Illinois Solar for All

Working Group

JULY 11, 2017

Contents

Solar for All Working Group Cover Memo

To: Anthony Star, Illinois Power Agency

Brian P. Granahan, Illinois Power Agency

From: Juliana Pino, Little Village Environmental Justice Organization

& Participants of the Illinois Solar for All Working Group

Date: 7/11/2017

Re: Illinois Solar for All Working Group White Paper

Dear Director Star and Mr. Granahan:

The Illinois Solar for All Working Group is pleased to deliver the enclosed White Paper on the Illinois Solar for All Program created and outlined in the Future Energy Jobs Act (FEJA; PA 99-0906). This memo describes an overview of the Illinois Solar for All Working Group.

Background: Illinois Solar for All Working Group

The Illinois Solar for All Working Group (the Working Group) formed from a subset of members of the Illinois Clean Jobs Coalition, who had comprised an Environmental Justice-Solar-Labor Caucus (the Caucus) during the negotiation of policies that would become FEJA. The group formed in order to bring the best practices and policies to the Illinois energy landscape that would serve to maximize benefits to the economically disadvantaged households and communities that targeted programs are intended to serve. The group was co-facilitated by a representative of a solar company, Amy Heart of Sunrun, and a representative of an environmental justice group, Juliana Pino of the Little Village Environmental Justice Organization.

Following passage of FEJA in December 2016, the Caucus expanded into the Illinois Solar for All Working Group, an open membership group including experts on environmental justice, environmental advocacy, consumer protection, solar business, low-income solar policy, energy efficiency, job training, program design, and other areas, who have substantive research and experience to bring to bear on implementation of Illinois Solar for All. Over 70 participants include representatives from the following organizations:

Blacks in Green	Midwest Renewable Energy Association
Central Road Energy	Natural Resources Defense Council
Elevate Energy	New Life Ministries
Environmental Defense Fund	ONE Northside
Environmental Law and Policy Center	People For Community Recovery
Faith In Place	Seven Generations Ahead
Futurez NFP Incorporation	Sierra Club Illinois
GRID Alternatives	Sierra Club Labor and Economic Justice Program
Illinois Environmental Council	Southeast Environmental Task Force
Illinois Green Economy Network	StraightUp Solar
Illinois People's Action	Sunrun
Illinois Solar Energy Association	The People's Lobby
Lift Them Up Center	Trajectory Energy
Little Village Environmental Justice Organization	Union of Concerned Scientists
Metanoia Centers for Innovation	Vote Solar

Working Group Process

The Working Group began convening in January 2017, and has had six monthly full-group meetings. In tandem, the Working Group operates with sub-teams that focus on specific areas relevant to the policies at hand and future work on the program. These sub-teams include: Program Design & Incentives, Consumer Protection & Financing, Definitions, Job Training, and Project Workshop. Each sub-team was facilitated by leads and co-leads and met weekly to biweekly over the course of the past six months.

A draft White Paper was delivered to the IPA on May 5, 2017. Many Working Group participants attended IPA's May 2017 workshops and helped develop responses to IPA's June 6, 2017 Request for Comments on the Long-Term Renewable Resources Procurement Plan (see Appendix C of the enclosed White Paper).

Program Principles for Illinois Solar for All

During the negotiation of FEJA, the Caucus membership collectively agreed upon the following policy principles to guide our work moving forward. These principles were rooted in the *Low-Income Solar Policy Guide*[1] authored by GRID Alternatives, Vote Solar, and the Center for Social Inclusion; further adapted through iterative deliberations in the Caucus; and ultimately adopted by the Working Group. The principles include:

• **Affordability and Accessibility**. Offers opportunities for low-income residents to invest in solar through a combination of cost savings and support to overcome financial and access challenges Creates economic opportunities through a job training pipeline. Supports skill development for family-supporting jobs, including national certification and apprenticeship programs.

• **Community Engagement**. Recognizes community partnerships are key to development and implementation, ensuring community needs and challenges are addressed. Strive to maximize projects located in, and serving, environmental justice (EJ) communities. Allows for flexibility for non-profit/volunteer models to participate, and strives to meet potential trainees where they are, with community-led trainings.

• **Sustainability and Flexibility**. Encourages long-term market development, and will be flexible to best serve the unique low-income market segment over time and as conditions change. Program administrator ensures community engagement, statewide geographic equity, and flexibility to meet goals. Job training program includes all training partners in design and implementation. Training offerings should come through diverse channels including utilities, unions, tech schools, non-profits, government agencies, and existing community-based job training organizations.

• **Compatibility and Integration.** Low-income program adds to, and integrates with, existing renewable energy and energy efficiency programs, and supports piloting of financing tools such as pay-as-you-save, on-bill financing, PACE or community-led group buy programs. Jobs training program will strive to ensure low-income solar installations incorporate workforce development, including coordinating opportunities for job training partners and individual trainees from the same communities that the low-income solar program aims to serve.

Purposes of White Paper

The Working Group researched and prepared the enclosed white paper to deliver high quality information and recommendations on implementation considerations for the Illinois Solar for All Program. The contents are not intended to reflect universal consensus on any point amongst Working Group members. These contents reflect extensive deliberation regarding aspects that the Working Group believes are important to the program's success moving forward.

In closing, we make these recommendations and identify options, considerations, questions, and examples with the aim to ensure high-quality implementation for Illinois communities. Communities throughout Illinois need the opportunities and services the Illinois Solar for All program will provide and the support of groups with substantive experience in the solar industry and low-income solar in particular. Please do not hesitate to contact us with questions or comments in regards to this matter.

[1] www.lowincomesolar.org

1. Definitions

Contents: Definitions

Section 1. Definitions Sub-team Introduction

The objective of the Definitions Sub-team of the Illinois Solar for All Working Group was to define priority terms included in SB2814 (Public Act 99-0906). The Sub-team's comments and recommendations are based on successful programs and lessons learned in other states where information about those programs is publicly available. For descriptions of commonly cited programs, please see Appendix A.

The Illinois Solar for All Program ("ILSfA Program") has four distinct program areas referenced in this whitepaper: Distributed Generation ("DG Program"), Community Solar ("CS Program"), Non-profits and Public Facilities ("N&PF Program"), and Community Solar Pilot ("CSP Program").

The Definitions Sub-team held one conference call in March 2017. The team's work proceeded electronically. The team lead and sub-team participants also held discussions with the Illinois Commission on Environmental Justice and the United States Environmental Protection Agency on this matter. Should the sub-team have further discussion regarding definitions, the information will be provided to the Illinois Power Agency (IPA), if applicable.

Section 2. Recommendations and Supporting Information

Section 2.1 "Low-income Communities" "Low-income Community Members" and "Low-income Participants in the Community"

Recommendations:

Low-income Communities

- Regardless of definition for "low-income community," the ILSfA Program should be open to all individuals whose income does not exceed 80% of area median income, as set annually by the U.S. Department of Housing and Urban Development (HUD), adjusted for family size and revised every 5 years.
- Use one or more existing definitions for "low-income community," including local, state or federal definitions (e.g. HUD's Qualified Census Tracts) from programs that provide benefits to low-income households and populations. In its collaboration with stakeholders, the IPA and third-party program administrators should continue to encourage broad and inclusive definitions.

Low-income Community Members

"Low-income community members" could be defined as all individuals whose income does not exceed 80% of area median income, as set annually by HUD, adjusted for family size and revised every 5 years, as well as anyone residing in one or more existing definitions for "low-income community," including local, state or federal definitions (e.g. HUD's Qualified Census Tracts) from programs that provide benefits to low-income households and populations.

- "Meaningful involvement" means longstanding involvement or standing of low-income persons – in projects from the early outset and onward – who have decision-making power, authority and accountability within their organization and community. It requires collaboration that demonstrates seeking out and facilitating this involvement and standing, as well as processes that demonstrate and document responsiveness to low-income persons' initial and emergent priorities and concerns. This includes that low-income persons have decision-making power and/or substantive influence into project design and development decisions, as well as into ongoing evaluation.

Low-income Participants in the Community

- "Low-income participants in the community" is synonymous with low-income community members.

Statute:

- "The objectives of the Illinois Solar for All Program are to bring photovoltaics to low-income communities in this State […] " (enrolled bill PDF p. p 44, ln 8)
- "Priority shall be given to projects that demonstrate meaningful involvement of low-income community members in designing the initial proposals." (enrolled bill PDF p. 47, ln 2)
- "Acceptable proposals to implement projects must demonstrate the applicant's ability to conduct initial community outreach, education, and recruitment of low-income participants in the community." (enrolled bill PDF p. 47, ln 6)

Discussion Questions:

Low-income Community Members and Low-income Participants in the Community

- Are specific types of community groups/church groups acceptable to meet these criteria?
- Is the participation of one low-income community member enough?
- What counts as meaningful?

Considerations:

Low-income Communities

- All low-income families in the state should have the opportunity to participate in and benefit from Illinois' investment in a clean energy future with SB2814 (Public Act 99-0906), regardless of geographic location.

- The definition of 'low-income community' should be broadly defined to include all families whose household income is 80% or less of the Area Median Income. This income threshold has been a well-established federal standard for HUD, the affordable housing sector, and other state/local low-income programs and should be the benchmark for IL's low-income programming.

Low-income Community Members and Low-income Participants in the Community

- As with the definition of "low-income community," all low-income families should have the opportunity to participate, regardless of geographic location. Additionally, the participation of one low-income community member is not enough to fulfill a threshold for low-income serving or meaningful involvement.
- Church and community groups are often the last institution that is truly "owned" by the community in low-income and environmental justice neighborhoods. They are often attended by neighborhood residents and also provide services those same individuals (e.g. food and clothing pantries, meeting places for community meetings, etc.) There is a distinction between groups controlled by and within the community rather than outside groups that come in and provide services for members of the community. The former should be given preference to the latter.
- The church is often the last standing organization to have meaningful involvement with that community. It doesn't dictate TO the community; it participates IN the community with the involvement of community members who attend the church, support its programs and also benefit from the programs within the church and/or are offered by the church. Churches are sometimes the last organized entity standing--every other business and community organization has fled. Additionally, even the church may have to limit what they can offer the community because they can no longer afford to heat or cool their own fellowship hall. This is why many churches fought for the passage of FEJA and ensured language was inserted that would guarantee they were included. They want three things out of FEJA: lower electric bills, opportunities for jobs that come with RE/EE, and energy sovereignty.

Successful Examples:

- **HUD's Qualified Census Tracts:** Qualified Census Tracts may be a good default starting point. Published by HUD, used by LIHTC 1) Low-Income Housing Tax Credit Qualified Census Tracts must have 50 percent of households with incomes below 60 percent of the Area Median Gross Income (AMGI) or have a poverty rate of 25 percent or more[1].

- **California's Single-family Affordable Solar Homes (SASH) Program[2]:** Participants living in a home defined as "affordable housing" is defined by California Public Utilities (P.U.) Code 2852. This can take many forms, including the following: Single-family home has a resale restriction or an equity sharing agreement with a public entity or non-profit affordable housing provider; Single-family home is part of a multi-family complex supported by public funds to enable selling the home at an affordable cost to low income families; Single-family home was purchased through a first-time homebuyer program or loan program that uses state or federal HOME funding - and contains a qualifying resale restriction or equity sharing agreement; Other - Certain and specific "presumed resale restrictions" meet this requirement, such as those found in federally-designated Empowerment Zones, Enterprise Communities, certain Neighborhood Revitalization Areas, Targeted Employment Areas, and Qualified Census Tracts[3].

Section 2.2 "Environmental Justice Community"

Recommendations:

Future Energy Jobs Act: Recommendations on Indicators and Methods for Defining Environmental Justice Community

We recommend that the IPA consider a combination of the following available resources in defining an environmental justice community (EJ community) and weighing various factors: the baseline policy from the Illinois Environmental Protection Agency (IEPA) for defining a "potential environmental justice community" and the definition from the United States Environmental Protection Agency (USEPA) of "overburdened community" paired with CalEnviroScreen indicators and methodology for "disadvantaged community" and the USEPA EJSCREEN environmental justice screening and assessment tool. In combination, critical factors such as income, race, environmental impacts, and more can and should be jointly considered when defining and locating EJ communities in Illinois.

The current IEPA policy for defining a "potential" EJ community was developed for use in implementing a public participation strategy for permits, programs and actions in potential EJ communities. We recommend that the IPA utilize additional indicators that go above and beyond this baseline to more accurately capture both the environmental context and demographic characteristics of communities as the initial means of assessment of environmental justice communities in the state. This should be paired with the option for self-identification.

- ***Recommendation on Indicators***

  We recommend that the IPA look to a system utilized in California named CalEnviroScreen to assist in defining an EJ community as a guide for both a subset of specific indicators, as well as an accompanying methodology for implementing and weighing indicators that could be adopted in the State of Illinois. The set of indicators is more inclusive than the baseline definition utilized in Illinois that only focuses on demographic characteristics, as well as the USEPA guidance that points to categories of impact, but does not delineate specific indicators.

  Importantly, while CalEnviroScreen includes a strong set of indicators, we recommend the IPA ensure that race is included in the ultimate set of indicators adopted by Illinois to reflect both the existing IEPA policy and the federal guidance on overburdened communities from USEPA. It is an essential demographic indicator in an Illinois EJ community definition for the purposes of FEJA implementation.

  California Environmental Protection Agency (CalEPA) Office of Environmental Health Hazard Assessment (OEHHA) developed CalEnviroScreen, and the tool has been utilized in defining "disadvantaged communities" for the purposes of receiving climate mitigation investment opportunities in California. Similarly, the definition of environmental justice communities for the Illinois Solar for All program is mandated for the purposes of distributing incentives and solar energy access in accordance with statutory goals.

  CalEnviroScreen scores are calculated from the scores for two groups of indicators: Pollution Burden and Population Characteristics. Pollution Burden represents the potential exposures to pollutants and the adverse environmental conditions caused by pollution. The indicators for Pollution Burden include:

  - Air Quality PM 2. 5 and Ozone
  - Diesel Particulate Matter
  - Drinking Water Contaminants
  - Toxic Releases from Facilities
  - Housing Quality
  - Traffic Density
  - Cleanup Sites
  - Groundwater Threats
  - Lead Exposure/Poisoning
  - Hazardous Waste Generators and Facilities
  - Impaired Water Bodies and Solid Waste Sites and Facilities.

Population Characteristics indicators represent biological traits, health status, or community characteristics that can result in increased vulnerability to pollution. The indicators for Population Characteristics are:

- Age: Children and Elderly
- Asthma
- Low Birth Weight Infants
- Educational Attainment
- Linguistic Isolation
- Poverty and Unemployment

Overview of Indicators: Illinois Data Available

The EJ Commission research related to the environmental indicators utilized in CalEnviroScreen 2. 0 should be publicly available via an Illinois database. The information from IEPA and other state agency databases may be pulled into any future GIS mapping done in furtherance of environmental justice goals under the Future Energy Jobs Act (FEJA) (Public Act 99-0906). The databases are:

- Drinking Water Watch: http://water. epa. state. il. us/dww/index. jsp
- There are a variety of IEPA Bureau of Land databases covering cleanup and regulatory programs: www. epa. illinois. gov/topics/cleanup-programs/bol-database/index

Minimally, those that would be of interest are:

- Site remediation: epadata. epa. state. il. us/land/srp/index. asp
- The Leaking Underground Storage Tank Incident Tracking ("LUST") database: www. epa. illinois. gov/topics/cleanup-programs/bol-database/leaking-ust/index
- State sites: epadata. epa. state. il. us/land/ssu/index. asp
- Solid waste: epadata. epa. state. il. us/land/solidwaste/index. asp
- Lead: Illinois Department of Public Health publishes surveillance reports on childhood lead poisoning: http://www.dph.illinois.gov/sites/default/files/publications/lead-surveillance-report-2015-122116.pdf
- Asthma: http://www.dph.illinois.gov/sites/default/files/publications//ilburdenasthmaaugust2013r.pdf

The report enclosed on asthma burdens only identifies impact at the county level, so it poses challenges for granularity. We recommend that the EJ Commission work with members from Illinois Department of Public Health (IDPH) to investigate if current asthma information exists at the census tract to align with the methodology used in CalEnviroScreen. CalEPA OEHHA currently collects information on emergency department visits and hospitalizations from different causes in California. Asthma emergency department data are currently the best available way of describing differences in asthma across the state at the census tract scale. The indicator is the number of asthma emergency department visits per 10,000 people for the years 2007-2009.

Finally, US Environmental Protection Agency's (USEPA) EJ mapping tool, EJ Screen,[4] contains many data sources that mirror the indicators used by California. Combining state databases and federal databases provides the indicator set needed to implement the CalEnviroScreen standard.

- ***Recommendation on Methodology***

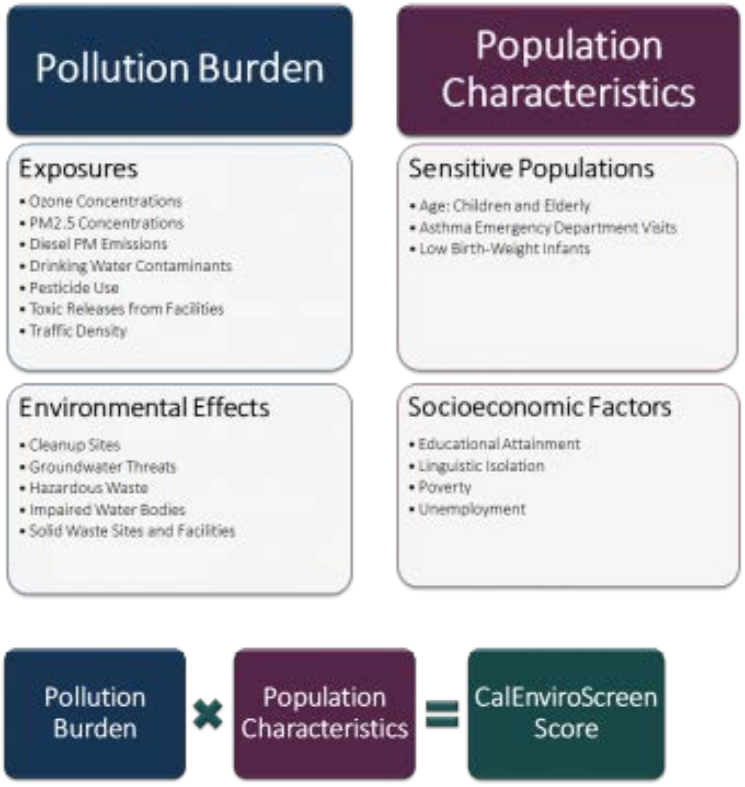
  We recommend that IPA consider the methodology that OEHHA used to identify census tracts as disadvantaged communities in California. This methodology combines the pollution burden and population characteristics. A full and more detailed description of scoring methodology with example calculations and weighing of indicators is available via the CalEnviroScreen 2.0 website: *https://oehha.ca.gov/calenviroscreen*.

  Individual indicator values are determined based on the characteristics respective to each indicator. Census tracts are ordered by percentile based on the distribution of these values statewide. The overall score for each census tract is calculated by combining the individual indicator scores within each of the two groups, then multiplying the Pollution Burden and Population Characteristics scores to produce a final score. Based on these final scores the census tracts across California are ranked relative to one another. Please see the text and models below for an explanation of how this method is used:

  - Each census tract receives scores for as many of the 19 indicators as possible. Some census tracts will not have scores for every one of the indicators.
  - For each indicator, the scores are put in order from highest to lowest. This allows us to calculate a percentile for all areas that have a score.
  - The Population Characteristics score for a census tract is the average of the percentiles for all the Sensitive Populations

indicators and Socioeconomic Factors indicators for that census tract.

- The Pollution Burden score is the average of the percentile scores from Environmental Effects and Exposures indicators.
- The Environmental Effects indicator percentiles are divided in half because we consider environmental effects to make a smaller contribution to pollution burden than exposures do.
- To get the CalEnviroScreen score, multiply the Pollution Burden score by the Population Characteristics score.
- Communities at the top 25% of scores relative to the state's range of scores qualify as disadvantaged. For all statewide California programs, the top 25% of scores are considered Disadvantaged Communities (DACs). For some Investor-Owned Utility (IOU)-specific programming, other metrics have been used; for example the California Green Tariff Shared Renewables (GTSR) Program EJ uses top 20% in each IOU, and EV uses top 25% in each IOU or statewide, whichever is more broad.



Statute:

Relevant statutory language from FEJA (PA 99-0906) is as follows: *For the purposes of this subsection (b), the Agency shall define "environmental justice community" as part of long-term renewable resources procurement plan development, to ensure, to the extent*

practicable, compatibility with other agencies' definitions and may, for guidance, look to the definitions used by federal, state, or local governments.

Considerations:

- The IPA may want to include Illinois-specific indicators that are not included in the recommendation. An example of this in the case of California is pesticide exposure, which California's regulators included due to their specific agricultural environments.
- IEPA Policy for Defining a "Potential" EJ Community: For thoroughness, the current IEPA definition and methods are included. The definition is as follows:
    - A "potential" EJ community is a community with a low-income and/or minority population greater than twice the statewide average. In addition, a community may be considered a potential EJ community if the low-income and/or minority population is less than twice the statewide average but greater than the statewide average and that has identified itself as an EJ community. If the low-income and/or minority population percentage is equal to or less than the statewide average, the community should not be considered a potential EJ community.
- IEPA EJ Policy: Methodology for Identification of Communities of Potential EJ Concern
    - IEPA utilizes an internal Geographic Information Systems (GIS) demographic screening tool (EJ START) developed by Agency staff to determine potential environmental justice areas. The criteria for identification is twice the statewide average for minority population (75%) and/or low-income population (63. 2%). The Agency adds a one-mile buffer around each regulated facility. The underlying data source is the latest American Community Survey 5-year estimates (2011-2015). The data used by IEPA are updated on an annual basis.
- USEPA Definition of "Overburdened Community": USEPA's definition of "overburdened community" considers demographic characteristics and adds crucial additional indications of vulnerability to environmental hazards:
    - Overburdened Community - Minority, low-income, tribal, or indigenous populations or geographic locations in the United States that potentially experience disproportionate environmental harms and risks. This disproportionality can be as a result of greater vulnerability to environmental hazards, lack of opportunity for public participation, or other factors. Increased vulnerability may be attributable to an accumulation of negative or lack of positive environmental, health, economic, or social conditions within these populations or places. The term describes situations where

multiple factors, including both environmental and socio-economic stressors, may act cumulatively to affect health and the environment and contribute to persistent environmental health disparities. | *Please see Appendix C for reference.*

- USEPA EJSCREEN: EJSCREEN is a USEPA environmental justice screening and mapping tool that utilizes standard and nationally consistent data to highlight places that may have higher environmental burdens and vulnerable populations. The tool provides both summary and detailed information at a high geographic resolution for both demographic and environmental indicators. While as a standalone tool, it is inappropriate to utilize EJSCREEN in identification of EJ communities, combined with the methodology from CalEnviroScreen and guidance from existing IEPA and USEPA baseline policies, it serves as a unique mapping resource that IPA can leverage in implementation. | *Please see Appendix C for reference.*
- Considerations for Self-Designation: Self-designation and ability to decline designation is critically important. Self-designation is particularly key for communities who are in rural areas captured with less accuracy in environmental harms data, communities affected by recent environmental harms that would not be tracked in the most recent national and state databases, and communities affected by environmental harms for which database-level indicators and tracking is unavailable. Such communities should be given a means through which they can demonstrate environmental harms, demographic vulnerabilities, and qualitative and quantitative justification for self-designation as a supplement to methodology proposed on mapping environmental justice communities. Additionally, the current IEPA policy for defining a "potential" EJ community referenced above sets a baseline precedent for self-identification based on core demographic characteristics in Illinois.
- As with initial identification of environmental justice communities, we recommend that the IPA consider a broad range of indicators that speak to both environmental and demographic characteristics of communities when reviewing self-identification of environmental justice status from communities that are not clearly captured in any initial identification.
- We recommend the IPA collaborate closely with the Illinois Commission on Environmental Justice, the IEPA, the Illinois Department of Public Health, and the USEPA in both obtaining the necessary indicator data and leveraging mapping tools and capacity to implement methodology that allows the agency to weigh and incorporate the environmental and demographic indicators. We also recommend that the IPA include in its program design annual updates and additions to the initial criteria used in identification of "EJ communities" as state and federal databases are updated and new indicators are added and as additional relevant factors for

environmental burdens and demographic vulnerability come to light via self-designation.
- CES took a significant amount of time and resources, which may or may not align with the timeline and scope of ILSfA Program.

Successful Examples: See the CalEnviroScreen examples above.

Section 2.3 "Energy and Economic Benefits" "Tangible Economic Benefits" and "Economic Benefits"

Recommendations:
- "Energy and economic benefits," "tangible economic benefits," and "economic benefits" are synonymous with each other.
- Eligible household participants should experience maximized monthly electricity bill savings, but also have opportunity to experience broader auxiliary benefits for participants in communities. Incentives should be set at a level that overcomes a low-income family's inability to pay anything upfront. Maximized monthly electricity bill savings means eligible participants are cash-flow positive from day one and ideally have no financial liability to the system owner; however, should any particular financing model require financial contributions, then the savings from the solar should far exceed the payment. Examples of auxiliary benefits (i.e. non-energy benefits) include access to hands-on solar job training, energy efficiency (EE) education and EE referrals, broad community engagement with solar, increased neighborhood resilience, and pride in one's neighborhood.
- Additional value/benefits/incentives should be added to the wholesale market value of the energy for eligible low-income participants in order to get to a tangible economic benefit that ensures eligible participants are cash-flow positive from day one and receive maximized savings at the household level as a result of solar access under ILSfA.
- The IPA may consider posing savings scenarios as a strawman proposal in the draft plan in order to solicit feedback.

Statute:
- "*Each contract that provides for the installation of solar facilities shall provide that the solar facilities will produce energy and economic benefits, at a level determined by the Agency to be reasonable, for the participating low income customers."* (enrolled bill PDF p. 45, ln 9-10)
- "*Contracts under the Illinois Solar for All Program shall include an approach, as set forth in the long-term renewable resources procurement plans, to ensure the wholesale market value of the*

energy is credited to participating low-income customers or organizations and to ensure tangible economic benefits flow directly to program participants, except in the case of low-income multi-family housing where the low-income customer does not directly pay for energy." (enrolled bill PDF p. 46, ln 23)

- "*Pilot projects must result in economic benefits for the members of the community in which the project will be located*." (enrolled bill PDF p. 49, ln 24,25)

Discussion Questions:

- Do we need the same levels of benefits for non-household eligible participants? E.g. should this be cash-flow positive on day one for non-profits?
- How to maximize monthly savings given that full retail rate NEM (for community solar) is not available in this market.

