guide/tool to make it easier for CBOs and community leaders to see what the options are for financing clean energy solutions.

**4. Storytelling Working Group**

- Desired Goal: Build knowledge systems for communities to easily communicate the importance of clean energy with a shared language among all stakeholders.
- Proposed Products: Talking points for CBOs to use with funders, talking points for CBOs with their constituents. Best practices for getting communities to the table early.

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