Successful Examples:

- **California SASH Program**: The 50% savings requirement functions as a "floor," as most households realize 80% or more of savings. The SASH program administrator serves as a liaison between the third-party system owner and the low-income household, and functions as a consumer advocate. The SASH TPO model, by design, removes all financial liability for the low-income family, thereby allowing families with poor credit to participate.

- **District of Columbia Solar for All Program**: D. C. Act A21-0466, Renewable Portfolio Standard Expansion Amendment Act of 2016, Section 216(a)[5] ensures seniors, small local businesses, non-profits, and low-income households receive at least 50% of the savings, as compared to standard utility rates, from the solar generating equipment.

Lessons Learned:

California SASH Program: The SASH program administrator has observed that most participating low-income families do not have access to capital or credit, and typically have poor credit worthiness and an inability or unwillingness to take on more debt. As such, the program administrator has developed models that work for the target market (see Successful Examples information above). The program administrator has observed households in the target market are more likely to participate in the SASH program when they are not subject to upfront costs.

Section 2.4 "Public Facilities and Non-profits"

Recommendations:

- The non-profits and public facilities incentive should go to non-profit and public facility organizations that act as critical service providers (e.g. youth centers, hospitals, schools, homeless shelters, senior centers, places of worship, affordable housing providers) and/or serve at-risk or low-income individuals, families, and communities, including EJ and historically underserved communities, in their missions. If applicable, those organizations should seek to provide and allocate the benefits of locally generated solar energy to income-eligible households.
- Government and non-profit entities should be required to submit verification of their tax-exempt status to be eligible for the public facilities and non-profit incentives.
- Third party program administrator(s) should set qualification criteria to make sure disproportionate amount of incentive money does not go to any one category or entity and adjust definitions of non-profits and public facilities accordingly. Similarly, third party program administrator(s) should provide feedback to the IPA on program uptake and usage of funds regularly, at least at the end each program year or within a program year if the third party program administrator(s) believes program changes or fund reallocation is necessary. Allow for definition changes or flexibility, as the N&PF Program gets underway.
- The IPA should consider awarding higher incentives to non-profits, which are less likely to have financial backing available to public facilities. This makes non-profit projects more difficult to finance.

Statute:

"(C) Incentives for non-profits and public facilities. Under this program funds shall be used to support on-site photovoltaic distributed renewable energy generation devices to serve the load associated with not-for-profit customers and to support photovoltaic distributed renewable energy generation that uses photovoltaic technology to serve the load associated with public sector customers taking service at public buildings. " (enrolled bill PDF p 49, ln 1,2)

Discussion Questions:

- CS Program specifically says non-profits are included (i. e. not-for-profit organizations). Where do non-profits fit – CS Program and N&PF Program or separate them out?
- Non-profit multifamily affordable housing/public housing should be prioritized. Which program, since they are non-profits too?
- What percentage (i.e. 50%) of households in a multifamily affordable housing property should be at or below 80% AMI? Establish minimum percentage (i.e. 50%) of affordable units. See details: California Public Utilities Code 2852 (a)(3)(A-B) as a reference for potential language.

Considerations:

- Strong interest among the EJ groups/community based organizations (CBOs) within ILSfA Working group to be eligible for this themselves.
- Include public facilities that serve specific at-risk groups (e.g. senior centers) even if they cannot pass benefits back to households.
- Include public facilities in communities that are a majority low-income even if they cannot directly pass benefits back.
- Consider repurposing the preferred participants from the Clean Power Plan's Clean Energy Incentive Program: critical service providers (e.g. hospitals, schools, places of worship). These organizations directly serve the community and the benefits from the incentives would have trickle down impacts.
- Since this is under the ILSfA Program, there should be parameters around serving/benefitting low-income constituents. CBOs, churches, etc. - groups that otherwise would not have ability to make investment on their own.

Successful Examples:

- **California Solar Initiative (CSI):** Go Solar California[6] incentive rates vary by the system owner's entity type (e.g., commercial, government or non-profit entities). The incentive amount is determined by the tax status of the system owner. Government and non-profit entities are required to submit verification of their tax-exempt status to receive the government/ non-profit incentive amount. Source: CALIFORNIA CODES - PUBLIC CONTRACT CODE, SECTION 21611
    - ***Non-Profit:*** *A Non-Profit institution is an entity not conducted or maintained for the purpose of making a profit, and is registered as a 501(c)3 corporation. No part of the net earnings of such entity accrues or may lawfully accrue to the benefit of any private shareholder or individual.*
    - ***Government:*** *A Government entity is any federal, state, or local government agency. Local government entities include cities, counties, school districts, and water districts.*
    - ***Public Entity:*** *Includes the United States, the state and any county, city, public corporation, or public district of the state, and any department, entity, agency, or authority of any thereof.*
- **District of Columbia Solar for All Program**: The District of Columbia's Department of Energy and Environment (DOEE) solicited grant applications from eligible entities[7] (Applicants). The goal of the Request for Applications (RFA) was to further the Renewable Portfolio Standard Expansion Amendment Act of 2016, effective October 8, 2016, (D. C. Law 21-154; 63 DCR 10138) (the Act) which established the District of Columbia's Solar for All Program. Specifically, Section 3(b) of the Act requires DOEE, through Solar for All, to reduce by at

least 50% the electric bills of at least 100,000 of the District's low-income households with high energy burdens by December 31, 2032. DOEE also includes, for this grant, the non-profits and organizations that serve such low income District residents. Proposals can seek to provide the benefits of locally generated solar energy to low-income households, small businesses, non-profits, and seniors. Eligible Applicants include non-profit organizations, including those with IRS 501(c)(3) or 501(c)(4) determinations; Faith-based organizations; Universities/educational institutions; and Private enterprises.

- **Clean Power Plan Clean Energy Incentive Program (CEIP)**[8]: USEPA went through a multi-year public stakeholder process to solicit comments on the types of solar technologies and programs that could be eligible for the low-income community reserve of the matching pool, and how states may be able to determine benefits delivered to low-income community ratepayers. USEPA recommended that a state consider projects that reduce electricity demand in buildings and institutions that provide critical services (e.g., community centers, street lighting, health clinics, etc.) within or to low-income communities and/or households. The proposed rule indicated a state that chooses to participate in the CEIP must include in its plan one or more definitions of low-income community. USEPA proposed to enable states and tribes to use one or more existing definitions for "low-income community," including local, state or federal definitions from programs that provide benefits to low-income households and populations.

References: Definitions

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[2] http://www.gosolarcalifornia.ca.gov/affordable/sash.php
[3] http://gridalternatives.org/what-we-do/solar-programs/single-family-solar/sash/qualify
[4] https://www.epa.gov/ejscreen
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[6] Go Solar California Handbook, Section 3.2.3 pg. 41-42
http://www.gosolarcalifornia.ca.gov/documents/CSI_HANDBOOK.PDF
[7] https://doee.dc.gov/release/notice-funding-availability-solar-all-dc-innovation-and-expansion-grants-multi-family
[8] https://www.epa.gov/newsreleases/epa-proposes-additional-details-clean-energy-incentive-program

2. Consumer Protection & Financing

Contents: Consumer Protection & Financing

Section 1. Consumer Protection & Financing Sub-team Introduction

The objective of the Consumer Protection & Financing Sub-team of the Illinois Solar for All Working Group was to ask, "How do we ensure a positive experience for the income-eligible participant?" Specifically, what measures should be embedded throughout program design to prevent misinformation and eliminate risks for predatory or subprime financing schemes?

The Sub-team's comments and recommendations are based on successful programs and lessons learned in other states where information about those programs is publicly available. For descriptions of commonly cited programs, please see Appendix A.

The Illinois Solar for All Program ("ILSfA Program") has four distinct program areas referenced in this whitepaper: Distributed Generation ("DG Program"), Community Solar ("CS Program"), Non-profits and Public Facilities ("N&PF Program"), and Community Solar Pilot ("CSP Program"). This white paper details the recommendations of the Consumer Protection & Financing Sub-team of the Illinois Solar for All Working Group.

The Consumer Protection & Financing Sub-team held four conference calls in March and April 2017 and work proceeded electronically thereafter. Should the Sub-team have further discussion regarding consumer protection and financing, the information will be provided to IPA, if applicable.

Section 2. Recommendations and Supporting Information

Section 2.1 Summary of Applicable Illinois and Federal Consumer Protection Laws

There are a number of existing state and federal laws that provide relevant consumer protections. The ILSfA program should reflect and acknowledge these existing state and federal laws to avoid duplication or avoid inconsistent requirements.

Section 2.1.1 Relevant Illinois Law

- Illinois Power Agency Act (20 ILCS 3855)
- Illinois' Consumer Fraud and Deceptive Business Practices Act (CFA) (815 ILCS 505/1 et seq.) is Illinois' unfair and deceptive trade practices act that would apply to virtually every stage in the life cycle of a solar transaction including advertising, representations made during the sales process, etc. The CFA includes, inter alia, a number of provisions that would apply to solar transactions including the right of cancellation for home solicitation sales (815 ILCS 505/2B), a requirement that if a contract was negotiated in foreign language that the contract must be furnished in that language (815 ILCS 505/2N), and a requirement that home improvement contractors complete work or return money upon demand

(815 ILCS 505/2Q). Both consumers and the Attorney General enforce the CFA and the DTPA.

- The Illinois Consumer Installment Loan Act (205 ILCS 670/1 et seq.) and Interest Act (815 ILCS 205/0.01 et seq.) regulate solar loan products and are enforced by the Attorney General.
- Home Repair and Remodeling Act ("HRRA") (815 ILCS 513/1 et seq.) establishes minimum home improvement contract standards and disclosures that would apply to solar companies and are enforced by the Attorney General. Violations of the HRRA are also considered violations of the CFA and are enforceable by consumers through invoking the remedies available under the CFA.
- Electronic Mail Act (EMA) (815 ILCS 511/1 et seq.) regulates email solicitations by prohibiting solar companies from sending consumers unsolicited email advertisements. The EMA is enforced by the Attorney General.
- Telephone Solicitations Act (815 ILCS 413/1 et seq.) and the Restricted Call Registry Act (815 ILCS 402 et seq.) regulate any solar telemarketing practices and are both enforced by the Attorney General.
- Personal Information Protection Act (815 ILCS 530/1 et seq.) requires that solar companies that collect personal information take reasonable measures to protect it and report an unauthorized access to consumer's personal information.
- In addition to various consumer protection statutes, Illinois state licensing laws also act to protect consumers by establishing minimum qualifications and standards for all installers (83 Ill. Adm. Code 468 et seq.), contractors (225 ILCS 335 et seq.), and lenders (205 ILCS 670/1 et seq.) that interface with Illinois consumers.

Section 2.1.2 Relevant Federal Law

Illinois residents are also protected by fourteen (14) federal statutes, including:

- **CAN-SPAM ACT** (regulating email solicitations)
- **Consumer Leasing Act** (regulating solar lease disclosures)
- **Electronic Funds Transfer Act** (regulating electronic payments made pursuant to any solar agreements)
- **Electronic Signatures Act** (regulating the use of electronic signatures on any solar agreements)
- **Equal Credit Opportunity Act** (safeguarding against anti-discriminatory lending practices)
- **Fair Credit Reporting Act** (regulating the use of credit scores in solar transactions and any credit reporting in connection with making payments on solar loans or leases)
- **Magnuson-Moss Warranty Act** (regulating solar warranties)
- **Federal Trade Commission Act** (prohibiting unfair and deceptive marketing and sales practices)
- **Gramm–Leach–Bliley Act** (safeguarding any personal information submitted to solar energy companies)
- **Servicemembers Civil Relief Act** (protecting Servicemembers from adverse action in connection with financing extended for solar financing)
- **Telemarketing Rules** (rules governing telemarketing activity)
- **Telephone Consumer Protection Act** (governing telemarketing activity)
- **Dodd-Frank Wall Street Reform and Consumer Protection Act** (regulating unfair, deceptive or abusive trade practices in connection with any solar financing)
- **Truth in Lending Act** (requiring key disclosures in connection with loans for solar energy systems)

Section 2.2 Cash-Flow Positive Experience

Recommendations:

- Income-eligible household participants in ILSfA should have a cash-flow positive experience from day one and have, ideally, no financial liability to the system owner; however, should any particular financing model require financial liability from eligible households,

then the savings from the solar should far exceed the payment.

- The IPA should work with the third-party program administrator(s) and stakeholders to advocate and ensure continual availability of public funding (e.g. Renewable Energy Resources Fund (RERF) and Renewable Portfolio Standard (RPS) proceeds) to ensure cash-flow positive experience for income-qualified households.

Successful Examples:

- **PAYS:** Pay-As-You-Save (PAYS)[1] 80% rule where a customer's estimated savings equals or exceeds their charges by 25%. PAYS financing for energy efficiency is being implemented by electric cooperatives in Kansas, Kentucky, and North Carolina (respectively called How$martTM, How$mart KY, and Upgrade to $ave).[2]
- **California SASH Program:** The statewide program administrator for SASH ensures that all systems are cash-flow positive for a low-income household from day one. Incentives are deliberately set at a level to cover a significant percentage of the system cost. Any gaps in financing between the available incentive and the system cost are filled by the program administrator, a non-profit organization that contributes proceeds from a third-party ownership (TPO) arrangement and its own philanthropic fundraising to projects. Under the SASH TPO offering, participating households have no financial liability to the system owner. The SASH program's TPO model must meet 12 baseline consumer protection minimum standards (see Section 2.6), including ensuring customers receive at least 50% of the savings, as compared to standard utility rates, from the solar generating equipment. In practice, the minimum 50% savings is a "floor," as most SASH households participating in the TPO model realize 80% savings or higher.
- **District of Columbia Affordable Solar Program:** The District's Affordable Solar Program covered the full cost to install solar panels on single-family homes owned or rented by income-qualified District residents.

Lessons Learned:

- **New York's NY-Sun Affordable Solar - Low incentives make it difficult to offer a cash-flow positive experience.** The incentives under the NY-Sun Affordable Solar[3] program are too low, which makes it more difficult for developers to offer a cash-flow positive experience and income-eligible customers are less interested in going solar. To illustrate this point, during the second quarter of 2016 in New York State, only six solar installations were completed under the Affordable Solar program (which doubles the standard incentive), and applications for 16 installations were approved [4]. During the same period, under the non-low income incentive program, 5,506 installations were completed and NYSERDA received applications for 4,108 projects (see Open NY Database[5]). New York's initial, non-low-

income incentives ranged from $.60/watt to $1.40/watt (service territory dependent).

- **New York's Green Jobs Green New York (GJGNY) Third-party Owner Pilot - Solar financing opportunities, including dedicated incentives, must be structured to overcome barriers faced by low-income families.** In October 2015, NYSERDA initiated a pilot program to determine the effectiveness of using GJGNY loans to prepay solar leases and power purchase agreements for projects receiving the Affordable Solar residential added incentive under the NY-Sun Initiative. The GJGNY Third-party Owner Pilot ran through 2016 and was limited to 300 projects. Standard financing options for solar such as a loan or a lease are typically out of reach for low-income families. Even though the pilot was launched for income-eligible families, the credit score requirement and debt to income ratios prevented most low-income families from participating. To be successful, it is critical that financing programs are thoughtfully structured to overcome the various barriers to solar access faced by low-income families.

Section 2.3 Program Design Measures

Recommendations:

- **Eligible Installers.** Consistent and quality installations are paramount to the success of the ILSfA Program. Installations should only be installed by vetted, licensed contractors. For the DG Program systems, the third-party program administrator should establish a mechanism for contractors to enroll and participate as subcontractors in the DG Program, akin to California's SASH Sub-contractor Partnership program.
- **Installation Standards.** Eligible modules[6] and inverters[7] should be limited to the California Energy Commission (CEC) approved equipment. There should be a minimum performance requirement for systems installed within the ILSfA Program. This could be evaluated though the PV Watts Calculator developed by National Renewable Energy Laboratory (NREL). For the DG Program, because homes have a system installed on their roof, it is imperative an equipment standard (CEC-approved equipment) be enforced by the third-party program administrator to ensure consumer protection.
- **Inspection Standards.** For the DG Program, a random sample of projects should be inspected to ensure proper installation and system functioning, for example, 1 out of 12 systems installed. Inspections should consist of a set list of information to be verified as related to installation quality and incentive calculation: System size and nameplates of equipment used; Design considerations; Performance requirements; Address and location of system; Operability, etc. For the DG Program, all systems installed by

subcontractors to the third-party program administrator should be inspected, akin to California's SASH Sub-contractor Partnership program.[8]

Description:

Determining eligible installers, installation standards, and inspections are important ILSfA Program design measures that ensure consumer protection.

Discussion Questions:

Installation Standards

Is minimum performance requirement relevant in a REC-based market?

Inspection Standards

- Does the fact that this a REC-only market with clawback provisions in any way change the need for inspections?
- For community solar, who inspects? The project should be vetted for regulatory compliance, consumer protection, contracts, etc. prior to selection. Prior to energization, the utility must inspect and approve the final installation. There are also typically local approvals that require inspection that must be gained prior to energization. Is it necessary for an additional inspection by the third-party program administrator for the CS Program or the CSP Program?
- Given the larger size and incentive investment of community and multifamily solar, should all projects be inspected?

Considerations:

Installation Standards

- In the current Illinois distributed generation (DG) Renewable Energy Credit (REC) Market, the array and inverter meet the performance standard set by the IPA and efficiency is 14.38% (1.26 MWH/kW capacity DC per year). This is a very easy number to hit and will likely need to be updated, but there should be flexibility allowed to let developers compete on costs. There are also Illinois metering requirements[9] to reference.
- Illinois has reference to CEC in current DG contracts.
- Leverage the California example so Illinois doesn't have to recreate the wheel. Income qualified families have less bandwidth to ask about equipment, do the research, etc.

Inspection Standards

- Inspection standards are as much for ensuring safety (i.e. proper

equipment, installation methods, etc.) as they are for ensuring production, especially for income eligible household participants in the DG Program.

- Current Illinois DG programs (non low-income) do not require inspections.

Successful Examples:

Eligible Installers

- **California:** The California Solar Initiative (CSI) program has a standard for installers, where certain actions warranted infractions, and three infractions warranted program removal, etc. and a public list of the infractions was published quarterly.[10]
- **California SASH and Multifamily Affordable Solar Housing (MASH) Programs:** The SASH and MASH programs require that appropriately licensed California contractors in accordance with rules and regulations adopted by the State of California Contractors State Licensing Board (CSLB) must install all systems.[11] [12]

Installation Standards

- **California, Colorado, and District of Columbia:** Multiple states use the CEC-approved equipment list, including California[13]and Colorado[14], or have required CEC-approved equipment in their project solicitations (e.g. DC[15]).
- **Illinois.** Illinois has reference to CEC in current DG contracts. *"For example, the defined term 'Standard RECs' as used in this contract is intended (but not guaranteed) to meet the definitional requirements of California programs for Renewable Energy Facilities that are certified as complying with the California Energy Commission requirements, once RECs trading is implemented pursuant to recent amendments to the statute authorizing the RPS, because Standard RECs means all Environmental Attributes, whether or not verified."*

Inspection Standards

- **California SASH Program:** The SASH program administrator ensures that 1 in 12 SASH system installations are inspected for proper installation and operability by an independent third-party. The sampling rate of 1 in 12 is based on the current general market CSI sampling rate.[16] 100% of SASH sub-contractor installed projects are inspected.
- **California MASH and Low-Income Weatherization (LIWP) Programs:** In the MASH program and the LIWP multifamily program, 100% of projects are inspected, due to the larger system size and incentive investment.

Section 2.4 Program Administrator's Role

Recommendations:

- The third-party program administrator(s) should all be non-profits to ensure that the maximum economic benefit and interests of income-eligible participants are at the forefront of the ILSfA Program, including ensuring opportunities for auxiliary benefits. The IPA may consider multiple third-party program administrator(s) that have expertise in certain project types and program areas (see Program Design & Incentives 3.1 for discussion regarding multiple administrator(s)).
- The DG Program should adopt a similar third-party program administrator role to SASH to ensure consumer protections for single-family rooftop projects – both host customer owned and TPO (see Sections 2.5 and 2.6). The program administrator should be responsible for all marketing and outreach (via its direct outreach partners, including community based organizations (CBOs)), application intake/income verification, developing financing models (including TPO), installations, coordinating with subcontractors, publishing semi-annual program reports, and ensuring free hands-on and paid job training opportunities are available statewide. Installation contracts should also be directly with the program administrator (i.e. contractor of record). SB 2814 allows for installation contracts to be directly with the program administrator, "*Contracts entered into under this paragraph may be entered into with an entity that will develop and administer the program.*" This should be a cornerstone of the DG Program, especially to ensure statewide continuity and consumer protection.
- For community solar projects (CS, N&PF, and CSP Programs), third-party program administrator(s) should develop standardized contracts and disclosures. For those unique situations where a standardized contract may not apply, the third-party program administrator could offer technical assistance to develop a workable alternative. Additionally, third-party administrator(s) should develop standard marketing materials, and should offer training for prospective ILSfA community solar providers regarding marketing guidelines and required disclosures.

Considerations:

- To date, Illinois' has been an open-market approach. There are clear consumer protection advantages to the SASH example/program administrator role.
- Using multiple administrators who have greater specialization in the program areas may ensure dedicated commitment to consumer

protections within each program area, especially for single-family rooftop projects.

Successful Examples:

- **California SASH Program. Consumer protection and a consistent marketing and outreach message can be maintained by having one entity oversee the program.** The SASH program is overseen by the California Public Utilities Commission (CPUC) and administered by a single statewide entity, a non-profit organization. The SASH program administrator is responsible for all marketing and outreach, application intake, developing financing models, installations, coordination with sub-contractors, semi-annual program reports, and ensuring free hands-on and paid job training opportunities are available statewide, and is the installation contract of record.[17] The non-profit program administrator functions as a consumer advocate and provides mission-aligned guidance and services and ensures there is a consistent statewide message around the potential full range of services that could be integrated in the solar installation, such as energy efficiency, job training, etc.

Lessons Learned:

California SASH Program. Households in low-income communities face marketing and outreach barriers to solar access. Many families speak languages besides English in the home, and require marketing and contracting to be conducted in non-English languages. The SASH program administrator ensures program marketing materials and customer contracts are translated into multiple languages, and has staff who can communicate in the 5-6 most commonly spoken languages in CA households.

Section 2.5 Single-Family Rooftop (Host Customer Owned Array)

Recommendations:

- A dedicated third-party program administrator that can act as a consumer advocate and offer participants contractual support and guidance throughout the process.
- A single, statewide marketing and outreach strategy exclusively implemented by the dedicated third-party program administrator in coordination and partnership with CBOs, with marketing materials and contracting explanations in clear, easy-to-understand text, and translated into multiple languages.
- A program and incentive structure that is designed to remove participants' financial liability in their system, overcome financial barriers, and ensure long-term economic benefit for the income-eligible household.
- The third-party program administrator should ensure that

participating income-eligible households:

- Receive accurate cost savings estimates based on current and projected future utility rates and solar production using net energy metering. In addition, families should be advised that utility rates could change in the future.
- Receive contractual support in the language they speak to ensure they understand their rights and obligations under the solar installation contract.
- Receive an industry-standard 10-year warranty for labor and equipment, and be advised of the process to report a service call or performance issue with the system.
- Be given information about their obligations to replace inverters or other system components outside of the 10-year installer warranty, manufacturer information, and the estimated costs.
- Be advised on operations and maintenance obligations and responsibilities.
- Be advised to inquire with their homeowner's insurance to add coverage for the solar electric system.

Considerations:

- Low-income homeowners face many barriers in accessing solar, including financial, marketing/outreach, and structural barriers.
- The financial barrier is the most insurmountable for low-income families.
- Consumer protection issues can arise around financing solar if low-income families are not protected from subprime solar financing schemes or are offered options that will not have a long-term net positive economic benefit.
- Marketing and outreach must be in multiple languages, and conducted by a trusted consumer advocate who has the families' long-term economic benefit and interests in mind.

Successful Examples:

- **California SASH and LIWP**. **The SASH and LIWP programs are specifically designed to address barriers to accessing solar for income-eligible families and include the highest consumer protection measures to ensure participating families receive long-term economic benefit.** Some examples of this on the ground include:
  - A single statewide program administrator that conducts program marketing, outreach, and contractual support in multiple languages and in an easy-to-understand manner.
  - Gap financing needs for projects are covered by the program administrator, a non-profit organization that applies its philanthropic fundraising dollars to projects.
  - Income-eligible households are not subject to financial liabilities

or loan obligations through their participation.

- California Department of Community Services and Development (CSD), the agency that administers LIWP, has a quality assurance unit that inspects a percentage of completed projects to ensure installation according to guidelines.

Lessons Learned: **California SASH and LIWP Programs. Financial barriers must be overcome by program design and incentive structure**. Income-eligible families are less likely to participate if they have to take out a loan, and are unlikely to have capital they can invest in a project. Removing income-eligible families' financial liability in the project also increases consumer protection and ensures long-term financial benefit. Marketing and outreach efforts can be more successful when they utilize community partners to build trust in communities. A non-profit program administrator can also build trust in communities and function as a consumer advocate.

Section 2.5.1 Supporting Information for Single-Family Rooftop (Host Customer Owned Array)

Barriers: The primary barriers to single-family rooftop solar for low-income homeowners include financial, marketing and outreach, and structural barriers.[18]

- Financial barriers: The most insurmountable barrier for low-income homeowners is the financial barrier to access solar. [19] Low-income homeowners generally are unable to contribute out-of-pocket financing toward a solar electric system. They typically are adverse to taking on more debt with a loan, even a low or no interest loan, and generally lack the credit-worthiness or capital necessary to purchase or finance rooftop solar. Moreover, income-eligible homeowners are less likely to have the tax liability to allow them to take advantage of the federal Investment Tax Credit (ITC). Consumer protection issues can arise from this financial barrier if families are offered a subprime solar deal that may not result in long-term savings, or a solar loan/lease product that could result in a negative economic outcome.

- Marketing/Outreach barriers: For many income-eligible households, solar is a new and unfamiliar technology, and they require extensive education and support to understand the installation process and contractual terms. Families in low-income communities have historically been the victims of predatory lending schemes, and may be distrustful of new programs. Marketing and outreach can be most successful when orchestrated through a trusted community partner or consumer advocate, and conducted in the language the household speaks at home.

- Structural: The roofs of many homes may not support solar or need repair/replacement, and main service panels for electrical systems often need upgrading to accommodate solar.

Solutions: In California, both the SASH and the LIWP programs have successfully overcome these primary barriers to income-eligible rooftop solar adoption.

- Financial: The SASH and LIWP programs offer an upfront incentive that covers much of the project cost; any financing gap between the incentive and the project cost is generally covered by the program

administrator, a non-profit organization, which applies its philanthropic fundraising dollars to the project. In this way, families do not accumulate more debt or acquire a risky financial obligation by participating in the program. Additionally, the program administrator, in coordination with the utilities, developed a structure in which the low-income participant can assign the upfront rebate to the program administrator, who provides a turn-key installation service for the benefit of the participating household.

- Marketing and Outreach: Both SASH and LIWP invest extensive resources into marketing and outreach, and have program staff who conduct targeted marketing in income-eligible communities with the help of trusted community organizations. SASH is administered by a non-profit organization, which helps build trust in communities and functions as a consumer advocate. Both programs provide education for homeowners on solar and energy efficiency. Marketing and outreach is multi-lingual and conducted in the language spoken in the home.

- Structural: Participants in SASH and LIWP can be referred to municipal rehab and re-roofing programs, where available, and the SASH program administrator has formed several partnerships with municipalities to provide support for structural improvement and roofing repair/replacement for SASH-qualified families. Even with these resources, structural issues can continue to be a barrier for income-eligible families to access solar.

- Special Consumer Protections: CSD has a quality assurance unit that inspects a percentage of completed projects to ensure installation according to guidelines. Post-installation inspections ensure greenhouse gas reduction targets, job creation benchmarks, and installation quality guidelines have been met.

Section 2.6 Single-Family Rooftop (Third-Party Owned (TPO) Array)

Recommendations:

- A dedicated third-party program administrator that can act as a consumer advocate and offer participants contractual support and guidance throughout the process.
- A single, statewide marketing and outreach strategy exclusively implemented by the dedicated third-party program administrator in coordination and partnership with CBOs, with marketing materials and contracting explanations in clear, easy-to-understand text, and translated into multiple languages.
- A Program and incentive structure that is designed to remove participants' financial liability in their system, overcome financial barriers, and ensure long-term economic benefit for the income-eligible household.
- Measures to prevent misinformation and eliminate risks for predatory or subprime financing schemes should be embedded throughout program design.
- Specific measures for TPO systems should be mandated, especially for rooftop single-family homes. The third-party program administrator should establish minimum standards (i.e. the same 12

customer protection standards from SASH) for a TPO model and standardize the TPO offering and associated contracts to be used across the entire program. Any TPO offering and associated contracts must meet or exceed the DG Program's minimum standards to be eligible for use in the ILSfA Program.

- In addition to the Illinois DG TPO offering meeting or exceeding the 12 baseline consumer protection standards in the SASH TPO model, it is important that participating families in the TPO structure:
    - Have support and guidance from a trusted, third-party (such as a program administrator) to review contractual terms, rights, and obligations.
    - Receive accurate cost savings estimates based on current utility rates and net energy metering, and system production, and are advised that utility rates and structures can change.
    - Understand all rights and obligations, specifically around maintaining shading at the site, allowing access for service calls, etc.
    - Understand options for system removal at the end of the agreement term.
    - Are aware of the process for transferring the agreement if they move or sell their house during the agreement term.
    - Are provided a production guarantee and operations and maintenance coverage for the entire agreement term.
    - Have marketing materials, documents and contractual explanations translated into the language they speak in the home.

Considerations:

- Low-income families typically cannot leverage the federal ITC. Many TPO providers require a high degree of creditworthiness, which may be out of reach for an income-eligible household. Some TPO models may offer participants only marginal savings from their current electric bill, and have payment obligations that could result in the participant in a worse financial position, for example, if they miss payments to the third-party system owner and the payments are sent to collections, or a lien could be placed on their home.
- TPO systems can be used successfully in low-income solar programs, as demonstrated in California, which incorporate critical consumer protection measures and reduce credit barriers.

Successful Examples:

California SASH Program. In 2015, the California SASH program received approval from the CPUC to use a TPO model that leverages federal ITC. The SASH program administrator was required to adopt 12 minimum standards as part of its TPO model (see below). Under the SASH TPO offering, participating households have no financial liability to the system owner. The SASH program administrator serves as a liaison between the third-party system owner and the income-

eligible household, and functions as a consumer advocate. The SASH TPO model, by design, removes all financial liability for the income-eligible household, thereby allowing families with poor credit to participate.

Section 2.6.1 Supporting Information for Single-Family Rooftop (Third-Party Owned (TPO) Array)

Barriers: Low-income homeowners face many barriers in accessing standard third-party ownership (TPO) arrangements and valid consumer protection issues can arise when these households are presented with a standard TPO offering.

- Cannot leverage ITC: Low-income families typically do not have a tax liability that would allow them to take advantage of the ITC. Even in the rare case in which they did have a tax liability, they are unlikely to be in a position to pay out-of-pocket for a solar investment that would allow them to take advantage of the ITC.

- Financial/Credit: Many TPO providers require a high degree of creditworthiness, which may be out of reach for a low-income household. Some TPO models may offer participants only marginal savings from their current electric bill, and have payment obligations that could place the participant in a worse financial position, e.g. if they miss payments to the third-party system owner and the payments are sent to collections, a lien could be placed on their home.

- Contracting: Low-income households may lack the background or legal training to be able to decipher the "fine print" and complex terms inherent in standard TPO contracts and may not fully understand their rights and obligations. Moreover, standard TPO contracts are unlikely to be translated into multiple languages and the families may not receive contractual support and explanations in the language they speak in their home.

Solutions: In California, the SASH and the LIWP programs, under oversight from the CPUC, have successfully overcome these barriers and developed an appropriate TPO model that protects income-eligible families and ensures long-term, substantive economic benefits.

History/Background: In establishing the initial SASH program in 2009, the CPUC declined to authorize a TPO model, as the TPO market was nascent in the state at that time, but left the door open to the possibility in the future if "… we are presented with a proposal that adequately protects and benefits low-income homeowners in third-party ownership agreements."[20] When the SASH program was reauthorized with additional funding in 2015, the CPUC decided to allow TPO, but required the SASH program administrator to develop a model that ensured at least 12 baseline consumer protection requirements were met. The baseline consumer protection standards are listed below and were developed with stakeholder input, including extensive input from the SASH program administrator.[21]

1. Ensure SASH customers receive at least 50% of the savings, as compared to standard utility rates, from the solar generating equipment;
2. Reduce or eliminate barriers for customers with poor credit (low FICO scores) to qualify and participate;
3. Address concerns that homeowners may have about moving or selling their home during the TPO contract term;
4. Cover maintenance, operations, inverter replacement, and monitoring;
5. Prohibit liens on homes;
6. Minimize the risk to the low-income customer that the solar system would be removed for delinquent

payments;
7. Ensure that all costs are apparent and up front and that there is no risk that the TPO deal would result in an additional financial burden to the family;
8. Standardize financial terms for low-income customers where possible;
9. Protect the customer against terms that could change after contract signing;
10. Require that TPO agreements note the potential for additional costs associated with the contract, if applicable;
11. Require the TPO provider to clearly explain that rate changes will affect the economics of a power purchase agreement; and
12. Require that TPO agreement provisions spell out what happens in the event that the solar financing company defaults

SASH/LIWP programs' TPO model: In order to meet or exceed all of the requirements above, and to offer a TPO model that functions for income-eligible families, the SASH program administrator developed a Prepaid Power Purchase Agreement (PPA) in which the income-eligible family has no financial obligation to the system owner. Because the family has no financial obligation, their credit worthiness is not a factor from the perspective of the third-party financier. The SASH program administrator entered into an agreement with two national TPO providers, and serves as the financial intermediary between the participating family and the third-party system owner. The SASH program administrator prepays all of the agreement on behalf of the family in one upfront payment, including all taxes and fees. The SASH program administrator receives some of the ITC benefits from the third-party system owner via a reduction in PPA price.

The participating family is offered the opportunity to contribute a donation to the program administrator, a non-profit organization, but the donation is a "pay-it-forward" approach and there are no penalties for non-payment. The SASH program administrator offers contractual support for participating families, and develops marketing information and contractual explanations for families in their native language, to ensure they understand all of their rights and obligations under the 20-year agreement. Even though there is no financial obligation, participating families agree to, for example, prevent shading with existing trees on the property and allow access for service technicians, and have options for removing the system at the end of the contractual term or transferring the agreement to another family if moving or selling the home. Participating families receive additional benefits of a performance guarantee, system monitoring, and a warranty for the duration of the agreement term.

Current scale and success of SASH TPO model: The SASH TPO model was launched in June 2015, and has been well-received by participating families. Many families have reported that they appreciate the performance guarantee, and the peace of mind that comes with monitoring and system maintenance and service being included for the 20-year term. The state agency that oversees the LIWP program has adopted the CPUC's 12 baseline requirements for the SASH TPO model and both programs use the same model and have the same statewide program administrator.

The SASH program's TPO model is noteworthy as it is the first time a dedicated income-eligible TPO model unlocking ITC benefits has been deployed at scale in the country, with installations expected at ~1,000/projects annually.

Section 2.7 Community Solar (All Ownership Types)

Recommendations:

- **Disclosures and Marketing Materials**. The third-party program administrator should produce a disclosure form and guide(s) similar to the materials used in Minnesota's Xcel Energy Community Solar Garden program[22]. Additionally, the third-party administrator should produce standardized marketing and outreach material. The third-party program administrator should offer training to prospective community solar providers regarding marketing guidelines and disclosures.
- **Standard contracts.** The third-party program administrator should develop standard contracts that community solar operators will use to transact with low-income subscribers. In unique situations in which a standard contract may not apply, the third-party program administrator can provide technical assistance to arrive at a workable solution.
- **Creditworthiness.** Similar to Maryland's three-year Community Solar Energy Generating Systems (CSEGS) pilot program, a developer or subscriber organization should apply uniform income, security deposit, and credit standards for the purpose of making a decision as to whether to offer a subscription to customers within a given class, provided that the developer or subscriber organization may apply separate sets of uniform standards for the purpose of promoting participation by income-eligible retail electric customers.
- **Consumer Protection Measures.** All of the California SASH TPO program consumer protection measures that are not solely applicable to rooftop installation should apply to community solar. The minimum standards and link to the CPUC Order are found here.[23]
- **Bonds.** The IPA could consider requiring a modest bond from community solar providers under the ILSfA program. Care should be taken to ensure any such requirements do not impede the successful development of projects.

Considerations:

These recommendations reflect a "typical" community solar program where developers are responsible for subscriber outreach and maintenance. Illinois may consider a more centralized approach to subscriber management, similar to what the District of Columbia Solar for All Task Force[24] recommended: "*the District government (or a contracted designee) would consolidate and manage all subscribers into the program—participants would be recruited through LIHEAP first and subsequently SNAP or other District public assistance programs.*"

Successful Examples:

- **Minnesota Community Solar Gardens Program:** Issued April 7, 2014, the Minnesota Public Utilities Commission (MPUC) Order Rejecting Xcel's Solar-Garden Tariff Filing and Requiring The Company to File a

Revised Solar-Garden Plan (pg. 28-30) lists the subscriber-protection measures that the tariff and contract between Xcel and the solar-garden operator must include.[25] Xcel Energy[26], the Minnesota Department of Commerce[27], and Clean Energy Resource Teams[28] have all developed helpful guides and checklists for prospective subscribers of Xcel Energy's Community Solar Garden Program.

- **Maryland CSEGS Pilot Program:** Effective July 18, 2016, the Maryland Public Service Commission included consumer protection requirements in the state's three-year CSEGS pilot program.[29]

Lessons Learned:

- **California MASH and Multifamily Affordable Housing Solar Roofs (MAHSRP) Programs. Robust requirements and standards can help ensure low-income tenants receive maximum household benefits from participating in low-income solar programs.** Lessons learned from the MASH program informed public stakeholders in the MAHSRP[30] to recommend program structure safeguards ensuring additional costs of the system are not passed on to tenants. For example, stakeholders have recommended that it could be part of the application process to require an affidavit from the property owner formally affirming that costs from the system will not be passed on to the tenants in any form such as by utility increases, rent increases, or by any other possibility. This affidavit could also note that any risk of default of the third-party system owner on their rights and obligations under the agreement are to be borne solely by the property owner/operator. Another stakeholder recommends that one part of the MAHSRP's third-party evaluation could include working directly with tenants through interviews and surveys to ensure they are receiving the intended benefits and not experiencing any additional costs. Please note the MAHSRP is not final and while there is a requirement for net economic tenant benefit, it is not known how that will be enforced.
- **Maryland CSEGS Pilot Program - Surety Bonds. If bonds are required, the various types of developers, including non-profits, should be considered so that any such requirements do not impede the successful development of projects.** On February 15, 2017, the Maryland PSC issued a decision on proposed modifications to the IOU tariffs for the CSEGS Pilot Program. The decision required that most program applicants, at the time of applying to become a Subscriber Organization (SO), would have to provide a bond of $10,000 for projects up to 1 MW. Non-profit applicants would not be subject to any bond. For SOs proposing to develop projects larger than 1 MW, an additional $25,000 per MW of proposed CSEGS capacity is required.[31]

Section 2.7.1 Community Solar Payment Model Examples

While it is impossible to capture all possible financing models for community solar projects, there are two customer payment models prevalent today: upfront payments, and payments over time (usually monthly).

Upfront payment models are especially challenging for low-income customers, because these customers typically do not have access to what could be a large, lump-sum of money. Payments over time may be more accessible for low-income customers, but care should be taken via ILSfA Program design and consumer protections to ensure overall meaningful savings for participating customers, and adherence to applicable consumer protections and disclosure requirements. Additionally, payments over time may be structured as power purchase agreements (PPAs). In these cases, many of the consumer protections that California has instituted regarding TPO for SASH participants may be applicable to community solar. In essence, all of the SASH TPO consumer protections that do not specifically apply to solar arrays installed on the customer's home would be applicable to a community solar model under which the consumer pays a subscription cost or a PPA installment over time.[32]

Section 2.7.2 Financing Model Examples

The Consumer Protection & Financing Sub-team discussed examples of inclusive financing, including Pay-As-You-Save (PAYS)[33] and the Kit Carson Model.

In the community solar context under the PAYS model, subscribers would pay a voluntary tariff on their utility bill that is capped at 80% of the estimated savings from the community solar. PAYS financing for energy efficiency is being implemented by electric cooperatives in Kansas, Kentucky, and North Carolina (respectively called How$martTM, How$mart KY, and Upgrade to $ave).[34] Many organizations are working on implementation efforts open up solar access via PAYS.[35]

Additionally, please see Appendix B for information prepared by a sub-team participant regarding the Kit Carson Model, which is a community solar financing model that benefits economically diverse populations and is being considered by an Illinois community.

References: Consumer Protection & Financing

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[21] Decision 15-01-027, January 29, 2015. "Decision Extending the Multifamily Affordable Solar Housing and Single-family Affordable Solar Homes Programs within the California Solar Initiative," pg. 56.
[22] http://www.cleanenergyresourceteams.org/sites/default/files/CommunitySolarGarden_DisclosureChecklist_12-11-14_0.pdf
[23] http://www.lowincomesolar.org/wp-content/uploads/2016/07/California-Consumer-Protection.pdf (However, the ILSfA notes that if the appropriate incentives do not exist, then developers should not be required to meet a 50% reduction in energy bill savings but should still be responsible for providing tangible economic benefits flow directly to program participants.)
[24] https://doee.dc.gov/service/solar-for-all
[25] The required subscriber-protection measures, link to the MPUC Order, and other resources are found here: http://www.lowincomesolar.org/wp-content/uploads/2016/07/Minnesota-Consumer-Protection.pdf
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3. Program Design & Incentives

Contents: Program Design & Incentives

Section 1. Program Design & Incentives Introduction

The objective of the Program Design & Incentives Sub-team was to identify program elements for successful Solar for All Program deployment in Illinois. The recommendations and discussion are based on successful programs being implemented in other states and where information about those programs is publicly available, as well as the expertise of sub-team participants. Unless explicitly referenced in SB2814 (Public Act 99-0906) these are general recommendations and discussion based on experience and success in other markets. For descriptions of commonly cited programs, please see Appendix A.

The Illinois Solar for All Program ("ILSfA Program") has four distinct program areas referenced in this whitepaper: Distributed Generation ("DG") Program, Community Solar ("CS") Program, Non-profits and Public Facilities ("N&PF") Program, and Community Solar Pilot ("CSP") Program.

The Sub-team held multiple conference calls and communicated electronically. Should the Sub-team have further discussion regarding program design and incentives, the information will be provided to IPA, if applicable.

Section 2. Summary of Recommendations to Illinois Power Agency

The ILSfA Program Design & Incentives Sub-team recognized its participants represent numerous types of organizations and companies, each bringing their own expertise and interest in this topic area. ILSfA encompasses four very different programs, all complex and interrelated with work of other sub-teams. Therefore, the Program Design & Incentives Sub-team collectively acknowledged the following approach:

- It is not possible to reach a consensus recommendation on every program design issue that arises. Nor is it appropriate – a diversity of views is good. Nor is it necessary – sometimes multiple program designs will be equally effective.
- Our goals are to identify different options for program design elements along with pros and cons of each option, if applicable.
- This approach allowed the sub-team to identify areas of consensus recommendations, particularly where options support the ILSfA Working Group's guiding principles, or facilitate discussion around questions and considerations for further discussion.
- This approach allowed individual sub-team participants to identify additional recommendations or strawman proposals where the sub-team as a whole does not take a unified position.
- This approach provides a valuable resource for the IPA to help inform its program design.

The Program Design & Incentives Sub-team collectively acknowledged the following shared assumptions:

- There is not one right way to design these programs or price these incentives.
- What has worked in other communities may or may not work here.
- The cost of solar varies significantly by market. If a certain incentive level worked for low-income solar

programs in other markets that does not necessarily mean it will work here.

The sub-team co-leads identified the following categories of program design elements to inform the sub-team's discussion:

- Primary: Program Administration, Program Evaluation, Marketing, Outreach, and Application Intake, Incentive Structure, and Project Selection
- Secondary: Eligibility, Multifamily Affordable Housing, Energy Efficiency, Community Involvement, Contracts and Funding, and System Sizing
- Other: Permanency Requirements/Clawback Provision, Reallocation of Funds Between Programs, and Grassroots Education
- Items for the Consumer Protection & Financing Sub-team: Eligible Installers, Installation Standards, Inspections, and System Ownership & Third Party Ownership
- Items for the Definitions Sub-team: Definitions for EJ Community, Benefit, N&PF, etc.
- Items for the Job Training Sub-team: Workforce Development/Job Training Opportunities

This report does not follow the above categories of program design. Instead, the Program Design & Incentives Sub-team acknowledged the interrelatedness of program design elements across all ILSfA Programs or unique to the DG, CS, N&PF, and CSP Programs and organized this report accordingly. Section 3 identifies the higher-level consensus recommendations for program design measures throughout ILSfA. Sections 4, 5, 6, 7, and 8 capture the discussion of the Sub-team for the DG, CS, N&PF, and CSP Programs and these sections are more focused on options and opportunities for these programs as opposed to consensus recommendations. As there were multiple ideas, questions, considerations, and examples raised during our discussions, we felt it beneficial to capture this information for the IPA.

Appendix C includes our Working Group's cover memo and accompanying response to the June 6, 2017 Illinois Power Agency (IPA) Long-Term Renewable Resources Procurement Plan (LTRRPP) Request for Comments.[1]

Appendices D-F include strawman proposal examples from participant organizations showcasing 1) Framework for how energy efficiency (EE) and eligibility criteria could be linked with incentives (Appendix D); 2) A sample community solar registry (Appendix E); and 3) the pyramid block structure (Appendix F). Please note strawman proposals were not discussed at length within the sub-team and do not necessarily represent the views of all sub-team participants.

Importantly, not every sub-team participant had 100% participation in the conference calls or reviewed the entirety of this report.

While the expertise of sub-team participants generated robust discussion, there were clear priorities. Of highest priority is ensuring the ILSfA Program is designed to maximize savings and auxiliary benefits for participants, involve communities throughout the state, ensure consumer protection, provide hands-on training and access to solar jobs, and be adaptable, flexible and sustainable. Importantly, the ILSfA Working Group stresses that ILSfA projects must have access to all available incentives, including the Adjustable Block Program (ABP), as low-income customers pay into these incentive pools as ratepayers, and these financing resources are essential to ensuring that impact for ILSfA Program is maximized. Without access to the ABP, the success of the ILSfA Program is in question.

Section 3. General Program Recommendations

Section 3.1 Program Administration

Description:

- Satisfying the requirement to select a third-party program administrator or administrators; determining the programs or sub-programs within ILSfA; selection criteria, etc.

Recommendations:

- **Selection criteria:** The third-party program administrator(s) should all be non-profit organizations to ensure the maximized economic benefit and interests of income-eligible participants are at the forefront of the ILSfA Program, including ensuring opportunities for auxiliary benefits. Third-party program administrator(s) should demonstrate their ability to collaborate across all ILSfA Programs (DG, CS, N&PF, and CSP) and with low-income and environmental justice (EJ) communities; demonstrate strong partnerships with stakeholders; have experience in administering low-income energy programs and overseeing statewide clean energy or EE services.
- **Single Administrator:** All ILSfA Programs can be run by a single non-profit third-party program administrator to gain efficiencies, provide consistency and better ensure consumer protections; or
- **Multiple Administrators:** ILSfA Programs can be run by separate non-profit third-party program administrator(s) to better align specific skill sets, constituencies, pipelines and similarities in program delivery.
- **Consumer Protection:** Refer to the Consumer Protection & Financing Sub-team's recommendations and supporting information for Program Administration (Consumer Protection & Financing Section 2.4). SB 2814 allows for installation contracts to be directly with the program administrator, "*Contracts entered into under this paragraph may be entered into with an entity that will develop and administer the program.*" This should be a cornerstone of the DG Program, especially to ensure statewide continuity and consumer protection.
- **Eligibility:** Ensure third-party program administrator develops clear guidelines for verifying income for qualified households (e.g. CA's Single Family Affordable Homes (SASH) program administrator is responsible for income verification and uses most recent available income tax return to verify 80% of Area Median Income (AMI)[2]; CA's Multifamily Affordable Solar Housing (MASH) program has set eligibility criteria[3]; and Maryland's Community Solar Energy Generating Systems (CSEGS) Pilot Program allows the commission to establish alternate means aside from income verification including participation in low-income assistance programs where eligibility is at or below 80% AMI[4]).
- **Marketing, Outreach, Application Intake, and EJ Verification:** Refer to the Consumer Protection & Financing Sub-team's recommendations and supporting information for the third-party program administrator of the DG

Program (Consumer Protection & Financing Sections 2.5 and 2.6). For all other ILSfA Programs, the third-party program administrator(s) should clearly define the marketing, outreach, application intake, and EJ verification processes. The DG Program approach of having marketing, outreach, application intake, and EJ verification handled by the third-party program administrator has clear consumer protection advantages; however for the other ILSfA Programs, this same approach (where all aspects flow through the third-party program administrator(s) may not be as appropriate.

- **Energy Efficiency:** Third-party program administrator(s) should ensure collaboration between EE and ILSfA in the way of promotion and education (e.g. sharing of lists). One should not slow down the other as EE and solar are on different timelines, nor should ILSfA dollars directly incentivize EE and vice versa. The ILSfA Working Group participants discussed EE collaboration options but did not settle on a recommended approach. One option discussed is a prescriptive approach where ILSfA requires EE education, and provides information about other state/utility programs for which ILSfA program participants might be eligible and assist them with enrollment. Another option is a performance approach, where verified EE measures allow for a larger incentive or sizing. Please see Appendix D for a strawman proposal for how energy efficiency and eligibility criteria could be linked with incentives (prepared by Elevate Energy).
- **Community Involvement:** Third-party program administrator(s) should help facilitate community involvement, including free hands-on training opportunities in solar installations.
- **Implementation Strategy:** The third-party program administrator(s) should work with the IPA to design an implementation strategy for their program(s). The implementation strategy should lay out the program goals, capacity goals, application intake processes, geographic distribution targets, and budgets for each program year, along with a detailed marketing and outreach plan.

Discussion Questions:

- What criteria beyond what is included in statute should the IPA consider when selecting a third-party program administrator(s)?
- How does the third-party program administrator ensure ILSfA incentive is effectively distributed to low-income communities throughout the state rather than geographically concentrated?
- How does the third-party program administrator ensure the EJ community requirement is met?

Considerations:

- Make sure incentives fund eligible, cost-effective projects – third-party program administrator(s) could do some level of contract review for commercial projects (e.g. California Solar Initiative (CSI) program example for setting benchmarks around cost of project and consumer protection enforcement where the program administrator flags issues and asks for justification if project cost is way outside the norm).
- Third-party program administrator(s) could provide a facilitation role for utility interconnection processes, if applicable.

Successful Examples:

- **California SASH Program**: The SASH program is overseen by the California Public Utilities Commission (CPUC) and administered by a single statewide entity, a non-profit organization. The SASH program administrator is responsible for all marketing and outreach, application intake and income verification, developing financing models and providing gap financing, installations, coordination with sub-contractors, semi-annual program reports, is the contractor of record, and ensures free hands-on and paid job training opportunities are available statewide.[5]
- **California's Low-income Solar Programs:** The program administrator(s) develop the program handbooks and follow a quasi-public format for future changes (through an advice letter process to service lists) (e.g. SASH 2.0 Program Handbook[6], MASH Program Handbook[7], LIWP Guidelines[8])
- **District of Columbia Affordable Solar Program:** The District's Affordable Solar Program was funded by the District of Columbia's Department of Energy and Environment and implemented by the D.C. Sustainable Energy Utility (DCSEU) and their contractor. The DCSEU worked with the Department of Consumer and Regulatory Affairs, District of Columbia Housing Authority, and Pepco to spread awareness about the opportunity and streamline the process, making it easy for customers to participate. Alongside the DCSEU's Workforce Development Program, the Affordable Solar Program helped train and employ local residents in the solar industry, thus supporting both the DCSEU's green job creation performance benchmark. The DCSEU also vetted local Participating Contractors qualified to install solar under the Affordable Solar Program.[9]

Lessons Learned:

- **California MASH Program.** Having more than one program administrator for the same type of program may create confusion for participating installers due to the lack of uniformity and consistency. [10]
- **District of Columbia Affordable Solar Program. Implementation should be multi-year to allow for long term planning.** Each fiscal year the program operated on a first-come, first-served basis and rebate fulfillment was dependent on funding availability. Contractors participating in the program have recommended a multi-year approach to this program to allow installations to continue throughout the year.[11]

Section 3.2 Incentives

Description: The ILSfA Program will provide incentives for eligible projects.

Recommendations:

- Incentives should be set at a level that overcomes a low-income family's inability to pay anything upfront (i.e., avoid credit requirements, maximize benefits, protect clients, increase participation).
- ILSfA projects must have access to all available incentives, including the Adjustable Block Program (ABP), as low-income customers pay into these incentive pools as ratepayers, and these financing resources are essential to

ensuring that impact for ILSfA Program is maximized. Without access to the ABP, the success of the ILSfA Program is in question. Please refer to Appendix C for further discussion on the design of the ABP.

- The following criteria should be evaluated and considered by the IPA when determining ILSfA incentives:
    - Cost of equipment
    - Availability and amounts of general market incentives, including Investment Tax Credit (ITC), DG Rebate, Adjustable Block Program (ABP)
    - Balance of system costs
    - No upfront cost for income-qualified households
    - Cost of capital
    - Customer acquisition/outreach costs
    - Customer relationship for life of contract or project
    - Subscriber maintenance vis-à-vis community solar
    - Interconnection costs
    - Labor
    - Real estate
- The IPA may decide to have an increase over what the IPA sets as their ABP rate, e.g. extra 5% or $10 over the REC. Whatever the final mechanics of the ABP, the ILSfA incentive could be an adder to address the REC source concerns expressed by IPA at the May 2017 workshops. However, incentives for ILSfA installations should not decline or be tied to declines in corresponding general market incentives and may actually need to increase if paired with declining general market incentives. When pairing the ABP and ILSfA incentives, the end value must be an incentive level that allows developers, installers, or the non-profit third-party program administrators to offer solar at no upfront cost to the income-qualified participant with near term significant economic savings realized by the household.
- Incentives should be assignable by the participating low-income household to installers that are providing the solar at no upfront cost, and paid upon successful completion of inspections by the authority having jurisdiction (AHJ) and the program's third party inspector, if applicable. Installers must demonstrate substantive pass through savings.
- Incentive payments should not be delayed by the inspection timeline. If any issues are identified in the inspection, the contractor should have an opportunity to remedy them and/or be required to return all of a portion of the incentive payment (e.g., if the installed system size is determined to be smaller than reported). Refer to the Consumer Protection & Financing Sub-team's recommendations and supporting information for DG Program inspections (Consumer Protection & Financing Sections 2.5 and 2.6).

Discussion Questions:

- Should ILSfA incentives apply to non-solar improvements (i.e. roof repair or electrical upgrades to ensure structure is solar ready)? For example, the District Department of Energy and Environment recently issued its

implementation plan[12] for the District's Solar for All Program, which recommended incentives be used for roof repairs to ensure structures are solar ready.

Considerations:

- Important to distinguish system sizes for kilowatts (kWs) vs. kilowatt hours (kWhs) for claiming incentives.
- The ILSfA Working Group assumes that in addition to being eligible for ILSfA incentives, ILSfA projects are also eligible for ABP incentives and the DG rebate.

Successful Examples:

See Sections 4, 5, 6, 7, and 8 for single-family, multifamily, and community solar incentive levels from other low-income solar programs.

Lessons Learned

- **California MASH Program. Incentives should be sustainable.** Avoid the result of the MASH 1.0 and MASH 2.0 programs in which all of the incentive reservations "sold out" quickly, often with projects that were effectively placeholders and did not come to fruition, closing the door on additional participation in future program years. There were flaws in the program design including possibly over-incentivizing projects.
- **New York NY-Sun Affordable Solar Program.**[13] **Incentives should not decline.** The low-income incentives under the NY-Sun Affordable Solar program are too low and problematic because they declined alongside the non-low-income incentives, therefore disregarding the costs to market or build projects for this sector. To illustrate this point, during the second quarter of 2016 in New York State, only six solar installations were completed under the Affordable Solar program (which doubles the standard incentive), and applications for 16 installations were approved.[14] During the same period, under the non-low income incentive program, 5,506 installations were completed and NYSERDA received applications for 4,108 projects.[15] New York's beginning ranges were from $.60/watt to $1.40/watt (service territory dependent). From October 2015 through the end of 2016, only 102 projects were completed using the added Affordable Solar incentive, with an additional 66 projects in the pipeline.[16]

Section 3.3 Program Evaluation

Description:

- Requirement that an independent program evaluation occur at least every two years. The evaluation will be based on objective criteria developed through a public stakeholder process, including participants and organizations in EJ and historically underserved communities. The report will be used, as needed, to revise the ILSfA Program.

Recommendations:

- **Evaluation should take into account program-specific, time-varying goals.** The IPA, in its long-term plan, or the third-party administrator(s) through deferred authority, should identify goals toward evaluation metrics, including program

uptake that are specific to each program and may vary over time within or between programs. Goals may be stated as a range or with several scenarios, as appropriate. Where information is available goals should be based in part on ramp-up speeds of similar programs in other states. See reallocation discussion in Section 3.5.

- **Regular reporting and early check-ins to enable course correction.** Third-party program administrator(s) should monitor program development, particularly during early stages, and submit quarterly reports to the IPA on progress toward established goals, evaluation criteria, and funding utilization. Underperforming programs should be analyzed to identify problems and, where possible, course corrected. A performance-based management approach should be considered. Reports should be made publicly available on the IPA's website.
- **Treating the initial evaluation differently.** The initial evaluation may occur as programs are still ramping up; programs may have been operational for a only limited time. Therefore, it may not be appropriate to expect programs to be on track to achieve solar deployment goals. The independent evaluator should consider which evaluation criteria are less meaningful in the initial evaluation to avoid measuring program success through an inappropriate or irrelevant lens.
- **Elements to include in an evaluation**. The independent evaluator should consider including the following elements in the evaluation of the ILSfA program: Program administration; Coordination with job training and EE programs; Customer experience; and Progress toward program goals. Program evaluation should not be limited to those elements.
- **Evaluation criteria should include but go beyond megawatts (MW) of low-income solar deployed to include other energy and non-energy benefits.** Suggested options include, but should not be limited to:
    - MW deployment and subscription/uptake progress toward pre-established short and long-term goals.
    - Money saved by program participants and dollar value of any other benefits that are reaching program beneficiaries.
    - Low-income households, non-profits and public facilities served .
    - Energy burden/utility savings over system life.
    - Distribution of benefits. For example, the California Low Income Weatherization Program (LIWP) has a geographic diversity goal, which is measured by county. Illinois may consider population density too (e.g. the Chicago area may get comparatively more than rural Illinois but the benefits will be spread).
    - Effective utilization of available ILSfA funding and Renewable Energy Resources Fund (RERF) drawdown.
    - Deployment in EJ and historically underserved communities.
    - Job trainee related criteria, such as overall number of job trainees, trainees per workday, and/or number of hours of hands-on experience. It should be noted that some aspects of coordination with

job training programs will be outside of the control of the IPA and its third party administrator.
    - EE engagement and/or number of referrals to EE programs (if appropriate programs exist).
    - Community partnership and collaboration.
    - Diversity of project types.
    - Community ownership and increased energy sovereignty.
    - Utility disconnects prevented.
    - Increased neighborhood resilience and neighborhood pride.
    - Other benefits to health, safety, and quality of life.
    - Utility interconnection and/or permitting timeframes.
- **Evaluations should include a qualitative component**. Though subjective, evaluation should include interviews of household participants, as well as job trainees, job training organizations, subcontractors, the third-party program administrator(s), etc. To reduce the overall independent evaluation cost, the IPA could consider having the third-party program administrator(s) conduct participant surveys and perhaps job trainees could register in a portal if they were hired, etc.
- **Evaluation should identify market opportunities and make recommendations.** As an example, in the SASH/MASH evaluations the evaluator made recommendations for changes and the program administrators and CPUC, working in tandem, decided how to implement the recommendations.
- **Recommendations for additional funding.** As part of the evaluation process, the evaluator should review funding availability for all ILSfA programs and recommend the legislature appropriate additional funds to successful programs as needed to enable continued success and meet the legislatively established goal of maximizing the development of new photovoltaic generating facilities in order to create a long-term, low-income solar marketplace in Illinois.
- **Stakeholder engagement to identify evaluation criteria is important.** Stakeholders should include, at a minimum, third-party program administrator(s), implementers, ILSfA customers and would-be customers, representatives from EJ and historically underserved communities, community organizations and advocates, and other entities involved in the ILSfA Program.

Considerations:

- It is difficult to predict every scenario that ILSfA projects will encounter in program launch and the ILSfA Working Group does not want to preclude or eliminate future projects that may fall outside of the evaluation criteria.
- ILSfA projects are meant to bring benefits “beyond MWs," meaning the programs will provide a host of broad benefits to participants and communities - both energy and non-energy benefits. It is important that program evaluation takes a holistic view on benefits provided by ILSfA programs.

Successful

- **Illinois 2015 Supplemental Photovoltaic Procurement.** According to the IPA’s Final Supplemental Procurement Plan[17], the Agency had discretion to grant

Examples:

timeline extensions for delays that did not jeopardize the success of the project and to approve project substitutions in scenarios in which a system that was part of a winning bid was not going to be developed.

- **California MASH Program. Example of measurement and evaluation activities.** Under the MASH program, a condition of receiving incentive payments under the CSI Program, System Owners and Host Customers agree to participate in Measurement and Evaluation (M&E) activities as required by the CPUC. M&E activities will be performed by an independent third-party consultant (selected by the CPUC) and include but are not limited to, periodic telephone interviews, on-site visits, development of a M&E Monitoring Plan, access for installation of metering equipment, collection and transfer of data from installed system monitoring equipment, whether installed by Host Customer, System Owner, a third party, or the MASH program administrators.[18]
- **California SASH Program. Example of including and evaluating non-energy benefits/auxiliary benefits.** SASH is held to the CA Standard Practice Manual (SPM) tests to evaluate programs, but the SPM notes its own limits in evaluating low-income programs. So a big "win" in the 2015 Navigant SASH/MASH program evaluation was getting non-energy benefits (NEBs) included as a qualitative section in the report. [19] Recently, the California Energy Commission's low-income solar barriers report required by SB 350 noted the need for “further analysis…to develop a standard calculation for inclusion of non-energy benefits in program evaluation."[20]

Lessons Learned

California SASH and MASH Programs. Example of initial evaluation in nascent market and second evaluation when the programs were more fully developed. Both the SASH and MASH programs undergo a comprehensive biennial program evaluation conducted by an independent third-party contractor selected by the CPUC. The first evaluation occurred in 2010-2011 when the programs were nascent (only approximately 50 SASH projects and 0 MASH projects had been completed), and the second evaluation occurred in 2013-2014 when the programs were more fully developed. In addition, both programs are audited regularly to ensure the program administrators are accurately issuing incentive payments and qualifying eligible properties and households for the programs. The CPUC issued an RFP for evaluators. Navigant consulting won both cycles, as well as the general market CSI evaluations. In each evaluation cycle, a group was put together of Navigant, the CPUC, and the program administrators to plan out the report, give feedback on what should be included, feasibility of different options, etc. The evaluator contacted clients, job trainees, etc. for interviews and the program administrators helped orchestrate the interviews and reviewed draft reports.[21]

Section 3.4 Grassroots Education

Description:

Requirement that 5% of the funds available under the ILSfA Program go to

community-based groups to assist in grassroots education efforts.

Recommendations:

- The IPA should include in its RFQ or RFP a requirement that upon award, the third-party program administrator(s) should identify and work with community-based groups to conduct outreach and education throughout the state and ensure consistent messaging about the ILSfA Program
- To the extent feasible, the third-party program administrator(s) should endeavor to begin outreach and education ahead of program(s) launch to ensure awareness of the various program benefits effectively reaches those who need them most across segments and geographies. If programs are launched in a staggered fashion, education and outreach should ideally precede each launch and continue after to support uptake and awareness.
- The third-party program administrator(s) should develop standardized marketing collateral and messaging framework for community-based groups to use with their networks (in the most relevant format).
- There should be "ingredients/framework" provided by the third-party program administrator(s) for the community-based groups to ensure consistent messaging about the programs, but it should be up to the community-based groups to determine which communication tool(s) works best within their networks.

Considerations:

- This funding was intended to support the time and efforts leading up to program launch.
- When community-based groups are out delivering information about the program, there needs to be a central point of contact to answer questions (i.e. third-party program administrator(s)).

Section 3.5 Reallocation of Funds

Description: Reallocation of funds pertains to how funds are allocated or reallocated between the four programs areas described in Section 1-56 b (2) A, B, C and D (Public Act 99-0906).

Recommendations:

- **Reallocation goals:** In considering the reallocation of funds between ILSfA programs the IPA and/or the third-party program administrator(s) through deferred authority should seek to balance the following goals: 1) Advancing the progress of effective models that achieve successful low-income solar deployment hand-in-hand with community empowerment through partnerships, jobs, and ownership opportunities; 2) Allowing programs that take time to develop the space to do so; 3) Giving programs that are not meeting uptake goals a chance to identify and correct problems before being defunded; 4) Allocating funds away from programs that are underperforming or have an allocation that is disproportionate to market interest, and 5) Achieving efficient drawdown of the RERF to limit the risk of sweeps and ensure efficient utilization of all other funding allocated toward ILSfA programs.

- **Under-subscription or underutilization should be evaluated against program-specific goals.** Progress toward these goals outlined by the IPA or third party administrator — as recommended in Section 3.3, "Program Evaluation" — should be taken into account when evaluating under-subscription and considering funding reallocation.
    - The fact that a program "sells out" of its incentive funds early should not, by itself, be a reason to reallocate funding from another program.
- **Regular reporting on program uptake and RERF drawdown.** The regular reports made by third-party program administrator(s) to the IPA — as recommended in Section 3.3 — should include information on program uptake and usage of funds. Programs that are not making reasonable progress toward uptake goals should be identified. Reports should identify programs that need troubleshooting and include recommendations for funding reallocation, as appropriate.
- **Try to correct problems before reallocating funds.** Third-party program administrator(s) should work to identify and correct problems impacting undersubscribed programs before recommending fund reallocation. Uptake goals may be revised, if appropriate.
- **Reallocation decision to include stakeholder input.** If the IPA or its administrator(s) believes a reallocation of funds may be warranted, the IPA should launch an open stakeholder process to share information on program success and solicit feedback and recommendations regarding potential funding reallocation. Stakeholders should include, at a minimum, third-party program administrator(s), implementers, ILSfA customers and would-be customers, representatives from EJ and historically underserved communities, community organizations and advocates, and other entities involved in the ILSfA Program.
- **Reallocation to subprograms enabled.** The IPA should be able to consider reallocating funds to distinct sub-programs within the four incentive programs established by the legislation or to new programs recommended through the long-term planning process (as described in the legislation).
- **No funding reallocation before programs have begun except via long-term planning process.** With the exception of the addition of new/proposed programs through the long-term planning process as outlined in the legislation, reallocation of funds between programs should not be made before implementation has begun and progress evaluated.
- **Fund reallocation may be necessary due to budget constraints.** If funding for ILSfA programs becomes constrained due to sweeps or budget drawdown, it may be appropriate to reallocate funds to ensure ongoing program efficacy. In this event, stakeholder input should be solicited before funding is reallocated.

Discussion Questions:

- What constitutes "under-subscription/underutilization?"
- What are the key elements of the "stakeholder process"?
- When is it appropriate to give more development time to an underperforming program before reallocating funds away?

Considerations:

- Balancing the importance of drawdown of the RERF with leaving adequate time for program development and ensuring long-term rather than a start and stop

market. The latter is particularly important for long-term job benefits.

- While size and speed are a part of efficient delivery of benefits to low-income communities, they are not the only important component. Programs that have the potential to be speedier may still be less beneficial if they lessen opportunity for community involvement in and ownership of all aspects of low-income solar deployment. Programs that involve deep partnerships with community organizations or a commitment to community ownership may proceed at a slower speed than typical market-driven initiatives.
- At what level of funding reallocation, if any, should the IPA go back to the Illinois Commerce Commission (ICC) for approval? Need to balance IPA/third-party program administrator flexibility with adequate adjudication of diverse and sometimes competing interests. Is it possible to achieve flexibility and oversight similar to that legislated regarding price changes for the ABP, whereby IPA/third-party program administrator can change pricing from Commission-approved level within a range before going back to the Commission?

Successful Examples:

- **California SASH Program. Program administration structure is a key driver in determining how program budgets are used and under what period.**
  - California's SASH and MASH programs have utilized their budget allocations differently over program years. Both programs took ~1 year to get off the ground and be fully operational. This is likely due to the fact they were the first low-income solar programs in the country, and were both working in new markets.
  - SASH is administered by a non-profit organization and, in working with the Commission, developed a program implementation plan that allowed for the program to be operational for the maximum number of years. This is intentional and related to the extensive marketing, outreach, and partnership development required, and ensuring it is a resource available to low-income communities for as many years as possible.
  - The SASH implementation plan established a gradual ramp up in the early years of the program, and within 24 months the program was functioning at full capacity.
  - Unlike MASH 2.0 which today is fully reserved and closed to new applications, the SASH 2.0 program is in a position to serve low-income homeowners until 2021.
  - Both SASH and MASH have been developed and implemented in open Commission proceedings with broad stakeholder input and vetting of any program modifications.
- **California LIWP-Large Multifamily (LIWP-LMF). Precedent for program adjustments.** In the State Fiscal Year (SFY) 2014/15 budget, a total of $832M was appropriated from the California Climate Investments Program to 12 state agencies, including $75M to the California Department of Community Services and Development (CSD) for the implementation of LIWP. An allocation of $24 million has been made to the LIWP-LMF Program, with additional amounts allocated to single-family and small multi-family developments and single-family solar photovoltaics. The goals of LIWP are to maximize greenhouse gas

reductions and maximize co-benefits to disadvantaged communities. As work progresses on LIWP, CSD may adjust allocation categories to best meet the goals of the program. Regardless of the adjustments, all funds will stay wholly within the disadvantaged communities and be used to serve qualifying low-income households.

- **Colorado Xcel Energy Settlement Agreement. Defining an implementation strategy.** The Low-Income Rooftop Solar program will be scaled up over three years (2017-2019) for no more than a total of 300 rooftop systems. In year one no more than seventy-five (75) systems will be installed; in year two 100 systems will be installed, and in year three 125 systems may be installed.

Lessons Learned:

- **California MASH Program. Avoid a "start-stop" program.** MASH is a contractor-driven program, and the incentive program dollars for MASH 1.0 were fully reserved several years before the scheduled sunset; the MASH 2.0 incentive dollars were fully reserved days after reopening the MASH 1.0 waitlist. This created a "start-stop" program of pent up demand, which had negative implications for building owners and contractors. Because incentives were likely unnecessarily high, the program reserved its incentive funding but has not yet developed the reserved projects.

Section 3.6 Contracts & Funding

Description:

- The ILSfA Program should ensure Renewable Energy Credits (RECs) are delivered as promised and that benefits flow to intended recipients.

Recommendations:

- On-site systems should be installed on structures that do not show any sign of portability to ensure that the system continues to serve the intended recipient, RECs are delivered, and benefits to intended recipients remain.
- See the Consumer Protection & Financing Sub-team's recommendations and supporting information for Program Administration and Contracts and Funding (Consumer Protection & Financing Section 2.4). E.g. for the DG Program, akin to SASH, the contractor of record should be the third-party program administrator to ensure statewide continuity, prevent misinformation, and promote consumer protection; and for the CS Program, the third-party program administrator should provide standardized contracts and disclosures.
- See the Definitions Sub-team's recommendations for "Energy and Economic Benefits" "Tangible Economic Benefits" and "Economic Benefits" as it relates to contracts under ILSfA ensuring the wholesale market value of the energy is credited to participating low-income customers or organizations (Definitions Section 2.3)
- Contracts should include minimal insurance requirements that can prevent unexpected events resulting in plant closure. For example, a solar project could experience a weather event that destroys the ability of the plant to produce electricity. If inadequately insured, the owners may not have the capital to repair or rebuild the facility resulting in abandonment of the project.

The income-eligible beneficiaries/subscribers would not receive their promised benefits and the RECs owed the state would be lost

- Contracts should include a guarantee of the amount of benefits that will flow annually and to whom. This could be expressed as a percent of the total economic value of the energy (%EVE). The %EVE should be reported to the third-party program administrator annually. If the %EVE is not achieved, the owners can propose remedies and, if the owners do not meet their commitment to remedy the shortfall to the satisfaction of the third-party program administrator and the IPA or the remedy agreement is violated, the IPA can trigger any financial assurance mechanisms in the REC contract/license.
- Contracts could include financial assurance commitments. The ILSfA Working Group participants discussed the possibility of requiring financial assurance commitments but did not settle on a recommended approach. One option discussed is an approach that could encourage ownership by established community organizations and public entities (e.g., a housing authority).
- The contract should not be considered fulfilled until all the RECs promised are delivered to the IPA regardless of the time it may take to produce those RECs, whether shorter or longer than the projected 15 years.

Discussion Questions:

- For DG Program, are there extra risks for administrator as contractor of record due to clawback provisions?
- How long should contracts be for?
- Should contracts be upfront versus over time?
- Should permanency be required through clawback provisions? Structure clawbacks fairly with more responsibility on developers.

Considerations:

- Permanency requirements are not intended to preclude mobile homes/trailer parks. Generally, these structures are non-portable and important low-income housing.
- Payout timing - note implications for budgets (with/without RERF).
- Non-low income program has upfront payment for systems under 10 kW and 5 payments over first 5 years for larger DG.
- Clear advantage for full REC upfront/ closer to beginning of project period.
- Remember the end goal, which is what incentive structure allows developers/IPA/third-party program administrator(s) to offer solar at no upfront cost to the income-qualified participant.
- The 2015 and 2016 procurements in Illinois had 10% of the contract value bond that was retained by the utility throughout the duration of the contract and returned once the RECs were delivered. This helped to ensure systems would deliver RECs throughout the contract duration (and thus stay in place), but it was removed for 2017. The risk is much lower for systems moving on REC-only contracts, because it generally behooves the system owner to continue to deliver power and RECs to get their return on the system. With income-eligible systems where there will likely be a significant portion of REC money paid upfront, there needs to be some stronger language to keep the

systems operating.

Successful Examples:

- **California LIWP Program. To keep an incentive reservation valid the customer is required to submit a copy of their executed contract within 60 days of reservation**. [22] To start the incentive reservation process, participant needs fill out and sign the LIWP PV Incentive Reservation and Participation Agreement (IRPA) and return it to their technical analyst together with these documents: Third Party Ownership Documents (ex. PPA, solar lease), when applicable (either draft or executed); System Size Justification (for common and tenant areas, inclusive of EE upgrades); Equipment Cut Sheets for inverters and modules (all equipment must be new and on the CEC approved list); and PVWatts Calculation for both Optimal and Actual Designs.
- **California SASH Program**. **The program administrator is responsible for developing all contracts and third party ownership financing models.** The SASH program is overseen by the CPUC and administered by a single statewide entity, a non-profit organization. The SASH program administrator is responsible for all marketing and outreach, application intake, income verification, developing financing models, installations, coordination with sub-contractors, semi-annual program reports, is the contractor of record, and ensures free hands-on and paid job training opportunities are available statewide.
- **California SASH and MASH Programs. Systems are required to be in place for the duration of their useful life.** Only permanently installed systems are eligible for incentives.[23]

Section 4. Multifamily Affordable Housing

Program Design:

- Multifamily affordable housing properties should be included in all ILSfA Programs. The different types of multifamily affordable housing may be included in ILSfA programs in the following ways, which are intended to be examples and not limitations:
    - The DG Program could include 2-4 unit, owner-occupied buildings and have a dedicated third-party administrator for single-family and this category of multifamily.
    - The N&PF Program could include multifamily affordable housing properties that are non-profit or publicly owned and have a dedicated third-party administrator for this program.
    - Privately owned multifamily properties with 5+ units and 2-4 unit affordable housing that are not owner-occupied could be captured the following ways:
        - The IPA could have two distinct DG programs, one single-family

and one multifamily (privately owned). This will allow access to an important segment but will mean significantly less incentive money going to single-family households – a vulnerable segment.
        - The IPA could create a new dedicated multifamily program, separate from the existing four (DG, CS, N&PF, and CSP), and reallocate funds logically across all.
    - Community solar (both CS and CSP Programs) allow individual households <80% AMI in multifamily to qualify as well as any multifamily affordable housing providers to develop projects to serve their tenants.
- Multifamily affordable housing building types should be clearly defined in order to limit eligibility among programs. In unique cases where multifamily affordable housing buildings are eligible for multiple programs, those buildings shall only receive incentives from one program.
- As noted above, the IPA could consider distinct sub-programs that are focused on multifamily affordable housing. As such, the IPA could consider exercising its ability to recommend these additions/sub-programs to the Commission in the initial design approval stage. The IPA could consider reallocating funds across programs to appropriate levels that take into account the addition of the distinct sub-program and its potential impact on uptake across all programs.

System Sizing:

- Consider a different incentive for master-metered versus non-master metered buildings.
- Oversizing is not eligible for Net Energy Metering (NEM) in Illinois - is an additional size cap needed? Pre SB2814 (Public Act 99-0906) it was 120% for NEM. Does this apply to master metered buildings only?
- How to size appropriately for future EE improvements?
- Should there be a maximum size for privately owned multifamily affordable housing properties, e.g. 10 kW or 15 kW?

Eligibility:

- Include eligible multifamily affordable housing providers and their tenants. Public Housing Authority or non-profit owned affordable housing with long-term rent restrictions; Establish minimum percentage (i.e. 50%) of affordable units. See details: California Public Utilities Code 2852 (a)(3)(A-B) as a reference for potential language.[24]
- For qualifying multifamily buildings that are not owner-occupied, existing EE/weatherization program qualifications could be used as a proxy for eligibility (see Section 3.1 for Program Administration - Eligibility recommendation).
- Should multifamily DG Program eligibility be based on privately owned properties (where non-profit and publicly owned multifamily would be eligible for N&PF Program incentives)?
- What percentage (i.e. 50%) of households in a multifamily property should be at or below 80% AMI? Should there be a clawback provision for properties that no longer meet the low-income percentage threshold before the 15-year SREC period is up?

- In order to address the concern over including naturally occurring affordable housing (that it could become non-low-income), should there be a clawback provision that requires a pro-rated payback of the incentives if the building no longer meets the definition of low-income before the 15-year REC term is satisfied?

Incentives:

- See Incentives recommendations in Section 3.2.
- Incentives should be set at a level that reduces project costs for multifamily affordable housing. Incentives can be based on achieving a range of savings for both tenants (e.g. 30%-50%) and common areas (based on max NEM or a percentage).

Considerations:

- Two-fours make up a significant portion of Cook County's affordable housing stock - over 53% of multifamily rental units in low and moderate income areas are in two-four unit buildings. There are 1.3 million affordable housing units in Illinois: 37% single-family, 26% two-four, 36% five plus. Multifamily is the largest portion of affordable housing in the state.
- Rural areas typically do not have high concentrations of multifamily affordable housing.
- Two-four unit rehab that does not incorporate EE and solar is a missed opportunity in the sense that future low-income tenants will struggle with energy affordability. Is there a role for a building level shared solar system? Or another way to incentivize investor owners to incorporate renewables and EE in their two-four rehab projects and portfolios?
- For indirect tenant benefit (i.e. the tenant doesn't pay their own electricity bill), the third party program administrator(s) can work with the affordable housing provider to demonstrate the provider's bill savings will generate tenant benefit through investing the savings in additional resident programs, property improvements, and or operating budgets.

Successful Examples:

- **Colorado Xcel Energy Settlement Agreement. Affordable housing providers can qualify as low-income under the community solar program rules, regardless of whether operators or tenants are paying utility bills.** [25] The November 2016 settlement agreement states non-profit affordable housing buildings or public housing authority buildings (Including homes and multi-family residential buildings) will be considered "low-income subscribers" so long as: (1) The building's residents meet the "low-income" definition set forth in § 40-3-106, C.R.S.; and (2) The housing authority provides verifiable information that these residents are the beneficiaries of the solar. This is key for affordable housing providers because they can qualify as low-income under the community solar program rules, regardless of whether operators or tenants are paying utility bills, as long as the participating buildings have residents that meet the low-income program definition of 185% of Federal Poverty Level or below. This will allow affordable housing providers, or projects that include them, to qualify for incentives associated with the low-income community solar programs in the settlement.

- **California LIWP-LMP Program. Example of multifamily affordable housing solar program.**
  - **Eligibility:** The Low-Income Weatherization Program – Large Multifamily (LIWP-LMF) provider will serve Large Multi-Family Buildings – "Large" multi-family refers to apartment buildings with 20 or more residential units, whether or not served by a central hot water, heating and/or cooling system, as well as multi-building complexes with at least one building of 20 or more units, though waivers to this rule may be requested.[26]
  - **Energy Efficiency:** The LIWP-LMF brings together EE, solar thermal, and solar PV upgrade opportunities under a single program offering to support owners and residents in lowering utility costs, saving energy and reducing greenhouse gas emissions. Incentives cover approximately 30-80 percent of EE upgrades and 50-100 percent of solar installations.
  - **Incentives:** To keep an incentive reservation valid the customer is required to submit a copy of their executed contract within 60 days of reservation. To start incentive reservation process, participant needs fill out and sign the LIWP PV Incentive Reservation and Participation Agreement (IRPA) and return it to their technical analyst together with the below documents: Third Party Ownership Documents (ex. PPA, solar lease), when applicable (either draft or executed); System Size Justification (for common and tenant areas, inclusive of EE upgrades); Equipment Cut Sheets for inverters and modules (all equipment must be new and on the CEC approved list); and PVWatts Calculation for both Optimal and Actual Designs. LIWP is an example of differential incentives based on the other funding the project leverages. The LIWP program contains a "matrix" by which the incentive is set based upon the project cost and the other types of funding the project leverages (ex. ITC, LIHTC, MASH) and is further delineated based on the percentage of common load versus tenant offset load. The LIWP program also has parameters for incentive level review once certain MW targets are attained in the program, allowing flexibility to make adjustments when market conditions change. Incentives cover approximately 50-100% of solar installations. [27]

Lessons Learned:

- Energy Efficiency for All best practices around multifamily affordable housing EE may be relevant to ILSfA Program.[28]
- **California MASH Program. Avoid a "start-stop" program. (See Section 3.5)**
  - **Incentives:** MASH provides fixed, up front, capacity-based incentives for qualifying affordable housing solar energy systems. The amount of the incentive depends on which Track (1C or 1D) the applicant is eligible for:
    - $1.10/Watt for Track 1C - PV System Offsetting one of the following: Common Area Load, Non-VNM Tenant Load, or VNM Tenant Load with <50% Tenant Benefit

        - $1.80/Watt for Track 1D – PV System Offsetting: VNM Tenant Load with >50% Tenant Benefit.
    - **System Size:** The minimum system size eligible for an incentive is 1 kW CEC-AC. The maximum incentive provided for a Host Customer Site (see Site definition) under the MASH Program is 1,000 kW (1 MW) CEC-AC.[29]

Section 5. Distributed Generation (DG) Program Discussion

Program Design

- See the Consumer Protection & Financing Sub-team's recommendations and supporting information for Program Administration (Consumer Protection & Financing Section 2.4). E.g. for the DG Program, akin to SASH, the third-party program administrator is responsible for application intake and income verification to ensure statewide continuity, prevent misinformation, and promote consumer protection.
- The third-party program administrator should develop and provide program information materials that may be independently marketed by other parties, including direct outreach partners and community-based organizations.

Contractors:

- DG Program should not be a solicitation.
- DG Program should have vetted companies (e.g. the SASH Sub-contractor Partnership Program example[30] where the program administrator works with vetted subcontractors).

System Sizing

- What size projects allow income-eligible households to realize meaningful/maximized savings (e.g. SASH's minimum 50% monthly electricity bills savings)?
- Oversizing is not eligible for NEM in Illinois - is an additional size cap needed? Pre SB2814 (Public Act 99-0906) it was 120% for NEM.
- How to size appropriately for future EE improvements or future loads? (e.g. SASH sizes systems under load).
- Should there be a maximum size for privately owned multifamily affordable housing properties; i.e. 10 kW or 15 kW? 10 kW would allow consistency with the small DG incentive in the ABP.
- For residential single-family systems, could establish a system size cap of 5 kW, akin to SASH. In 2012, the SASH program administrator, working with the CPUC, selected 5 kW (from the previous cap of 7kW) in order to allow more low-income families to participate in and benefit from the SASH program while also ensuring substantive utility savings for families. System sizes may be increased with proper justification.

Eligibility

The residence should be owner-occupied and the household income must be

80% of the area median income or less.

Multifamily Affordable Housing

See Section 4 for further discussion regarding incorporation of multifamily affordable housing throughout ILSfA.

Incentives

See Incentives recommendations in Section 3.2.

Energy Efficiency

See Program Administration recommendations and discussion in Section 3.1.

Successful Examples:

- **California SASH Program. The first of its kind program in the nation.**
  - **Marketing, Outreach, and Application Intake:** The SASH program is overseen by the CPUC and administered by a single statewide entity, a non-profit organization. The SASH program administrator is responsible for all marketing and outreach, application intake, developing financing models and providing gap financing, installations, coordination with sub-contractors, semi-annual program reports, is the contractor of record, and ensures free hands-on and paid job training opportunities are available statewide.[31] There are benefits to having one entity oversee the program messaging: a consistent marketing and outreach message can be maintained, and one trusted entity, the non-profit program administrator, can effectively market the program statewide to the target market, which is most vulnerable to predatory financing. The non-profit program administrator functions as a consumer advocate and provides mission-aligned guidance and services to low-income participants, and ensures there is a consistent statewide message around the potential full range of services that could be integrated in the solar installation, such as EE, job training, etc. The SASH program administrator ensures program marketing materials are translated into multiple languages, and has staff who can communicate in the 5-6 most commonly spoken languages in California households.
  - **Incentives ($3.00/watt):** The SASH Program provides incentives to qualified low-income homeowners to help offset the costs of a solar electric system. Incentives are assignable to installers. Incentives are set at a level to cover a significant percentage of the system cost. Incentives are presently $3.00/watt (CEC-AC). In 2015, the California SASH program received approval from the CPUC to use a third party ownership model that leverages federal Investment Tax Credit (ITC) to reduce system costs. The approval was granted with the condition that the model met 12 customer protection standards[32]; including ensuring customers receive at least minimum 50% of the savings, as compared to standard utility rates, from the solar generating equipment. Under the SASH third-party ownership offering, participating households have no financial liability to the system owner. Gaps in financing between the available incentive and the system cost are made up by the SASH program administrator, a non-profit organization that contributes proceeds from a third-party ownership arrangement or its own

philanthropic fundraising to the project.

- **Job Training and Community Involvement:** Workforce development opportunities are integrated into every project. The SASH Program provides direct economic benefits to participating families, and also adds value to the industry in the areas of green job training and broad consumer education. Each SASH project contains a workforce development component and provides opportunities for job trainees and community participants to get hands-on experience installing solar systems. Every SASH installation includes either a team of volunteers from the local community or trainees from job training programs. In addition, each sub-contracted installation requires at least one job training program graduate to be on-site, as a paid worker learning valuable skills. These opportunities are equivalent to paid "field interviews," and many SPP contractors report hiring SPP job trainees for full-time employment after their time as a job trainee. These green job training opportunities form the backbone of SASH and create lasting value in local communities by helping foster a new green workforce – a workforce of skilled laborers, many hailing from the same communities that SASH aims to serve – that will have high employability in the expanding solar job sector. This model promotes solar energy and educates community members on solar technologies, the importance of EE, and the CSI programs. Individuals experience a heightened knowledge about the solar industry and the SASH Program that can motivate them to be solar advocates in their communities.
- **Subcontractor Requirements:** Requirements for admission to the SPP program include: a valid state contractor's license; at least 20 installations completed under current license; professional and customer references verified by the SASH program administrator; financials (balance sheet, statement of cash flow) reviewed by the program administrator; 2-3 installations reviewed by the third-party field inspector to verify industry-best practices in installation and adherence to program administrator's installation standards before on-boarding the company. [33] Subcontractors must provide a job trainee or graduate of a job training program with a short-term paid work and opportunity on each SASH project (see above)
- **Eligibility:** The homeowner/applicant must occupy the residence and live in a home defined as "affordable housing." "Affordable housing" is defined by California Public Utilities (P.U.) Code 2852. The household's total income must be 80% of the area median income (AMI) or less based on the most recent available income tax return. Area Median Income is subject to annual changes based upon Housing and Urban Development's income guidelines.[34]
- **Energy Efficiency:** EE education and referral to energy-efficiency providers is an integral part of the SASH program. The SASH program administrator provides EE education for every participating household and partners directly with utilities and state agencies to enroll

participants in the appropriate low-income EE program, referred to as the Energy Savings Assistance Program (ESAP), if eligible.[35]

- **California LIWP. Incentives for single-family rooftop installations ($4.75/watt to $1.75/watt).** Using a similar structure to the SASH program, this program provides up-front rebates to qualifying residents, and can be used in tandem with SASH incentives for residents who qualify for both. LIWP includes a direct incentive ($4.75/watt to $1.75/watt rebate, based on eligibility for other funding programs); gap financing provided by the program administrator; and comprehensive programming (direct energy efficiency coordination and workforce development requirements).
- **District of Columbia Affordable Solar Program.** [36] **Incentives for single-family rooftop installations ($2.70/watt).** The District's Affordable Solar Program covered the full cost to install solar panels on single-family homes owned or rented by income-qualified District residents. FY16 incentives were $2.70/watt. It was funded by the District Department of Energy and Environment and implemented by the D.C. Sustainable Energy Utility and their contractor.
- **Colorado Energy Office Rooftop Solar Pilot Program.** [37] **Incentives for single-family rooftop installations ($3.50/watt).** A November 2016 settlement agreement for Xcel Energy (Public Service) from 2017-2019 includes incentives and programming for the 300 kW of rooftop (Solar Pilot Program) that will be administered by the Colorado Energy Office (CEO) in partnership with Public Service and implemented through the CEO weatherization assistance program. CEO will fund the initial installation of the solar PV system using:
    - Department of Energy ("DOE") funds of up to $3,545 per home to offset the cost of the solar PV system.
    - The overall incentive funding for each project is approximately [$3.50/watt). Public Service will provide an upfront incentive of $2.00 per installed watt to offset the remaining costs of the solar PV system. These incentives will be paid from the Renewable Energy Standard Adjustment (RESA) account (RESA is a 2% rider, approved with the Colorado Renewable Energy Standard, to allow utilities to finance the incremental costs of renewable energy. All Investor Owned Utility ratepayers in Colorado have contributed to the RESA account since 2006).
    - In addition, Public Service will provide a production–based incentive equal to $0.034/kWh for the electricity generated by the PV system.

Lessons Learned:

California SASH Program. Sizing systems under load incentivizes participating households to adopt EE measures. The SASH program sizes systems based on annual electric usage, and reduces load to account for EE. Sizing systems under load incentivizes participating households to adopt EE measures. The program administrator provides EE education and training, and refers participants to the utilities' no cost EE programs for low-income families. System size is capped at 5 kW in order to allow more families to participate in and benefit from the program while also ensuring substantive savings. The average installed system size for SASH is approximately 3 kW, well under CA's state average of

approximately 4.5 kW, and reflecting the modest-size homes the SASH program serves. System sizes may be increased beyond current annual usage with proper justification (e.g. recent installation of an A/C system). Any system under 5 kW is consider appropriately sized without justification.

Section 6. Non-profits and Public Facilities (N&PF) Program Discussion

Program Design:

- Third-party program administrator has roles including but not limited to: Ensure projects are providing a prescribed framework of benefits to subscribers; Ensure projects are located in diverse communities; Ensure developers have clear guidelines for verifying income for qualified households; and Ensure projects demonstrate clear community involvement in design and planning.
- How does third-party program administrator ensure EJ community siting goal is met?

Eligibility:

- See the Definitions Sub-team's recommendations and other market examples for defining non-profits and public facilities (Definitions Section 2.4).
- Ensure third-party program administrator develops clear guidelines for eligible non-profits (including churches) and public facilities.
- The non-profits and public facilities incentive should go to organizations that specifically serve income-qualified individuals (80% AMI) and wouldn't otherwise have the ability to make the solar investment on their own.
- Third-party program administrator can make sure a disproportionate amount of incentive money does not go to any one category and adjust definitions accordingly after evaluations, for example.
- Who should <u>not</u> benefit from the N&PF Program incentives?
- For the N&PF Program, consider repurposing the preferred participants from the Clean Power Plan Clean Energy Incentive Program: critical service providers (e.g. hospitals, schools, places of worship, multifamily affordable housing providers). These organizations directly serve the community and the benefits from the incentives would have trickle down impacts. Otherwise financeable entities should not receive too high of incentives.
- What scale of public facilities should be allowed?.

Multifamily Affordable Housing:

- Non-profit or publically owned affordable housing should be first in line – prioritize them in N&PF Program. How to prioritize non-profit affordable housing/public housing? See Section 4 for further discussion regarding incorporation of multifamily affordable housing throughout ILSfA.
- CS Program in legislation specifically says non-profits are included. Where do

multifamily affordable housing non-profits fit?

Incentives: See Incentives recommendations in Section 3.2 and examples of multifamily incentives in Section 4.

Energy Efficiency: See Program Administration recommendations and discussion in Section 3.1.

Discussion Questions: What about rural electric cooperatives and municipal utilities (e.g. the Colorado rural coops that have developed 100% low-income projects via the CEO's Demonstration Project?)

Successful Examples:

- **Colorado Energy Office's Low-income Community Shared Solar Demonstration Project.**[38] **Partnership with rural electric cooperatives and complementing solar with weatherization assistance.** The demonstration project was designed to demonstrate the viability of community solar models that serve low-income households, with the goal of reducing low income energy burdens through community solar as a complement to the CEO's statewide weatherization assistance program. The CEO awarded a $1.2 million grant to a non-profit solar installer to develop at least 1 MW of community solar to bring 50% monthly electricity bill savings to at least 300 low-income subscribers. The CEO investment is leveraged with utility investment for each project, at a ratio of two utility dollars for each CEO dollar of grant funding invested. In-kind contributions were also included in the leveraged ratio. The demonstration project was in partnership with rural electric cooperatives throughout Colorado.
- **California Go Solar California Program.**[39] **Eligibility examples for public entity, government and non-profit.** Incentive rates vary by the system owner's entity type (i.e., commercial entities or government or non-profit entities). The incentive amount will be determined by the tax status of the system owner. Government and non-profit entities will be required to submit verification of their tax-exempt status to receive the government/ non-profit incentive amount. [40]
  1) Non Profit: A non-profit institution is an entity not conducted or maintained for the purpose of making a profit, and is registered as a 501(c)3 corporation. No part of the net earnings of such entity accrues or may lawfully accrue to the benefit of any private shareholder or individual. 2) Government: A Government entity is any federal, state, or local government agency. Local government entities include cities, counties, school districts, and water districts. 3) Public Entity: Includes the United States, the state and any county, city, public corporation, or public district of the state, and any department, entity, agency, or authority of any thereof.
- **District of Columbia Department of Energy and Environment (DOEE) Solar for All Program.**[41] **Eligibility example for non-profits, educational institutions, and faith-based organizations.** Due 3/31/17, DOEE solicited grant applications for Solar for All Program (reduce at least 100,000 low-income DC households' electricity bills by 50% by 2032). DOEE also includes, for this grant, the non-profits and organizations that serve such low-income District residents.

Proposals can seek to provide the benefits of locally generated solar energy to low-income households, small businesses, non-profits, and seniors. Eligible applicants are non-profit organizations, including those with IRS 501(c)(3) or 501(c)(4) determinations; Faith-based organizations; Universities/educational institutions; and Private Enterprises.

Section 7. Community Solar (CS) Program Discussion

Program Design:

- Third-party program administrator has roles including but not limited to: Ensure projects are providing a prescribed framework of benefits to subscribers; Ensure projects are located in diverse communities; Ensure developers have clear guidelines for verifying income for qualified households; and Ensure projects demonstrate clear community involvement in the design and planning of the project.
- The third-party program administrator should help facilitate siting partnerships.
- ILSfA is a statewide program and should be as inviting/accommodating as possible for the different types of projects communities have in mind, small or large.
- Appendices E and F include strawman proposals regarding a sample community solar registry and pyramid block structure.

Contractors:

Contractors/developers/participants should be vetted to eliminate "bad actors." Facility owners or leadership that has a history of bankruptcy, criminal investigations, and litigation that is not readily explainable should be rejected.

Eligibility:

- Make sure incentives are directed to eligible and cost-effective projects – third-party administrator could do some level of contract review for commercial projects. There is a CSI program example for setting benchmarks around cost of project and consumer protection enforcement where the program administrator flags issues and asks for justification if project cost is way outside the norm.
- Ensure projects demonstrate clear community involvement in the design and planning of the project. There should be robust participation of smaller parties, e.g. inclusion of single-family/residential in the CS Program as subscribers.
- A CS project should identify the income-eligible beneficiaries targeted by the project, reasonably estimate the percentage of the economic value of the energy (%EVE) generated will benefit the income-eligible beneficiaries, the projected number of beneficiaries served, and the yearly dollar value of the benefits per beneficiary. The assumptions (e.g., power pricing, electrical usage of the income eligible beneficiary) and calculations used in this determination should be documented.
- The third-party program administrator should ensure incentives are distributed to projects proportionally throughout the state; or, if a bidding process occurs, a mechanism within the selection process should ensure that the selected CS projects are distributed proportionally throughout the state.

Incentives:

- See Incentives recommendations in Section 3.2.
- The IPA could follow the category approach for past auctions, where the largest size category for CS Program could be bidding and set prices for smaller projects. Or all CS Program projects could meet set eligibility requirements and therefore be eligible for "X" incentive.
- Regardless of final structure, the fact that the incentive is upfront is important! And the fact that it's a dedicated/differential incentive is important, in addition to all the other market incentives.
- How do projects maximize monthly savings for income-eligible households given that full retail rate NEM (for community solar) is not available in this market?

Contracts:

Refer to Section 2.4 in Consumer Protection & Financing for that Sub-team's recommendations and supporting information for Program Administration as it relates to contracts and disclosures.

Community Involvement:

Community organizations/community members should be involved in project decision-making, ideation, planning, site selection, outreach and education planning. Participation in public forums/neighborhood meetings/town halls are examples of how to gather community input.

Discussion Questions:

- Should there be limitations on non-low-income anchor tenants?
- Small community solar projects warrant a set price/incentive rather than competitively bidding. But is it more efficient to instead aggregate a number of smaller projects into one large one?

Considerations:

- Three-member minimum for community solar projects, no more than 40% of energy offtake for a single subscriber.
- There are two options for the CS Program. Both options, 1) establishing "requirements" that community solar projects need to meet in order to take advantage of the ILSfA incentive or 2) competitive bidding, have pros/cons from the third-party program administrator role (e.g. staff time to review bids, start/stop component to competitive RFPs versus just requiring all projects to do "good" in order to take advantage of ILSfA incentive).
- It may be difficult to track a monthly percentage bill reduction. As an alternative, IPA or third-party program administrator could define a percentage of the electrical power proceeds that must make their way from a community solar project to the income-eligible beneficiaries. This could also be criteria for project selection under a competitive bidding scenario.

Successful Examples:

- **Colorado Xcel Energy Settlement Agreement. Upfront or production based incentive.** [42] The settlement includes 500 kW 100% Low-income Community Solar Standard Offer: annual, first come, first serve community solar incentives for up to 100 kW systems (so, five 100 kW projects, or ten 50 kW, etc.) that exclusively benefit low-income families or affordable housing providers. The REC incentive for standard

offer will be the average annual awarded REC for the low-income CSG RFP, paid as an up-front incentive, plus $0.01/kWh.

- **District of Columbia Solar for All Program. Stakeholder input for implementation.**[43] Incentive levels haven't been set yet for this community solar program but the District Department of Energy and Environment convened a task force to develop recommendations [44] regarding incentives and financing and the DOEE recently issued its implementation plan[45].
- See Section 4 for California MASH and LIWP incentive examples. Though these are designated multifamily affordable housing solar incentives, multifamily solar and community solar may be synonymous, depending upon the context of the project.

Lessons Learned:

- **Colorado Xcel Energy 5% Carve-out. Provide options for developers to verify eligibility.** In order to meet the previous 5% low-income participation requirement for community solar projects in Xcel Energy's service territory, developers had to use a form[46] to verify eligibility. To become an income-verifying agency, Xcel Energy developed "guidance questions"[47] to determine what organizations could verify low-income on a rolling basis.
- **Colorado Xcel Energy 5% Carve-out. Developers did not have access to incentives to facilitate low-income participation and instead donated subscriptions and passed the costs onto other general market subscribers.** The previous 5% low-income minimum participation level for community solar projects in Xcel Energy's service territory in Colorado, though successful, functioned as a ceiling to low-income participation[48]. The bid process to secure placement in the program resulted in a highly competitive program, and thus, very thin margins for developers and financiers. The low-income carve-out further eroded these margins, making it extremely unattractive to exceed the mandatory 5% amount; in practice, due to the way the program is structured, no developers exceed this requirement and effectively "wrote off" low-income participants as another program cost.[49] Developers did not have access to incentives to facilitate low-income participation and instead donated subscriptions and passed the costs onto other general market subscribers. As a result of this lesson learned, numerous stakeholders came together as part of the 2016 Xcel Global Settlement to increase low-income solar access beyond what the 5% had done and instead design a targeted program that maximizes bills savings through solar access (both rooftop and community solar), and targets co-benefits such as coordination with EE measures and job training opportunities.

Section 8. Community Solar Pilot (CSP) Program Discussion

Program Design:

- How should the third-party program administrator work with the IPA on RFP

development and/or bid review in the CSP program?

- Third-party program administrator has roles including but not limited to: Ensure projects are providing a prescribed framework of benefits to subscribers; Ensure projects are located in diverse communities; Ensure developers have clear guidelines for verifying income for qualified households; and Ensure projects demonstrate clear community involvement in the design and planning of the project.
- If ILSfA Programs are staggered, the CSP Program should go last to allow market to develop before cheap energy takes it over. This gives time for the market-driven projects to take root. There is concern that the removal of the size cap and the increase to $20M per project has the potential of flooding the Illinois market with a lot of very cheap community solar. While this is great in terms of maximizing renewables, it can have the effect of stalling the community solar market or setting it back a few years.

System Sizing: In the CSP Program, the 2 MW cap is erased but if projects are too big too quickly it will damage the market. There must be some order to preference/rank projects. Example is the state revolving fund – rank projects and fill as they come available.

Eligibility: Ensure projects demonstrate clear community involvement in the design and planning of the project.

Incentives:

- Should the IPA consider caps or should the IPA provide an incentive at a level that does not pay for the entire pilot; e.g. $1.50 per watt?
- Should the incentive amount change based on size of project, i.e. more for smaller projects, less for larger?

Considerations: Historically, Illinois REC deployment has been very focused on cost efficiency, without focusing on other criteria. Are there criteria that make sense and are feasible for IPA or third-party program administrator to take into account when awarding REC contracts? For example, inclusion of EE/weatherization and solar job training. Are there special criteria worth considering for CSP Program projects?

Successful Examples: **Colorado Xcel Energy Settlement Agreement. Example of upfront or production based incentive, evaluation criteria, and consideration of higher RECs for low-income projects.**

- 4 MW 100% Low-income Community Solar RFP: annual RFP that will offer either up-front incentives or production-based incentives for projects that exclusively benefit low-income families or affordable housing providers. Evaluations will also consider 1) Percentage of expected electric utility bill reduction for the low-income customer, 2) Provision of solar installation job training for low-income individuals at the bid CSG, and 3) Coordination with installation of EE measures.
- 500 kW 100% Low-income Community Solar Standard Offer: annual, first

come, first serve community solar incentives for up to 100 kW systems (so, five 100 kW projects, or ten 50 kW, etc.) that exclusively benefit low-income families or affordable housing providers. REC incentive for standard offer will be the average annual awarded REC for the low-income 4 MW CSG RFP paid as an up-front incentive, plus $0.01/kWh.

- Solar*Rewards Community Program: RFP offering up to 44 MW annually, including the ability for projects with higher low-income participation, or other innovative projects that benefit low-income subscribers, to receive consideration for higher incentives, provided that any low-income minimum proposed through this solicitation, as well as through the low-income solicitation, must be maintained through the life of the Solar*Rewards Community contract.

Lessons Learned:

Connecticut Shared Clean Energy Facility Pilot Program.[50] **It is important to include an inclusionary target or some prioritization within the RFP process for consideration of low-income residential customers who pay their own electricity bills.** The CT Department of Energy and Environmental Protection (DEEP) included an expanded definition of low-to moderate-income (LMI) customers to include tenants of master-metered housing authorities, as this helps to overcome unique barriers that affordable housing providers often face to participation in LMI solar programs, and often allows developers to overcome financing barriers by working through affordable housing owners. Affordable housing tenants are also often amongst the lowest income demographic and can most benefit from access to community solar. However, this definition also has an unintended consequence of favoring master-metered housing arrangements, under which a developer can simply work with a single building owner and not low-income customers directly. Therefore, it is important to include an inclusionary target or some prioritization within the RFP process for consideration of low-income residential customers who pay their own electricity bills for the pilot program. This can be achieved through a few different strategies – such as a minimum low-income residential inclusionary target or simply by a higher weighting for low-income residential impact in the evaluation process (so, for example, if a developer provided higher savings to low-income residential customers). In its final RFP, DEEP included the extent to which the credit benefit is delivered directly to the low-income utility account holder to their qualitative evaluation list for bids.

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4. Training

Contents: Training

Section 1. Training Sub-team Introduction

The objective of the Training Sub-team is to ensure that low-income populations are represented when building a highly qualified Illinois solar workforce. The relevant goals of the Illinois Solar for All (ILSfA) Program are to create training opportunities that benefit low-income residents and community organizations serving low-income populations through the ILSfA Program. In addition to basic workforce readiness and technical solar industry skills, trainees will receive hands-on training while installing PV systems in their communities. The comments and recommendations are based on successful programs being implemented in other states and where information about low-income training programs is publicly available. Unless explicitly referenced in SB2814 (Public Act 99-0906) these are general comments and recommendations based on entry-level skill requirements in the industry, and experience and successful training programs throughout the U.S. market. For descriptions of commonly cited programs, please see Appendix A.

The Training Sub-team held multiple conference calls and communicated electronically. Should the sub-team have further discussion regarding training, the information will be provided to IPA, if applicable.

Section 2. Summary of Recommendations to Illinois Power Agency

Hands-on training should be incorporated into every solar installation that receives ILSfA Program incentives to provide a basis for economic growth and employment opportunities in low-income communities throughout Illinois. The ILSfA Program should allow for innovative models and partnerships to develop and the third-party program administrator(s) should help facilitate the hands-on training by partnering companies that install solar panels with entities that provide solar panel installation (or related) job training and non-installer opportunities such as sales, design, project and construction management. The third-party program administrators should also offer resources to participating contractors seeking to hire job trainees, as well as employment resources and support to the program's job trainees to help them obtain gainful employment in the industry. The third-party program administrators should also implement strategies for tracking job trainees in the ILSfA Program and assessing their success in obtaining full-time positions in the industry.

Please note the Training Sub-team report discusses ways the ILSfA Program will "endeavor to coordinate with the job training programs described in paragraph (1) of subsection (a) of Section 16-108.12 of the Public Utilities Act."

The IPA should work with its third-party program administrators to offer and implement the recommendations discussed in Section 3 regarding training outreach, tracking metrics, and qualifications. The Training Sub-team focused its discussion and recommendations on the following areas:

- Tracking Metric Requirements
    - Trainee (assessments are aimed at trainee employability)
    - Pre-Training
    - Classroom assessment
    - Post training assessment
- Training Provider Requirements
    - Partnerships with community-based organizations (CBOs)
    - Instructor qualifications/credentials
    - Curriculum accreditation requirements
    - The North American Board of Certified Energy Professionals (NABCEP) provider
    - Student Evaluation Metrics (quizzes, skills assessments)
- Contractor Training Requirements
    - Connecting with Training Programs
    - Jobsite Requirements
    - Student Evaluation Metrics
    - Job Placement Requirements

Diverse training opportunities under the ILSfA Program will facilitate multiple pathways to employment opportunities. All jobs including, but not limited to, installation, generation, transmission, and manufacturing, for renewable energy, energy efficiency, grid, and electrical vehicles should provide quality careers. A *quality career* is a job in a safe and supportive work environment that offers family-supporting wages and benefits with opportunities for advancement.

Section 3. Recommendations and Supporting Information

Section 3.1 Local Community Organization Trainee Outreach Requirements

Recommendations:

- Local community organizations outreach entities should have a demonstrated active organizational presence in the communities in which the training will be provided. Because of traditional low technical and financial capacity in environmental justice (EJ) and historically underserved communities to develop, own, and operate such projects, local community organizations should partner with local installers and solar trainers that possess the accreditations necessary in the industry.
- Local community organizations that are selected to partner with training organizations within EJ communities should have an active demonstrated organizational presence within EJ communities and

preferably either an active historical collaboration or demonstrated interest in collaboration with the Illinois Department of Corrections (IDOC) or equivalent entities, if such training will also be provided to ex-offenders.

- Increasing the diversity of the clean energy workforce can, in part, be achieved through targeted standards that require employers to prioritize hiring from groups that have historically faced barriers to employment.[1] Targeted hire standards are most often applied to public construction projects, projects that receive public funding, or have a negotiated PLA or CBA. These requirements do not dictate that employers hire any particular worker, but rather establish a mechanism to assist individuals under-represented in the workforce on a trajectory to stable employment. In states without hiring restrictions, targeted hire requirements may explicitly seek to create opportunities for women and racial or ethnic minorities. Other disadvantaged groups that are sometimes identified include disabled workers, youth, or seniors.

Discussion Questions:

- What is the incentive and how will *qualified persons who are or were foster children and persons with a record* access the incentives?
- The goal is to employ at least 2000 qualified persons who are or were foster children and persons with a record, how can they become *qualified*?
- What is the designed process for Environmental Justice Community outreach?
- What incentives or training will be given to employers to create pathways to employment, post-training, that removes the barriers typically put up for persons with a record?

Section 3.2 Job Readiness Pathways Assessment Rubric Requirements

Recommendations:

- Job readiness pathways assessment rubrics should be required to include both hard skill & soft skill needed in the industry to ensure that EJ community residents are sufficiently equipped to work on the installation and operation of solar projects that are developed in EJ communities. This rubric can be used a tool for assessing an individual's fit for particular solar-related career paths and employers, an individual's training needs before pursuing job opportunities, and to have organizations assess what they can offer to potential solar trainees.
- Rubric would include qualities and skills desired by local solar employers, and also those known to be crucial in one's ability to maintain and advance in employment.
- Local community organizations that are selected to provide such

training within EJ communities should have an active demonstrated organizational presence within EJ communities and preferably an active historical collaboration with the IDOC or equivalent entities, if such training will also be provided to ex-offenders.

- Soft skill training should cover the following topics or their equivalents:
  - Initial Program Application & Applicant Interview
  - Aptitude: Who the candidates are in terms of their own interpersonal core values & their general and vital relationships with others
  - Aptitude: Why we humans and the candidates are made for work & designed to work successfully
  - Authority: Dealing with authority & who is the boss
  - Attitude: You are what you think
  - Integrity: A successful pattern for living
  - Communicating Successfully
  - Conflict Resolution
  - Managing Time & Money Properly
  - Striving for Excellence in Everything
  - Chemical Dependency Education
  - Nutrition
  - Sexual Harassment
  - Mentoring
  - Teaming Building Relationships
  - Job Survival Skills
  - GED Preparation
  - Basic Literacy and Math
  - Job readiness may include resume development, interviewing skills, financial planning; social services and support including driver's license acquisition, court intervention and record expungement as needed, drug and alcohol counseling, and support in acquiring other needed services such as childcare and financial aid.
- Sufficient funding should be made available for soft skills training in addition to basic hard skills and safety training. Employers affirm that they can adequately provide the necessary hard skills training for employees to succeed, but if the employees don't come to the employment arena with the necessary soft skills to succeed, they will fail because the employers are not equipped to provide soft skills training for them. Due to many employment arenas operating on the basis of middle class values, many moderate or low-income community residents are at a disadvantage in acquiring soft skill training naturally through their own social and family networks.
- The Jobs Partnership soft-skills training is deployed in communities, correctional centers and county jails throughout much of our state, from Lawrence County in the south to Lake County in the north. It is deployed in 17 of the 25 IDOC centers. The IDOC has requested that

the Jobs Partnership model be deployed in the remaining 8 IDOC centers, so that Jobs Partnership soft-skills training is deployed in every correctional center in the state. In most of these locations the program is located within IDOC centers, with a limited community presence outside of correctional centers in a couple of counties. But with proper funding we can deploy soft-skills training programs in EJ communities to make it available for the EJ community residents, in addition to incarcerated residents throughout much or all of the state, as needed.

- Connect EJ community residents to training and education opportunities that result in employment within 12 months, so that residents receive immediate benefits from pursuing training and education opportunities.
- Connect EJ community residents who are recipients of employment opportunities to longer-term training and employment opportunities to enhance their career development opportunities.
- Ensure a skilled and trained workforce in clean energy. State or federally-certified apprenticeships are earn-as-you-learn programs that combine classroom instruction and paid on-the job-training with wage progression tied to skill acquisition and an industry-recognized credential when apprentices "journey out." Apprenticeships in the construction trades are the gold standard in workforce training and trade certification, building a cadre of skilled workers qualified to tackle the infrastructure challenges of decarbonization.2 Manufacturing apprenticeships also advance skill acquisition and specialization.

Consideration:

In support of the importance of soft skill training, basic safety training and previous demonstration of ability to learn technical skills: *"Employers correspondingly report that they look less to installation-specific training among job applicants, and place more value on those experiences that develop technical abilities, safety techniques, and soft skills that are common to all companies. A lack of traditional in-depth training, degrees, certifications, and electrical licenses are not holding back entry level applicants, but seem to hold more value for incumbent employees looking to take on greater levels of responsibility and leadership within their organization."* Solar Training Hiring and Insights, April 2017[3].

Successful Examples:

- **Homeboy Industries. Training Program.** An example of a California program with a strong soft skills training and support system, combined with quality solar training that results in highly sought after trainees that include formerly incarcerated individuals.[4]
- **Individual Stories:** Jose Ramos[5] and Marc Spohn[6]
- **Employer Input:** Virginia example of collected input from employers.[7]
- **Training Rubric:**
  A non-profit solar installer's Installation Basics Training Checklist--

parts of this could be turned into a hard skills rubric for entry level installers.[8]

- **Targeting Disadvantaged Workers: The following recommendations for targeting** disadvantaged workers have been used in California, where state law limits affirmative action policies in hiring on public works.
  - An individual who meets one or more of the disadvantaged worker criteria:
    - Household income is below 50 percent of AMI
    - Recipient of public assistance
    - Lacking a GED or high school diploma
    - Previous involvement with the criminal justice system
    - Custodial single parent
    - Chronically unemployed
    - Emancipated from the foster care system
    - Limited English Proficiency (LEP)
    - Dislocated fossil-fuel worker
  - —OR—
    - An individual who is a resident of a high unemployment zip code where the unemployment rate is either 150 percent of the median unemployment rate for the county, or 150 percent of the median unemployment rate for the state.
- **Ensuring a skilled and trained work force in clean energy:** California SB 54,[9] establishes standards for utilization of a "skilled and trained workforce" in the refinery sector. Rebuilding America's energy infrastructure similarly requires skilled workers whose product and craftsmanship is reliable. Training standards help ensure work quality and job safety. Where possible, require apprenticeship or comparable skill standards on energy projects.[10] Other strategies include:
  - Support policies that encourage union engagement in clean energy work.11
  - Maintain stringent state- and federal-standards for apprenticeship certifications.
  - Require a minimum of 60 percent of workers in covered entities to be OSHA 10-hour General Industry Safety and Health certified and a least one jobsite worker to be OSHA 30-hour General Industry Safety and Health certified.12
  - Work with the highest quality, highest wage or unionized segment of the industry to standardize state training requirements.13
  - Negotiate skilled workforce standards through public ordinances at the state, local, or utility commission level or implement through PLAs, community benefit agreements (CBAs), or community workforce agreements (CWAs). Fund apprenticeship training through PLAs (under which employers contribute to an

apprenticeship training fund per each craft-hour worked) to support the next cohort of trained workers.

Lessons Learned:

The Solar Training Network[14]. Training up too many people too quickly for a specific type of job in an evolving sector can be detrimental to partnership, morale of trainees, and the industry if jobs aren't available for graduates. For this reason, connecting short solar training that can be deployed when industry needs are definite and that builds on existing soft skills programs will be very helpful for building an effective approach. And in relation, designing intensive solar training experiences that build transferable skills that allow individuals to connect to career opportunities in related fields is helpful as well.

Section 3.3 Target Market Trainee Requirements and Trainee Pre-training Assessment Rubric Requirements

Recommendations:

Assessments are aimed at trainee employability for solar industry standards based on NABCEP job task analysis and/or accredited requirements for Site Assessment certificate and/or Design and Sales certificates.

Considerations:

- **Pre-Training** (CBOs may be in a good position to offer generalized training to prepare candidates for the solar training program):
  - Job readiness skills requirements
  - Identify need for assistance with transportation, tools, PPE,
  - Identify other pre-training requirements
  - Communication skills (emails, resumes, etc.)

- **Classroom assessment:**
  - Grasp of content
  - Punctuality

- Real world application of concepts
- Team building/leadership
- Participation

- **Post training assessment:**
  - Eligibility for recognized industry credential (like NABCEP PV Associate Exam)
  - Self-Identify career pathway, next steps

Successful Example: **City of Madison's Solar Job Training Program**[15]

Section 3.4 Career Pathway Training Requirements

Recommendations:

- Career pathway training requirements are found in NABCEP PV Associates, PV Site Assessor, Basic PV Installer, PV Designer and Sales person.
- Recommend leveraging the Interstate Renewable Energy Council (IREC) Solar Career Map and use as a basis for identifying types of positions to train towards.16
- Build career ladders through multi-craft, apprenticeship readiness programs. Apprenticeship readiness programs are the first step for many workers in a career pathway to a job or union apprenticeship. Whether those workers are high school or community college students or adults looking to change career paths, apprenticeship readiness programs (sometimes called pre-apprenticeship programs) can provide remedial or supplemental education to help workers apply for an apprenticeship position. The curricula vary according to participant need, but they often incorporate a combination of job readiness, comportment, or soft skill development, OSHA and CPR training, math, adult education, financial literacy, career and industry awareness workshops, and/or introductory professional training.

Considerations:

- **Secure program funding.** Unlike apprenticeship programs, which are industry-funded, pre-apprenticeships often rely on a combination of grants from foundations, community colleges and government agencies. The federal government directs funding toward job training under the Workforce Opportunity and Investment Act; however, there is no provision to require training to be linked to an apprenticeship, job opportunity, or direct career pathway. California's AB 554[17] is one example of a law that mandates WIOA-funded programs and services directed to apprenticeable occupations are conducted in coordination with one or more state-registered apprenticeship programs. Expanding similar mandates would have to occur through state-by-state legislative

action or a federal amendment to WOIA, which may be feasible in areas with a strong labor presence but less so in states without.

- **Support curriculum standards.** The Multi-Craft Core Curriculum (MCCC) is owned by the Building Trades[18] and is taught in conjunction with local unions to ensure that students learn about and have opportunities to engage with organized labor.
- **Readiness.** The federal Department of Labor identifies core elements of "a quality pre-apprenticeship" that should be part of each apprenticeship readiness program:
    1. Approved curriculum for training
    2. Recruitment, educational, and professional development to guide under-represented individuals on a path to long-term success
    3. Access to financial, mentoring, or other necessary support services
    4. Hands-on training[19]
    5. Link to registered apprenticeship program formalized through articulation agreement[20] or facilitated entry[21] where possible

  Although there exist many models[22] under which pre-apprenticeship programs operate, career training should always be demand driven, allowing program graduates to transition into a job or union apprenticeship.[23]
- How can ILSfA engage folks at different junctures in their employment path? See Table 1 "Opportunity Chart" below.

Table 1. Opportunity Chart

Career Pathway Training Requirements "Stackables"	Who Provides	Who Participates	Recruitment List Entry
Meet jobsite readiness (pre-training) standards	Through CBO partner program or employer interview	Jobseekers -- mainly new workers, returning citizens, EJ community members	
• Intro to Solar • Intro to solar and career pathways • Intro to parallel Energy and construction pathways (Installation: ComEd, IBEW, UL) • Pathway Assessment	Standardized presentations given by partner CBOs or Lead ILSfA contractor, Community Colleges offering the 40-hour training, or third-party program administrator(s), if experienced	Individuals from groups above and transitioning workers who show interest in learning about solar	Upon completion: Enter ILSfA subcontractor trainee recruitment list

Career Pathway Training Requirements "Stackables"	Who Provides	Who Participates	Recruitment List Entry
• Basic Safety Intro • Participation in 6-16 hours of installation -- ILSfA			
OSHA-10	Various existing training providers		Enter ILSfA subcontractor trainee recruitment list
IREC Accredited Site Assessment Certificate (other accredited providers recognized in IL[24])	Midwest Renewable Energy Association (MREA)[25] + Community Orgs or Colleges	Individuals who complete Intro to Solar and indicate strong assessment for sales roles	Enter Overall Employer Recruitment List & Solar Training Network List
IREC or NABCEP Accredited Sales and Design Certificate	MREA + Community Orgs or Colleges	Individuals who complete Intro to Solar and indicate strong assessment for design and/or sales roles	Enter Overall Employer Recruitment List & Solar Training Network List
40-Hour IREC or NABCEP Associates approved training	Local community colleges, community based training providers, MREA, IBEW	For individuals from above groups already employed in solar, have completed at least one month of internship.	
Testing for ComEd, IDOT Highway construction or other related utility career paths		Individuals who complete Intro to Solar and indicate strong assessment for construction or utility careers	
IBEW apprenticeship	IBEW solar-trainers	For individuals who complete program and wish	

Career Pathway Training Requirements "Stackables"	Who Provides	Who Participates	Recruitment List Entry
		to seek additional training	
Higher-ed degrees in renewable/solar technologies	Community Colleges or Universities	For individuals who complete program and wish to seek additional training	

Successful Example: **California Single-family Affordable Solar Homes (SASH) and Multifamily Affordable Solar Housing (MASH) Programs:** Job training opportunities include both direct installation experience, as well as design/engineering, and project coordination experience. This provides opportunities for trainees to gain valuable experience in all parts of solar installation, though the bulk of the trainees tend to be directly involved in the installation on-site.

Section 3.5 PV Training Provider Accreditation Requirements

Recommendations: PV training provider accreditation requirements include IREC credentials and/or curriculum, NABCEP Registered PV Associate Program provider, and assessments aimed at trainee employability, or local employer approval.

Discussion Questions:
What is defined as local (50mi radius, 100 miles)?
Are online trainings eligible? Many trainers offer PV fundamentals courses in this format, and hands-on training in-person.

Section 3.6 Training Host Site Requirements

Recommendations: Training host site requirements should include ADA accessibility, computers & internet access, projectors & screens, PV training lab equipment.

Question: How will the program ensure facilitation of training sites and opportunities downstate?

Consideration:	Community Colleges network extends across the state and has a unique and well-established local community connection with publicly-accessible, hands-on training capabilities.
Successful Example:	**Illinois Green Economy Network (IGEN):** IGEN is a consortium of Illinois community colleges working together to share resources, common experiences and best practices to help grow the new green economy. Through this unique platform, they have recently developed 32 online, open-source green career degree and certification programs.

Section 3.7 Training Curriculum Requirements

Recommendations:

- Job readiness/soft skills programs must work towards industry expressed needs and national work readiness credential[26] subject areas, including applied math for construction purposes.
- Work-based experiences should be included, as available through ILSfA, as part of the training process.
- A Technical Classroom Training Program outcome should be that trainees are eligible to sit for towards NABCEP PV Associate Exam (Formerly known as Entry Level).
- Funding should be provided for NABCEP provider status fees.
- Curriculum accreditation should be required in ILSfA (include IREC credentials and/or curriculum, NABCEP Registered PV Associate Program provider, and assessments aimed at trainee employability, or local employer approval).
- Student Evaluation Metrics (quizzes, skills assessments)
- A trainee may be considered someone who has completed at least 40 hours or classroom and/or hands-on solar installation experience and may have attended a wide variety of accredited solar training programs, offered by community colleges, vocational schools, and non-profit organizations. Each individual has eligibility as a “trainee” for one year, and a “job training opportunity” requires at least 8 hours of relevant work.

Considerations:

- Identify applicable certifications: NABCEP PV Associate (Formerly Entry Level) Exam, Site assessment, Sales and Design, DG “qualified person”
- The Solar Foundation’s Solar Training Network Research Report “2017 Solar Training and Hiring Insights,”[27] found that the NABCEP Associate Exam is the most widely-recognized solar industry certification. Sitting for the exam requires the completion of a 40-hour course, built upon the NABCEP Associate Learning Objectives, which were developed with input from a broad cross-section of solar installers and equipment manufacturers. When hiring entry-level solar installation workers, over half (62%) of employers stated they prefer NABCEP exam passage. This

same report also found that *"employers indicate that there needs to be more training (not per student, but generally), and that they would benefit from access to industry standardized on-the-job training programs for both new hires and incumbent employees."*

- ILSfA trainings should be designed to help the trainee work towards becoming eligible for the current Illinois DG Installer certification: "a person who is not a qualified person but is enrolled in a training program that, upon satisfactory completion, will meet the requirement to become a DG 'qualified person' provided he/she is directly supervised by a 'qualified person.'" (Section 468.60(d)(3)).

Successful Examples:

MREA Solar Training Academy[28]

- **California MASH Program:** in order to be eligible for an incentive, the contractor agrees to hire at least one student or graduate of a job-training program for at least one full paid day (8 hours) of work for each 10 kilowatts (kW) of system size up to 50kW.[29]
- **California SASH Program:** SASH 2.0 is uniquely designed to incorporate job training programs intended to promote green-collar jobs in low-income communities and to develop a trained workforce that will help foster a sustainable solar industry in California. The SASH 2.0 Program is legislatively mandated to include a job training opportunity at every installation.[30]

Lessons Learned:

California SASH and MASH Programs: MASH contractors and SASH subcontractors report that they benefit when they are provided resources for meeting the job training requirement, e.g. resumes of eligible job trainees.

Section 3.8 Contractor Installation Hands-On Training Requirements

Recommendations:

ILSfA should follow similar guidelines to California's SASH and MASH Programs, while making accommodations during the program start-up process when fewer trainees may be available. The SASH program administrator is the lead contractor who handles most of the SASH installations and manages the subcontractors who do the remaining installations. The administrator utilizes community participants and trainees alongside paid staff to provide solar installations at no cost to low-income households. Please see Appendix G for a description of SASH 2.0 and MASH program's job training requirements in CA.

Question:	How will the program ensure that training opportunities will be facilitated broadly and evenly down-state?
Successful Examples:	• **California's SASH and MASH programs. See Appendix G.** • **City of Madison's Solar Job Training Program**[31]

Section 4. Conclusion

The objectives of the ILSfA Training Program are to positively impact local Illinois economies by helping overcome common barriers and develop a pipeline for trainees from low-income populations to enter the workforce. As research in the solar industry has found, "*training providers should work closely with employers to improve solar training both before and after hire. Prior-to-hire training should focus on providing a preliminary understanding of system components and electrical basics, safety techniques, softs skills, and should maximize opportunities for hands-on worksite experience. Training providers should also work with employers to develop company specific on-the-job training or internship opportunities.*" [32]

Training for these technical jobs involves soft skills, core math skills and basic hands-on solar training. All of these skills are needed in the industry and fundamental to entering into the workforce successfully. The conclusion of this research highlights the many variables that need to align to overcome the existing barriers to training and solar deployment for low-income and underserved communities in Illinois. These include difficulty finding tuition funding, ease of access to information needed to better prepare for class, and lack of proper math skills needed for the industry.

This ILSfA Training Program should involve a multi-step process whereby the third-party program administrator(s) assist in facilitating partnerships for local community organizations, qualified solar trainers, and solar industry contractors. While solar installations offer the largest employment opportunity for the solar PV industry, there will be sales, design, project, and construction management jobs as well. Importantly, third-party program administrator(s) should ensure non-installer training opportunities (e.g. MREA and NABCEP have sales related trainings) are also facilitated in ILSfA to support Illinois' growing solar economy.

These are general comments and recommendations based on the findings from the industry, and experience from successful training programs in the U.S. to successfully overcome the current barriers found in the industry.

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[2] Zabin, C. et al. (2014). Workforce Issues and Energy Efficiency Programs: A Plan for California's Utilities. Don Vial Center on the green Economy, University of California, Berkeley Institute for Research on Labor and Employment. Retrieved from: http://laborcenter.berkeley.edu/workforce-issues-and-energy-efficiency-programs-a-plan-for-californias-utilities/. See also: Olinskey, B. and Ayers, S. (2013). Training for Success:
A Policy to Expand Apprenticeships in the United States. Center for American Progress. Retrieved from: https://www.americanprogress.org/wp-content/uploads/2013/11/apprenticeship_report.pdf

[3] https://drive.google.com/file/d/0B-fejpWsLASCcVFTaFJfQ0NBZjQ/view

[4] http://www.homeboyindustries.org/what-we-do/solar-panel-installation-training-certification-program/

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[6] http://www.gridalternatives.org/regions/gla/news/grid-success-story-marc-spohn

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[8] https://drive.google.com/open?id=0B-fejpWsLASCa0F1RUJ6Rktvb1E

[9] California Legislative Information. (2013). SB-54 Hazardous materials management: stationary sources: skilled and trained workforce. Retrieved from: http://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201320140SB54

[10] Although it is not as strong as the California standards outlined in SB 54, Illinois requires a Distributed Generation Installer Certification, that provides another example of how workforce standards can be applied. All distribution generation renewable energy must be installed by a "qualified person," who holds a "Distributed Generation Installer Certification." A qualified person is defined as someone who has the "experience and/or training […] with the same type of distributed generation technology for which the qualification status is sought" and has either:

1) Satisfactorily completed at least five installations of a specific distributed generation technology; or
2) Has completed at least one of the following programs requiring lab or field work and received a certification of satisfactory completion:
    a) an apprenticeship as a journeyman electrician from a DOL registered electrical apprenticeship and training program;
    b) a North American Board of Certified Energy Practitioners (NABCEP) distributed generation technology certification program;
    c) an Underwriters Laboratories (UL) distributed generation technology certification program;
    d) an Electronics Technicians Association (ETA) distributed generation technology certification program; or
    e) an Associate in Applied Science degree from an Illinois Community College Board approved community college program in the appropriate distributed generation technology.

See: Joint Committee on Administrative Rules: Administrative Code. (2013). Title 83: Public Utilities, Chapter I; Illinois Commerce Commission, Subchapter C: Electrical Utilities, part 468 Distributed Generation Installer Certification. Accessed from: http://www.ilga.gov/commission/jcar/admincode/083/08300468sections.html; Illinois Solar Energy Association. (2014). Distributed Generation Installer Certification. Accessed from: http://www.illinoissolar.org/dgcertification; also: Zabin et al., 2014, pp.54-56.

[11] More apprenticeships will open and more apprentices will be required in increasingly unionized EE and RE sectors. Because apprenticeships are self-funded, demand-driven training programs, growing the number of apprentices depends on building demand for union workers so they can generate the funds for new trainees.

[12] Zabin et al., 2014, 49

[13] It is critical that workforce standards be developed in conjunction with the Building Trades unions. The transition to 100% clean energy is not about creating new green jobs, but greening the jobs that already exist. The long-standing apprenticeship model of training new workers has been successfully employed by the skilled trades for over 100 years; the skills learned are transferable to renewable energy, energy efficiency, and other applications of improving our existing building, energy, and transit infrastructure. One of the areas highlighted by the industry trade group, the Solar Foundation in their 2015 National Solar Jobs Census is the growing difficulty employers face in hiring qualified workers. Less than one-quarter of employers in the fields of installation, project development, manufacturing, sales and distribution, and "overall" industry report that it is "not at all difficult" to find qualified employees, whereas more than a fifth of employers feel it is "very difficult" to find the employees that they need with the highest reported hiring difficulty in installation (The Solar

Foundation, 2016, 49). The Solar Foundation (2016: 59) even concludes that: "Given the stark differences among employers in their reporting regarding the use of on-the-job training, third-party training, and credentials, it is becoming clearer that the solar industry is one that is searching for a consistent framework for training and evaluating talent. This may become a problem quickly as the growth of the industry accelerates." This obvious need for standardization in the field is an opportunity to implement mutually-beneficial, high skill standards based on utilizing federally- or state-registered apprenticeship programs. Apprenticeship programs are coordinated between employers and unions to ensure that only as many people as they are jobs available at the end are indentured into the program. This flexible, demand-driven model allows unions to recruit and train more apprentices as the demand for work rises, for instance, during a renewable energy building boom. In addition, under collectively-bargained contracts, training is paid for through a fund to which both workers and contractors contribute. See: The Solar Foundation. (2016). National Solar Jobs Census, 2015. Retrieved from: http://www.thesolarfoundation.org/wp-content/uploads/2016/01/TSF-2015-National-Solar-Jobs-Census.pdf; for more on how the Building Trades have taken up clean energy work, see: Berkman, L. (2015). Trade Win for Workers in Sacramento. Building Trades News. Retrieved from: http://laocbuildingtrades.org/trades-win-for-workers-in-sacramento/; CURE. (2016). What We've Accomplished. Retrieved from: http://www.sbctc.org/cure/default.asp?ID=2378; Doherty, B. (no date). Ironworkers Turbine Training. AFL-CIO. Retrieved from: http://www.aflcio.org/Features/Innovators/Ironworkers-Turbine-Training; Matos, J. (2012). Iron Workers Lead the Construction Industry In Wind Turbine Erection and Safety Training. Ironworkers. Retrieved from: http://www.ironworkers.org/press-room/2012/11/13/iron-workers-lead-the-construction-industry-in-wind-turbine-erection-and-safety-training

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[15] http://host.madison.com/ct/news/local/govt-and-politics/madison-solar-installation-training-program-provides-experience-reduces-carbon-footprint/article_505fd37b-1a31-5b57-8ec5-d13345f47171.html

[16] http://irecsolarcareermap.org/

[17] California's AB 554 requires: "that programs and services funded by the Workforce Investment Act of 1998 and directed to apprenticeable occupations, including pre-apprenticeship training, are conducted in coordination with one or more apprenticeship programs approved by the Division of Apprenticeship Standards for the occupation and geographic area. The bill would also require the California Workforce Investment Board and each local board to develop a policy of fostering collaboration between community colleges and approved apprenticeship programs in the geographic area to provide pre-apprenticeship training, apprenticeship training, and continuing education in apprenticeable occupations through the approved apprenticeship programs."

[18] North America's Building Trades Unions. (2016). Course Descriptions. Retrieved from: http://www.bctd.org/About-Us/The-Building-Trades-Academy/Course-Descriptions.aspx

[19] Specifically, the DoL states that training should be "Meaningful hands-on training that does not displace paid employees." Pre-apprenticeship programs are often not paid given that participants are seen as working towards an educational certificate. Unpaid pre-apprenticeship or volunteer labor should never be used to displace workers on clean energy projects. Instead, program participants should have the opportunity to work with apprentices or journey-level workers on a project site to have a better idea of what a job in construction or manufacturing would be like every day if they chose to pursue such a career following completion of the pre-apprenticeship.

[20] Articulation agreements dictate that if a participant completes a pre-apprenticeship program in good standing, they are guaranteed either a union apprenticeship or a job. Articulation agreements are difficult to fulfill given that there are often long waiting lists for openings in apprenticeship programs or work is not immediately available. The Wisconsin Regional Training Program (WRTP), also known as Big Step, is one example of a workforce intermediary that establishes articulation agreements with construction and manufacturing employers and unions. Their demand-driven training model depends on strong connections to industry; WRTP will reach out to employers and unions to determine demand for new employees with a few months' advance. They then offer pre-apprenticeship programs, but only accept as many students as there are positions available. In addition, they provide other services to new workforce entrants, such as math readiness and career counseling, and employers, including helping connect firms to specific workers as required under targeted hire agreements (for more on this model, see lxxxv).

[21] Facilitated entry does not necessarily guarantee a job or apprenticeship at the conclusion of a pre-apprenticeship program, but can help pre-apprenticeship graduates find a placement. For example, in California where many pre-apprenticeship programs have switched to use the Building Trades Multi-Craft Core Curriculum (MC3) (see note lxxxvii),

PLAs are increasingly requiring a certain percentage of workers that have completed the MC3 as part of their targeted hiring requirements. In these instances especially, and in some regional districts where there is often a long waiting list for apprenticeship openings, graduates of a course that used the MC3 curriculum can jump to the head of the cue (from discussion with Anne McMonigle, Project Coordinator on the Workforce and Economic Development team of the California Labor Federation on April 15, 2016).

[22] Conway, M., Gerber, A. and Helmer, M. (2010). Construction Pre-Apprenticeship Programs: Interviews with Field Leaders. Workforce Strategies Initiative of the Aspen Institute. Retrieved from: http://www.aspenwsi.org/wordpress/wp-content/uploads/10-014.pdf; Conway, M. and Gerber, A. Construction Pre-Apprenticeship Programs: Results from a National Survey. Workforce Strategies Initiative of the Aspen Institute. Retrieved from: http://www.aspenwsi.org/wordpress/wp-content/uploads/09-007.pdf.

[23] Rosen, H. (2001). New Approach to Assist Trade-Affected Workers and Their Communities: The Roswell Experiment. Journal of Law and Border Studies, 1(1): pp.75-87. Retrieved from: http://www.heinonline.org/HOL/Page?handle=hein.journals/jlbs1&div=7&collection=journals

[24] http://www.illinoissolar.org/dgcertification

[25] https://www.midwestrenew.org/courses/

[26] http://www.workreadiness.com/images/training.pdf

[27] https://drive.google.com/file/d/0B-fejpWsLASCcVFTaFJfQ0NBZjQ/view

[28] https://www.midwestrenew.org/sta/

[29] MASH program handbook, pg. 23, Section 2.5 http://www.gosolarcalifornia.ca.gov/documents/MASH_Handbook.pdf

[30] SASH 2.0 Program Handbook pg. 5. Section 2.7 http://www.gosolarcalifornia.ca.gov/documents/SASH_Handbook.pdf

[31] http://host.madison.com/ct/news/local/govt-and-politics/madison-solar-installation-training-program-provides-experience-reduces-carbon-footprint/article_505fd37b-1a31-5b57-8ec5-d13345f47171.html

[32] https://drive.google.com/file/d/0B-fejpWsLASCcVFTaFJfQ0NBZjQ/view pg. 17

Appendices

Contents

Appendix A

Descriptions for Low-Income Solar Programs Frequently Cited in the White Paper

California's Sash Program

Website: http://www.gosolarcalifornia.ca.gov/affordable/sash.php

Handbook: http://www.gosolarcalifornia.ca.gov/documents/SASH_Handbook.pdf

The Single-family Affordable Solar Homes (SASH) Program is one of the California Solar Initiative's (CSI) two low-income programs, alongside the Multi-family Affordable Solar Housing (MASH) Program. A non-profit solar contractor is the statewide Program Manager for the SASH Program. The SASH incentive is available to qualifying low-income homeowners in the Pacific Gas and Electric (PG&E), Southern California Edison (SCE), and San Diego Gas and Electric (SDG&E) Investor-Owned Utility (IOU) service territories.

The SASH incentive provides low-income families with free or low-cost solar photovoltaic (PV) systems that significantly reduce household energy expenses and allow families to direct those savings toward other basic needs. The SASH Program is uniquely designed to be a comprehensive low-income solar program. In addition to providing incentives, SASH is structured to promote and provide energy efficiency, workforce development and green jobs training opportunities, and broad community engagement with solar in low-income communities. The SASH Program is a first-of-its-kind solar program, and offers a diverse range of benefits for low-income communities throughout the IOU service territories.

California's Mash Program

Website: http://www.gosolarcalifornia.ca.gov/affordable/mash.php

Handbook: http://www.gosolarcalifornia.ca.gov/documents/MASH_Handbook.pdf

The Multifamily Affordable Solar Housing (MASH) Program is one of CSI's two low-income programs and is administered by Southern California Edison (SCE), Pacific Gas and Electric Company (PG&E), and Center for Sustainable Energy® (CSE) in San Diego Gas & Electric Company's (SDG&E) service territory. The MASH Program provides incentives for the installation of solar photovoltaic (PV) systems on low-income multifamily housing, as defined in California Public Utilities Code (PUC) Section 2852. A higher MASH incentive is available for projects that offset tenant energy use and provide direct tenant benefit, as opposed to a lower incentive for projects that only offset common load and typically benefit the building owner/operator.

The overall goals for the MASH Program are to: 1) Stimulate adoption of solar power in the affordable housing sector; 2) Improve energy utilization and overall quality of affordable housing through application of solar and energy efficiency technologies; 3) Decrease electricity use and costs without increasing monthly household

expenses for affordable housing building occupants; 4) Increase awareness and appreciation of the benefits of solar among affordable housing occupants and developers; 5) Maximize the overall benefit to ratepayers; 6) Require participants who receive monetary incentives to enroll in the Energy Savings Assistance (ESA) program, if eligible; and 7) Provide job training and employment opportunities in the solar energy and energy efficiency sectors of the economy.

California's LIWP-LMF Program

Website: https://camultifamilyenergyefficiency.org/

LIWP Guidelines: http://www.csd.ca.gov/Portals/0/Documents/LIWP/LIWP%202014-15%20LMF%20Program%20Guidelines%20Amended%20092316.pdf

Service Delivery Plan: https://camultifamilyenergyefficiencydotorg.files.wordpress.com/2016/02/aea_liwp-service-delivery-plan-v2_public1.pdf

The Low-Income Weatherization Program – Large Multifamily (LIWP-LMF) brings together energy efficiency, solar thermal, and solar PV upgrade opportunities under a single program offering to support multifamily affordable housing owners and residents in lowering utility costs, saving energy and reducing greenhouse gas emissions. An allocation of $24 million was made to the LIWP-LMF Program through California Climate Investments, a fund generated by cap-and-trade revenues. Incentives cover approximately 50-100 percent of solar installations. It is estimated approximately 5,000 households will benefit from the LMF Program.[1] The program started December 1, 2015 and is scheduled to run through April 30, 2018 and will be split into two rounds. As of March 2017, LIWP-LMF has been fully reserved, securing funding for approximately 70 projects for the first round.

California's LIWP-Single Family Program

Website: http://www.csd.ca.gov/Services/SolarPrograms.aspx

In 2015, the state allocated California Climate Investments funds (funds generated by its cap-and-trade program) for low-income solar projects through the California Department of Community Services and Development's Low Income Weatherization Program (LIWP). SB 535, passed in 2012, required that 25 percent of the cap-and-trade funds be used to benefit environmentally and economically disadvantaged communities. Using a similar structure to the SASH program, this program provides up-front rebates to qualifying residents, and can be used in tandem with SASH incentives for residents who qualify for both. LIWP includes a direct incentive ($1.75/watt to $4.75/watt rebate, based on eligibility for other funding programs); gap financing provided by the program administrator; and comprehensive programming (direct energy efficiency coordination and workforce development requirements).

Colorado Energy Office's Low-Income Community Shared Solar Demonstration Project

Website: https://www.colorado.gov/pacific/energyoffice/community-solar

In 2015, the demonstration project was designed to demonstrate the viability of community solar models that serve low income households, with the goal of reducing low income energy burdens through community solar as

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1 http://www.csd.ca.gov/Portals/0/Documents/LIWP/LIWP%20LMF%20Final%20Program%20Guidelines%20111015%20FINAL.pdf ; https://camultifamilyenergyefficiencydotorg.files.wordpress.com/2016/02/aea_liwp-service-delivery-plan-v2_public1.pdf

a complement to the Colorado Energy Office's (CEO) statewide weatherization assistance program. The CEO awarded a $1.2 million grant to a nonprofit solar installer to develop at least 1 MW of community solar to bring 50% monthly electricity bill savings to at least 300 low-income subscribers. The CEO investment is leveraged with utility investment for each project, at a ratio of two utility dollars for each CEO dollar of grant funding invested. In-kind contributions were also included in the leveraged ratio. The demonstration project was in partnership with rural electric cooperatives throughout Colorado.

Colorado's Xcel Energy Settlement Agreement

Link to Settlement Agreement:
https://www.dora.state.co.us/pls/efi/EFI.Show_Filing?p_session_id=&p_fil=G_678020

In the fall of 2016, Xcel Energy filed their 2017-2019 global settlement and was approved by the Public Utilities Commission. In this plan, Xcel Energy will significantly expand low-income solar programs. The Commission also approved rule changes to support broader participation by affordable housing providers in low-income solar programs, and encourage additional co-benefits including job training opportunity.

In total, the settlement includes about 20 MW of additional rooftop and community low-income solar capacity for 2017-19, as well as the opportunity to bid more low-income capacity in the large community solar program by offering consideration for low-income participation in RFPs for the sale of project renewable energy credits (RECs). Xcel has budgeted about $25 million in ratepayer Renewable Energy Standard Adjustment (RESA) rider funds to support these low-income solar programs for 2017-19. RESA is a 2% rider, approved with the Colorado Renewable Energy Standard, to allow utilities to finance the incremental costs of renewable energy. All Investor Owned Utility ratepayers in Colorado have contributed to the RESA account since 2006.

District of Columbia's Affordable Solar Program

Websites: https://doee.dc.gov/service/affordable-solar-program

The District's Affordable Solar Program covered the full cost to install solar panels on single-family homes owned or rented by income-qualified District residents. It was funded by the District of Columbia's Department of Energy and Environment and implemented by the D.C. Sustainable Energy Utility (DCSEU) and their contractor. The DCSEU worked with the Department of Consumer and Regulatory Affairs, District of Columbia Housing Authority, and Pepco to spread awareness about the opportunity and streamline the process, making it easy for customers to participate. Alongside the DCSEU's Workforce Development Program, the Affordable Solar Program helped train and employ local residents in the solar industry, thus supporting both the DCSEU's green job creation performance benchmark. The DCSEU also vetted local Participating Contractors qualified to install solar under the Affordable Solar Program. To date since 2012, the DCSEU, working with a number of local contractors, has installed over 500 single-family rooftop solar PV systems through its income-qualified solar programming.

District of Columbia's Solar For All Program

Implementation Plan:
https://doee.dc.gov/sites/default/files/dc/sites/ddoe/service_content/attachments/DOEE-%20Report-%20Solar%20for%20All%20Implementation-%20Final%20for%20Transmittal.pdf

The Renewable Portfolio Standard Expansion Amendment Act of 2016, effective October 8, 2016, (D. C. Law 21-154; 63 DCR 10138) (the Act) established the District of Columbia's Solar for All Program. Specifically, Section 3(b) of the Act requires DOEE, through Solar for All, to reduce by at least 50% the electric bills of at least 100,000 of the District's low-income households with high energy burdens by December 31, 2032. Program design is still

underway. The District Department of Energy and Environment (DOEE) recently issued its implementation plan in 2017.

New York's Affordable Solar Program

Website: https://www.nyserda.ny.gov/All-Programs/Programs/NY-Sun/Customers/Available-Incentives/Affordable-Solar

Through NY-Sun, the New York State Energy Research and Development Authority (NYSERDA) provides rebates and affordable financing for the installation of approved, grid-connected solar systems. NY-Sun's Affordable Solar Program provides double the standard incentive amount for households earning less than 80 percent of the area or state median income, whichever is greater.

Appendix B

A Community Solar Financing Model that Benefits Economically Diverse Populations

Submitted by Diane Fager and William Rau

April 20, 2017

One of the key policies embedded in the Future Energy Jobs Act, FEJA, is that Illinois will have "*home grown renewable energy"* that creates jobs, particularly in the income and environmentally challenged communities, as well as rate and energy efficiency benefits for an economically and racially diverse array of ratepayers. Community Solar is clearly a model that has the potential to do that. Although Community Solar is new in Illinois and Low Income Community Solar is even newer, there are efforts nationally that could be instructive regarding this soon to be burgeoning market.

According to the Rocky Mountain Institute (RMI), there were 14 states and Washington, D.C. that had community solar-supporting legislation at the end of 2015 and at least 30 states had minimally one active utility-involved community solar program. Warren Buffett's Berkshire Hathaway Energy has a subsidiary in Utah, Rocky Mountain Power, which is building a 20 MW "Subscriber Solar" installation in Utah ***for business and residential customers who cannot or choose not to invest in their own rooftop solar.*** In fact, according to Joseph Goodman, Manager of the Rocky Mountain Institute, "We are now making markets happen…. We are testing the hypothesis that community scale solar can be the lowest cost and highest value form of solar on the grid."

In Illinois, members of Illinois People's Action (IPA) are in negotiations to implement one of these national community solar models: The Kit Carson Solar Model. IPA is recommending an Illinois city seek a power purchase agreement (PPA) for wind from an Illinois wind farm and possibly the construction of an integrated wind plus solar power park (one or two 2.3 MW turbines paired with 500 KW to 1 MW solar in which both use the same inverter and balance of plant). The system owner could either be a third party who sells power to the city on a 10 to 20-year contract, PPA, or ownership could roll over to the city utilizing the non-profit/private equity partnership embodied in the Kit Karson Model. Although this city is not representative of the whole state, many components of the model are generalizable and can be taken to scale.

The 3 Components of the Kit Carson Solar Model

1. **Cookie Cutter Design** similar to a pre-fab model that is standardized for 500 KW or 1 MW arrays.

2. **Purchasing at Scale** in which multiple non-profits, churches and/or municipality aggregate their purchasing power to benefit from lower prices from large-scale construction discounts such as 30 arrays @ 1 MW each or 30 MW in the Kit Carson model. Evidence shows that even with a 5 MW plant, large-scale construction costs can

drive down prices significantly.

3. **Private Equity Partnerships** to capitalize on the 30% Solar Investment Tax Credit plus depreciation tax benefits.

According to the Rocky Mountain Institute, municipalities, electrical coops and community based organizations can further reduce costs by in-kind assets and efforts. Many municipalities and community based organizations own vacant land that can be donated for the site of the community solar plants resulting in the elimination of rent, a standard operating cost. Collaboration with municipalities can also decrease permitting process costs with in-kind efforts within their own departments. Normally, obtaining required permitting entails significant legal costs and time consuming efforts.

The Kit Carson Electric Cooperative, a nonprofit located in Northern New Mexico, historically has had many low and moderate income families. Nevertheless, a decision was made to expand capacity to serve even more families. (Braun 2016; Guevara-Stone 2016; Trabish 2016). To quickly expand capacity, they did the following:

- Brought in Guzman Energy as a private equity partner (Mann 2016; Svaldi 2016)
- Chose ground-mounted, cookie cutter arrays
- Installed 30 solar arrays at 1 megawatt each
- For an electricity price of 4.5 ¢ / kWh competitive with utility-scale prices

Potential for Municipal and/or Community Based Ownership

One of the strategies being assessed by an Illinois city is how ownership can eventually be obtained by involved nonprofits, churches, and/or the city etc. Their analysis concludes that it can be achieved even with a $100,000 solar system by doing the following:

- A private equity firm finances the community solar system
- Claims the $30,000 ITC
- Exploits depreciation tax advantages for 6 years
- In year 7, the firm sells the community solar system to any or/a combination of church(s), the municipality or community based organization(s) at a fair market value- about $25,000

The municipality, the church, or the community based organization then owns a 23-year asset that will reduce electricity bills by approximately $5,000 per year. Ownership also ensures a greater degree of market stability and enhanced community engagement.. The private equity group receives handsome profits (18%-20% internal rate of return). In exchange, the church/community group/municipality gets a 75% markdown on a long-lived asset with a fairly quick payback.

Can this Work in Urban Areas?

When Joseph Goodman of RMI began work in Rochester, New York, he was told that there wasn't a market for

community solar because overall electricity prices were low and due to a limited supply of solar, the prices for solar were significantly higher. Instead of leaving, Goodman decided to move forward in Rochester by first identifying an effective and reliable local partner, ROCSPOT. He recommended to ROCSPOT that eight community-scale projects of 2 MW each should be developed because electric costs could then be significantly reduced. Additionally, ROCSPOT needed to utilize a "cutter mode" that could be brought to scale. Development costs could also be reduced by having ROCSPOT staff and volunteers provide allot of the "pre-notice-to-proceed development work" including site identification, obtaining permits, meeting zoning requirements and scheduling interconnection. According to Goodman, "They completed most of the necessary activities at far less cost than an outside developer ever could." As a result, "you go from a solar market where subscribers have to pay a 10% to 20% premium to a market where subscribers can get a 10% to 20% savings. We think of that as making markets." Goodman also assisted ROCSPOT in hiring a subscription manager(s) from an experienced community solar developer like CEC, SunShare and Solstice Initiative.

The ROCSPOT model is also instructive on achieving another one of the policies/goals of NEJA: hiring and training a local workforce. ROCSPOT developed a collaboration with Rochester's Democracy Collective to assist with the hiring and training of workers charged with operating and maintaining the system. By having the Democracy Collective hire members of the community, ROCSPOT also inherited natural outreach workers who could tell the story of their local community solar project to their families and neighbors. By successfully doing that, ROCSPOT was able to increase the number of their subscribers as well as increase community support. As a result, the cost of customer acquisition as well as savings from slowed down customer churn created a more stable source of revenue.

Are models like Kit Carson and ROCSPOT Replicable in Illinois?

In Illinois, very large (100 MW) wind and solar farms cost $30 / mWh or 3 cents / kWh for wind and $45 to $50 / mWh, or 4.5 to 5 cents /kWh for solar. According to William Rau of IPA, these industry prices suggest that a 5 MW to 10 MW construction project utilizing the Kit Carson Solar model (standardized replication, aggregated demand, and private equity) could bring the price of community solar down. Rau projects the cost as 6 cents per kWh, give or take several tenths of a penny. This compares with 12 cents / kWh for residential electricity in Central Illinois (Ameren).

What are some of the unique Financing Challenges in FEJB?

Most components of the Kit Carson and ROCKSPOT models are replicable in Illinois especially in regard to creating rates that are competitive by reducing development costs. William Rau sees the real challenges arriving over the long run such as access to sufficient revenue for ongoing operating costs such as increased costs of labor (especially with the escalating cost of health insurance) as well as non-personnel costs including procurement of replacement parts; repairs to defective parts; increases in local, state, federal taxes and monthly rent to name a few. Net metering has provided an excellent source of ongoing revenue for rooftop solar due to the fact that the reimbursement of energy sold to the grid is at a retail level. In comparison, FEJA stipulates that community solar be reimbursed at wholesale rates thus putting it at greater risk for sustainability than rooftop solar.

In Illinois communities, strategies are being discussed to compensate for this disparity to enhance long term financial well-being of their proposed community solar projects. Solutions are particularly challenging for low and moderate income community solar. Thus, unique strategies are being developed including having participating churches, non-profits, and the city self-consume what they generate which can be achieved via a combination of proper sizing of the array plus demand management technology. Also, discussions regarding the positives and negatives of changing community solar's reimbursement rate from wholesale to retail as well as other *sustainable financing strategies* being employed in other states should occur to enhance long-term sustainability particularly for low-income and environmentally challenged communities.

Clearly the development of Community Solar including Low Income Community Solar provides Illinois with incredible opportunities to reach a diverse rate payer base. Community Solar also provides an excellent opportunity to create thousands of well-paying jobs in low and moderate income communities due to its ability to be competitive in a decentralized manner both in rural and urban settings. With cutting edge financing strategies and proven models, energy from Community Solar, including Low Income Solar, is affordable in both the short as well as the long run.

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Appendix C

ILSfA Working Group Cover Memo and Response to June 6, 2017 IPA Request for Comment

To: Anthony Star, Illinois Power Agency
Brian P. Granahan, Illinois Power Agency
From: Juliana Pino, Little Village Environmental Justice Organization
& Participants of the Illinois Solar for All Working Group
Date: 6/27/2017
Re: Illinois Solar for All Working Group

Dear Director Star and Mr. Granahan:

The Illinois Solar for All Working Group is pleased to deliver the enclosed comments on IPA's June 6, 2017 Request for Comments on the Long-Term Renewable Resources Procurement Plan. This memo describes an overview of the Illinois Solar for All Working Group.

Background: Illinois Solar for All Working Group

The Illinois Solar for All Working Group (the Working Group) formed from a subset of members of the Illinois Clean Jobs Coalition, who had comprised an Environmental Justice-Solar-Labor Caucus (the Caucus) during the negotiation of policies that would become FEJA. The group formed in order to bring the best practices and policies to the Illinois energy landscape that would serve to maximize benefits to the economically disadvantaged households and communities that targeted programs are intended to serve. The group was co-facilitated by a representative of a solar company, Amy Heart of Sunrun, and a representative of an environmental justice group, Juliana Pino of the Little Village Environmental Justice Organization.

Following passage of FEJA in December 2016, the Caucus expanded into the Illinois Solar for All Working Group, an open membership group including experts on environmental justice, environmental advocacy, consumer protection, solar business, low-income solar policy, energy efficiency, job training, program design, and other areas, who have substantive research and experience to bring to bear on implementation of Illinois Solar for All. Over 70 participants include representatives from the following organizations:

Blacks in Green	Midwest Renewable Energy Association
Central Road Energy	Natural Resources Defense Council
Elevate Energy	New Life Ministries
Environmental Defense Fund	ONE Northside
Environmental Law and Policy Center	People For Community Recovery
Faith In Place	Seven Generations Ahead
Futurez NFP Incorporation	Sierra Club Illinois
GRID Alternatives	Sierra Club Labor and Economic Justice Program
Illinois Environmental Council	Southeast Environmental Task Force

Illinois Green Economy Network	StraightUp Solar
Illinois People's Action	Sunrun
Illinois Solar Energy Association	The People's Lobby
Lift Them Up Center	Trajectory Energy
Little Village Environmental Justice Organization	Union of Concerned Scientists
Metanoia Centers for Innovation	Vote Solar

Working Group Process

The Working Group began convening in January 2017, and has had six monthly full-group meetings. In tandem, the Working Group operates with sub-teams that focus on specific areas relevant to the policies at hand and future work on the program. These sub-teams include: Program Design & Incentives, Consumer Protection & Financing, Definitions, Job Training, and Project Workshop. Each sub-team was facilitated by leads and co-leads and met weekly to biweekly over the course of the past six months.

A draft White Paper was delivered to the IPA on May 5, 2017. Many Working Group participants attended IPA's May 2017 workshops and helped develop responses to IPA's June 6, 2017 Request for Comments on the Long-Term Renewable Resources Procurement Plan submitted as a separate document along with this memo.

Program Principles for IL Solar for All

During the negotiation of FEJA, the Caucus membership collectively agreed upon the following policy principles to guide our work moving forward. These principles were rooted in the *Low-Income Solar Policy Guide*[1] authored by GRID Alternatives, Vote Solar, and the Center for Social Inclusion; further adapted through iterative deliberations in the Caucus; and ultimately adopted by the Working Group. The principles include:

- **Affordability and Accessibility**. Offers opportunities for low-income residents to invest in solar through a combination of cost savings and support to overcome financial and access challenges Creates economic opportunities through a job training pipeline. Supports skill development for family-supporting jobs, including national certification and apprenticeship programs.

- **Community Engagement**. Recognizes community partnerships are key to development and implementation, ensuring community needs and challenges are addressed. Strive to maximize projects located in, and serving, environmental justice (EJ) communities. Allows for flexibility for non-profit/volunteer models to participate, and strives to meet potential trainees where they are, with community-led trainings.

[1] www.lowincomesolar.org

• **Sustainability and Flexibility**. Encourages long-term market development, and will be flexible to best serve the unique low-income market segment over time and as conditions change. Program administrator ensures community engagement, statewide geographic equity, and flexibility to meet goals. Job training program includes all training partners in design and implementation. Training offerings should come through diverse channels including utilities, unions, tech schools, non-profits, government agencies, and existing community-based job training organizations.

• **Compatibility and Integration.** Low-income program adds to, and integrates with, existing renewable energy and energy efficiency programs, and supports piloting of financing tools such as pay-as-you-save, on-bill financing, PACE or community-led group buy programs. Jobs training program will strive to ensure low-income solar installations incorporate workforce development, including coordinating opportunities for job training partners and individual trainees from the same communities that the low-income solar program aims to serve.

The Working Group researched and prepared the enclosed comments to deliver high quality information and recommendations on implementation considerations for the Illinois Solar for All Program. The contents are not intended to reflect universal consensus on any point amongst working group members. These contents reflect extensive deliberation regarding aspects that the Working Group believes are important to the program's success moving forward.

In closing, we make these recommendations and identify options, considerations, questions, and examples with the aim to ensure high-quality implementation for Illinois communities. Communities throughout Illinois need the opportunities and services the Illinois Solar for All program will provide and the support of groups with substantive experience in the solar industry and low-income solar in particular. Please do not hesitate to contact us with questions or comments in regards to this matter.

ILLINOIS POWER AGENCY LONG-TERM RENEWABLE RESOURCES PROCUREMENT PLAN REQUEST FOR COMMENTS

RESPONSE FROM THE ILLINOIS SOLAR FOR ALL WORKING GROUP

JUNE 27, 2017

The Illinois Solar for All (ILSfA) Working Group recognizes the IPA requested ILSfA specific input in Section E. However, many questions in Sections A-D are applicable to the ILSfA Program. Therefore, we prepared responses accordingly as they are important questions in the context of the ILSfA Program. We encourage the Illinois Power Agency (IPA) to refer to our White Paper once it is published.

A. GEOGRAPHIC ELIGIBILITY OF RENEWABLE ENERGY RESOURCES

1. What level of documentation and analysis should be required from an adjacent state project as part of a request that the Agency consider determining that the project is eligible to provide RECs for the Illinois RPS?

The ILSfA Working Group is not commenting on this question.

2. ***What would be an appropriate methodology for the Agency to use to determine that a project located in a state adjacent to Illinois meets the public interest criteria enumerated in Section 1-75(c)(1)(I)? For example, should it be a weighted scoring system based upon each of the criteria outlined in the law contributing towards meeting a minimum aggregate score, or does a threshold level of compliance with each criterion have to be fully demonstrated?***

The ILSfA Working Group is not commenting on this question.

B. MEETING PERCENTAGE-BASED RPS TARGETS

1. ***To incent the development of new resources outside the Initial Forward Procurement requirements and the Adjustable Block Program, how should the Agency consider balancing short-term REC procurements for meeting annual RPS percentage goals with procurements of multi-year commitments for RECs? In responding to this question, please consider that the eligibility requirements under the revised RPS may reduce the availability of eligible RECs from existing projects, potentially necessitating the development of new generation.***

The ILSfA Working Group is not commenting on this question.

2. Should the IPA develop distinct procurements that target specific renewable generating technologies beyond wind and solar? And if so, what technologies?

The ILSfA Working Group is not commenting on this question.

C. ADJUSTABLE BLOCK PROGRAM

Importantly, the ILSfA Working Group stresses that ILSfA projects must have access to all available incentives, including the Adjustable Block Program (ABP), as low-income customers pay into these incentive pools as ratepayers, and these financing resources are essential to ensuring that impact for ILSfA Program is maximized. Without access to the ABP, the success of the ILSfA Program is in question.

Whatever the final mechanics of the ABP, the ILSfA incentive could be an adder to address the REC source concerns expressed by IPA at the May 2017 workshops. However, incentives for ILSfA installations should not decline or be tied to declines in corresponding general market incentives and may actually need to increase if paired with declining general market incentives.[1]

When pairing the ABP and ILSfA incentives, the end value must be an incentive level that allows developers, installers, or the non-profit third-party program administrators to offer solar at no upfront cost to the income-qualified participant with near term significant economic savings realized by the household.

Blocks

1. ***What approaches should the IPA consider for determining the size of blocks? What are the advantages/disadvantages of having a larger block size as opposed to a smaller block size?***

The IPA should account for the expected use of the ABP by ILSfA projects in setting block sizes.

Blocks design should account for accurate project development timelines, especially specific to project development timelines for low-income community solar projects.

IPA may consider offering a carve out, block or interconnection pathway specific to low-income projects. These projects often have longer development timelines, including for siting and pre-development, and therefore may be disadvantaged or discouraged with highly competitive blocks.

Please see D. Community Solar Blocks for further discussion as it relates to ILSfA community solar projects.

2. ***Should the category for systems between 10 kW and 2 MW be subdivided into distinct blocks? And if so, what are the appropriate break-points (e.g., 100 kW, 200 kW, 500 kW) between categories, and why?***

The ILSfA Working Group is not commenting on this question.

[1] The low-income incentives under the NY-Sun Affordable Solar program are too low and problematic because they declined alongside the non-low-income incentives, therefore disregarding the costs to market or build projects for this sector. To illustrate this point, during the second quarter of 2016 in New York State, only six solar installations were completed under the Affordable Solar program (which doubles the standard incentive), and applications for 16 installations were approved. During the same period, under the non-low income incentive program, 5,506 installations were completed and NYSERDA received applications for 4,108 projects. New York's beginning ranges were from $.60/watt to $1.40/watt (service territory dependent). From October 2015 through the end of 2016, only 102 projects were completed using the added Affordable Solar incentive, with an additional 66 projects in the pipeline.

3. ***Should the initial block or blocks have a different structure than subsequent blocks to account for expected pent up demand?***

Developers will likely incur higher costs at the opening of the program, as they navigate community solar project development, and challenges unique to low-income projects. If using a block system, including a larger block/incentive from the outset would help ensure project development targets are met.

4. ***What criteria should be used to prioritize projects within a block when applications exceed the remaining available capacity in a block? Should the projects be prioritized on a first-come first–served basis or by other criteria?***

IPA may consider prioritization for low-income projects, including criteria such as impact for low-income customers through electric bill savings, coordination with energy efficiency measures and complementary low-income energy programming, and job training provided during installation. Low-income projects typically face longer development timelines, and may not be able to compete with a first-come, first-serve approach for allocating block capacity.

5. ***How should the Agency handle the transition between blocks? Should a block close automatically upon being filled? Or should a block remain open until a predetermined date? Upon a block being closed, should the next block open immediately, or should there be some delay?***

Regardless of the method chosen for transition between blocks, there should be clear and transparent communication about the transition. There should be no delay between blocks closing and blocks opening to prevent a start-stop program. The ABP should be designed to be a continual and open incentive program with no disruption.

Prices

The IPA and/or third-party program administrators should allow themselves the flexibility to change or adjust the ABP and ILSfA incentives (if an adder to the ABP) as needed.

6. ***Should the ABP REC prices be based on a cost-based model which takes into account the revenue requirements for new projects in Illinois, or should it be based on market observations of pricing data as well as developments in other jurisdictions?***

Especially as it relates to the ILSfA Program, using a cost-based model allows IPA to set incentives at an appropriate level to cover a majority of system cost, but not over-incent projects. For example, in California's Single-family Affordable Solar Homes (SASH) program, incentives are deliberately set at a level to cover a significant percentage of the system cost. Any gaps in financing between the available incentive and the system cost are filled by the program administrator, a non-profit organization that contributes proceeds from a third-party ownership (TPO) arrangement and its own philanthropic fundraising to projects. Under the SASH TPO offering, participating households have no financial liability to the system owner.

The working group cautions IPA against using a market based approach for the ILSfA Program. A market based approach requires expertise in policy and regulatory considerations for that particular market. It is

general knowledge that certain aspects of low-income solar development cost more (customer acquisition, for example). Therefore, IPA should account for that to set incentive levels and in order to do that accurately, a cost-based approach is required.

a. For the cost-based approach please provide recommendations for data inputs that should considered for the model. If there are publicly available models that could be used as a template, please provide information about those models.

Elevate Energy has developed a comprehensive model for community solar projects in Illinois available at http://www.elevateenergy.org/community-solar/communitysolarbusinesscasetool/ . This model could be the basis for the initial community solar block prices. Developers could be invited to provide unit costs to the third-party administrator for consideration to incorporation in the model.

An important note for low-income projects is to consider both project costs as well as impact when modeling low-income projects and developing incentives. Incentives should be structured to enable significant low-income energy savings (e.g. at least 50% electric bill savings), not just program participation. The ILSfA Working Group acknowledges that energy only net metering may eventually make it difficult for any project to achieve greater than 50% electric bill savings, but urges the IPA to ensure that incentives from this program drive meaningful declines in energy burden for low-income households.

b. For the market observations approach, please identify the jurisdictions that could be considered, and any significant differentiators between those jurisdictions and Illinois that should be used to adjust results.

The ILSfA Working Group is not commenting on this question.

c. Does the methodology for determining REC pricing have to be either cost-based or market observation based, or can it be a combination of both? Are there any other approaches that should be considered?

The IPA should reserve its ability to do both cost-based and market-based. The first set of RECs should be cost-based. Then IPA may move to market-based once a bigger set of data is available from Illinois' own market.

7. How should the approach for determining REC prices take into account geographic differences in price or cost factors, e.g. local labor/land costs etc.? How narrowly or broadly should geographic factors be considered?

IPA and third-party program administrators should consider the differences in project economics by service territory and project type/market segment and adjust REC prices as needed to ensure geographic diversity.

8. Besides geography and system size, are there other factors that should be considered to create differentiated pricing?

The federal Investment Tax Credit (ITC) step-down and change in value of the DG rebate should be considered. IPA should take care not to "over-incent" projects that will be using that rebate. Projects

serving low-income participants may be costlier to develop and may need to provide higher levels of financial benefits to participants than their market-rate peers. It will be important to incorporate these additional costs when developing pricing for ILSfA projects.

Project Development Process

9. ***How much time should be allowed between system application/contract approval and when a system must be energized? The time allowed could take into account issues like (i) the seasonality of applications, (ii) delays in permitting, interconnection, (iii) equipment availability and etc. Should this time vary by size of system, geographic location, or interconnecting utility?***

Developing projects that serve low-income customers may take longer and are costlier than equivalent market-rate projects. Additionally, non-profit developers are not as well resourced as larger for-profit companies, so milestones like siting take longer; larger blocks would help facilitate a longer development timeframe for ILSfA projects. IPA should allow low-income projects to be allotted additional time for project development than the broader market - i.e. 18 months for broader market, 24 months for low-income. This gives developers of low-income community solar projects additional time to overcome the unique challenges of these projects, including siting, customer acquisition and financing. The IPA should also allow for reservation extensions for ILSfA projects.

The Working Group recommends a minimum of 24 months for ILSfA community solar projects. If IPA uses a shorter time period, extensions should be offered, as appropriate..

10. ***What type of extensions to a guaranteed in-service date should be allowed, and what additional requirements should there be for extensions?***

If the utility has delays in interconnection authorization or a project faces legal challenges, there should be indefinite no-fee extensions allowed.

11. ***What information about a system should be required for a system to be qualified to participate in the program (e.g. site control, local permitting, interconnection status, etc.)? Should the requirements be different for smaller systems (e.g., under 10 kW) than larger systems? Should the requirements be different depending on whether the system is being interconnected with an investor-owned utility, a municipal utility, or a rural electric co-op?***

The ILSfA Working Group is not commenting on this question.

12. ***What development deposit/credit requirements should there be in addition to any program fees? And for how long should such requirements run?***

Minimize fees for the ILSfA Program, especially as it relates to non-profits that maximize savings for their clients. Any payments or fees imposed on non-profit solar installers and community-based organizations reduces the savings they would otherwise pass onto their low-income clients.

Projects that are developed or owned by non-profit and quasi-governmental entities (schools, local governments) should require minimal deposits.

13. ***Should there be intermediate project milestones to help ensure that projects that have reserved RECs out of a block are successfully developed, and that closure of blocks due to all RECs being allocated is effectively managed? If so, how should milestones and performance standards vary between smaller and larger projects?***

The ILSfA Working Group is not commenting on this question.

14. ***For the Supplemental Photovoltaic Procurement, inverter readings were allowed for systems below 10 kW, and revenue grade meters were required for larger systems.[2] How should these standards be updated for the ABP?***

The ILSfA Working Group is not commenting on this question.

Clawback Provisions

Clawback provisions should be designed to avoid a scenario where a developer gets paid up front for a project and subsequently stops delivery of electricity - there must be a guaranteed delivery of energy. Equally important is that clawback provisions must apply and follow any change in ownership.

15. ***What clawback provisions would be appropriate for ensuring that RECs are delivered while not creating potentially prohibitive additional costs or burdens?***

Clawback provisions should be designed for the 15-year life of the RECs to avoid a scenario where a developer gets paid up front for a project and subsequently stops delivery of electricity - there must be a guaranteed delivery of energy. This can be achieved through annual reporting, checked by the third-party program administrators.

If a community solar developer takes the ILSfA incentive and then switches the project from benefitting low-income, they should be penalized. System capacity must be locked into low-income by use of ILSfA incentives.

The IPA could consider requiring a modest bond from community solar providers under the ILSfA Program. If bonds are required, the various types of developers, including non-profits, should be considered so that any such requirements do not impede the successful development of projects.[3]

16. ***What would be reasonable circumstances to allow for the waiving of clawback provisions? (e.g., fires, severe weather, etc.)***

[2]See: www.illinois.gov/sites/ipa/Documents/IPA-metering-accuracy-standard-5-14-15.pdf for the metering standard used for the Supplemental Photovoltaic procurement.

[3] For example, on February 15, 2017, the Maryland Public Service Commission issued a decision on proposed modifications to the Investor Owned Utility tariffs for the Community Solar Energy Generating System (CSEGS) Pilot Program. The decision required that most program applicants, at the time of applying to become a Subscriber Organization (SO), would have to provide a bond of $10,000 for projects up to 1 MW. Non-profit applicants would not be subject to any bond. For SOs proposing to develop projects larger than 1 MW, an additional $25,000 per MW of proposed CSEGS capacity is required. http://www.psc.state.md.us/electricity/community-solar-pilot-program/

The ILSfA Working Group is not commenting on this question.

17. Should clawback provisions vary based on system size? If so how should these provisions vary?

The ILSfA Working Group is not commenting on this question.

18. How should clawback provisions carry over when a system and/or system location is sold?

At any point in a project's life, if ownership changes the new owner must be required to deliver RECs for the remaining duration.

Consumer Protections

19. What consumer protection elements should the IPA consider adopting as part of the ABP program? How should those elements differ between distributed generation and Community Solar?

Please refer to the response to question E-11.

20. Should the ABP require the use of a standard disclosure form? If so, what elements should that form include?

Please refer to the response to question E-11.

21. Are there examples from other states of model approaches to consumer protection, and/or lessons learned regarding insufficient consumer protections?

As described in the response to question E-11, consumer protection issues will arise around financing solar if low-income families are not protected from subprime solar financing schemes or are offered options that will not have a long-term net positive economic benefit. If sufficient measures are put in place for the ILSfA Program, and dedicated third-party program administrators enforces those measures, Illinois residents and ILSfA Program participants will have a positive experience.

D. COMMUNITY SOLAR

Geographic Considerations

1. ***Should the IPA consider taking steps to encourage projects to be located geographically closer to subscribers? If so, what steps should be considered?***

The ILSfA Working Group believes multiple options should be preserved so that they meet the needs of multiple communities and accommodate both community driven and developer driven successes. Some communities will want hyperlocal community solar projects while others will not have siting capabilities. Neither should be prevented.

2. How can geographic diversity be ensured?

The IPA and/or third-party program administrators should preserve flexibility to adjust incentives/create adders to meet geographic diversity needs and ensure local job training opportunities are available.

IPA should work with rural non-regulated electric utilities (coops and munis) in Illinois to pro-actively make them aware of the ILSfA Program and ensure that they take steps to ensure that benefits can flow to their low-income ratepayers through a valuation of community solar that at least meets the minimum

requirements of community solar as defined in the Future Energy Jobs Act. Establishment of a community solar policy that at least meets these minimum requirements should be a prerequisite for accessing ILSfA and ABP incentives, to ensure that their ratepayers adequately benefit. The IPA does not have any authority to force rural electric cooperatives or municipal utilities to adopt the minimum policies necessary to enable ILSfA participation, however, every effort should be made to ensure the ILSfA Program is truly statewide.

Project Application Requirements

3. ***Should Community Solar projects have different application requirements than a comparably sized distributed generation project? What level of demonstration of subscriber interest should be required prior to approving an application from a Community Solar project?***

The ILSfA Working Group is not commenting on this question.

4. ***How should co-location of Community Solar projects be addressed in light of the definition of community renewable generation projects that is capped at 2 MW?***

The ILSfA Working Group notes that there is a mandate on geographic diversity, and co-location runs opposite of that. However, IPA should preserve the ability to co-locate if proven absolutely necessary; perhaps through a waiver process for co-location if the project meets certain criteria.

If IPA allows co-location, limitations should be placed on number of projects and/or developers on a single site, to avoid market monopolization and deviance from statute definition of community solar.

Community Solar Blocks

Under the ILSFA Program, it is important to have a definition for what constitutes a low-income community solar project (e.g. all 80% AMI subscribers, non-profit affordable housing, and/or non-profit, etc.) and request 100% dedicated low-income projects based on that definition, or at least a minimum requirement (i.e. 50% of system to low-income to be eligible to access ILSfA incentives).

If some percentage of the project is low-income, only that percentage of the project capacity should access the ILSfA incentive, and that percentage would need to maintain that level of low-income participation for the life of the system, as enforced through reporting to the third-party program administrator and clawback mechanisms.

The Future Energy Jobs Act states that for ILSfA Program Low-Income Community Solar Project Initiative, "Incentives should also be offered to community solar projects that are 100% low-income subscriber owned, which includes low-income households, not-for-profit organizations, and affordable housing owners." IPA may consider creating a block for 100% subscriber owned projects.

5. ***Should the design approach for blocks for Community Solar vary from that used for Distributed Generation (e.g., size of blocks, criteria for prioritizing applications)?***

The ILSfA Working Group is not commenting on this question.

6. ***What would be reasonable assumptions to make for the cost of acquiring and maintaining subscribers? How will these costs be expected to vary over time (e.g., the difference between initial subscriber recruitment and managing churn rates)? How will these costs differ between***

managing residential and commercial subscribers?

While customer acquisition cost data will be market specific to Illinois and ultimate program / incentive structure, generally, residential customers are a higher cost to projects than commercial. Further, low-income residential customers are the most difficult customers to acquire and maintain, contributing in other states to 20-50% higher costs than average community solar residential customers.

7. Should the value proposition to the customer for a subscription to a Community Solar project be more, or less, attractive than for a comparable sized DG system at the customer's location?

Community solar subscribers should be allowed to receive an equal value proposition to onsite solar participants. ILSfA Program low-income household participants should receive the highest value proposition, to entice customer participation and maximize program impact.

Development Milestones

Development milestones are important, especially as it relates to the ILSfA and ensuring consumer protection.

8. Should the time allowed for Community Solar project development be different than for comparably sized Distributed Generation systems?

Community solar projects and especially low-income community solar projects face longer project development timelines, due to the inherent additional components of project development, and therefore should be allotted longer development timelines and reservation extensions.

9. *What project development milestones should be required to demonstrate sufficient levels of subscriber interest before a contract may be terminated?*

In addition to maintaining the basic participation definition of community solar for the 15-year REC span of the project, projects that utilize ILSfA Program incentives should be required to maintain levels of low-income participation throughout the life of the project, included in annual reporting and verified by the non-profit third-party program administrator. The IPA should weigh options to best maintain low-income participation levels while minimizing the administrative cost of reporting and verification.

Residential versus Commercial Interest

IPA should monitor this segment and adjust the program as necessary to ensure robust residential participation.

The language of the Future Energy Jobs Act directly requires the IPA to ensure robust participation opportunities for small customers as well as customers that cannot put solar on their own roof. During the May workshops, we repeatedly heard about the challenges associated with serving small customers as well as examples of markets (e.g. Minnesota) where community solar had left small customer participation behind. Given this experience in other markets, the IPA has an obvious responsibility to take proactive measure to ensure this robust small customer participation. Without proactive measures, it seems clear these customers will be left behind.

The Illinois Solar for All Working Group understands that there are multiple proactive measures that the IPA could take, ranging from mandates to more market-driven approaches, to ensure this robust small

customer participation. The Working Group is skeptical as to the ability of a market-based approach to achieve robust participation and urges the IPA to consider other approaches that will not limit diverse types of projects and business models from participating in the Illinois market. Regardless of initial approach, IPA should monitor small customer participation and, if robust participation is not achieved, alter the program to ensure robust small customer participation.

10. ***What, if anything, should the IPA consider to ensure robust residential participation in Community Solar?***

Examples in other states include Nevada at 40% residential/25 kW or less[4] and Maryland and Massachusetts are similar.

11. ***Should REC pricing vary based on the portion of the project that is residential? How can this be verified, and what would be required over time to ensure ongoing residential participation?***

The ILSfA Working Group is not commenting on this question.

12. ***Should project application/viability requirements be different based on the mix of residential and commercial customers?***

The ILSfA Working Group is not commenting on this question.

13. ***Are there additional considerations that should be made for projects that are entirely subscribed with commercial customers, or entirely subscribed with residential customers?***

The ILSfA Working Group is not commenting on this question.

E. ILLINOIS SOLAR FOR ALL PROGRAM

Of highest priority is ensuring the ILSfA Program is designed to maximize savings and auxiliary benefits for participants, involve communities throughout the state, ensure consumer protection, provide hands-on training and access to solar jobs, and be adaptable, flexible and sustainable.

ILSfA Programs (i.e. distributed generation, non-profits and public facilities, community solar) should be run by multiple non-profit third-party program administrators to better align specific skill sets, constituencies, pipelines and similarities in program delivery and ensure enforcement of consumer protection. The third-party program administrators should all be non-profit organizations to ensure the maximized economic benefit and interests of income-eligible participants are at the forefront of the ILSfA Program, including ensuring opportunities for auxiliary benefits. Third-party program administrators should demonstrate their ability to collaborate across all ILSfA Programs and with low-income and environmental justice (EJ) communities; demonstrate strong partnerships with stakeholders; have experience in administering low-income energy programs and overseeing statewide clean energy or energy efficiency services.

1. ***How should the concept of "80% of area median income" be applied? What size area should be considered (e.g., municipality, county, utility service territory)?***

County is the most universal application.

[4] https://www.leg.state.nv.us/App/NELIS/REL/79th2017/Bill/5450/Text

2. What should be the balance between verifying individual income eligibility and using other criteria such as median income of census tract?

All low-income families in the state should have the opportunity to participate in and benefit from Illinois' investment in a clean energy future with SB2814 (Public Act 99-0906), regardless of geographic location.

To help with income qualification for ILSfA Program projects, ensure the non-profit ILSfA third-party program administrators develop clear guidelines for verifying income for qualified households (e.g. CA's Single Family Affordable Homes (SASH) program administrator is responsible for income verification and uses most recent available income tax return to verify 80% of Area Median Income (AMI)[5]; CA's Multifamily Affordable Solar Housing (MASH) program has set eligibility criteria[6]; and Maryland's Community Solar Energy Generating Systems (CSEGS) Pilot Program allows the Commission to establish alternate means aside from income verification including participation in low-income assistance programs where eligibility is at or below 80% AMI[7]). Allowing proxy verification assists community solar developers with the customer acquisition process and meeting requirements for residential participation.

3. What provisions in contract and REC payment structure should the IPA consider to ensure that any revenue received for RECs does not hinder participants' eligibility in other benefits programs?

The ILSfA Program should result in participants realizing meaningful and significant monthly savings on their monthly electricity bills, eliminating the need for enrollment in energy assistance programs and ultimately keeping their homes affordable. Income eligible participants would need to ensure they meet qualifications for other benefiting programs. Given the target of low-income households, it is unlikely participating in ILSfA would change their income level substantially enough so that they would no longer qualify for similar income-based programs. It would continue to be the responsibility of the participating household to ensure their income is reported accurately for various programs.

The non-profit third-party program administrator should be tasked with ensuring that community solar participants' subscriptions are coordinated with energy assistance benefits they may receive, and allocated to guarantee that significant benefit is achieved, and energy assistance customers are not negatively impacted. Any reduction of energy assistance subsidies due to participation in community solar should not be viewed as negative, as long as the benefits from the community solar subscription equal or exceed the energy assistance benefits.

IPA may wish to note a current point of inquiry in Maryland that relates to this issue. In that state, concern has arisen among advocates for low-income ratepayers that, if not structured correctly, the community solar pilot program could dilute energy assistance benefits for participating energy assistance recipients,

[5] see SASH 2.0 Program Handbook pg. 7, Section 4.2.1
http://www.gosolarcalifornia.ca.gov/documents/SASH_Handbook.pdf

[6] SMASH Program Handbook pg. 16, Section 2.1.5
http://www.gosolarcalifornia.ca.gov/documents/MASH_Handbook.pdf

[7] COMAR 20.62.03.03 Pilot Project Application Process
http://www.dsd.state.md.us/comar/comarhtml/20/20.62.03.03.htm

and could result in cash flow issues.[8] IPA should consider the recommendations of advocates relating to funding to cover low-income customers' subscription costs, and special consumer protections to notify these customers that there could be a problem if a solution is not arrived at in initial program design.

4. What distinct requirements and considerations should apply to multi-family buildings?

Multifamily affordable housing owners and buildings should be eligible as long as tenants meet 80% AMI or below income requirements. In the case that a building owner is a direct offtaker, serving as an intermediary to low-income tenants, a requirement must be included that benefit be demonstrated for low-income tenants. The non-profit third-party program administrator should be charged with developing a reporting mechanism and ensuring compliance.

Multifamily affordable housing properties should be included in all ILSfA Programs. Multifamily affordable housing building types should be clearly defined in order to limit eligibility among programs.[9] In unique cases where multifamily affordable housing buildings are eligible for multiple programs, those buildings shall only receive incentives from one program. Non-profit or publically owned affordable housing should be prioritized.

IPA may consider a different incentive for master-metered versus non-master metered buildings. In the California multifamily solar programs, they put solar systems in two buckets: Systems serving common areas versus tenants. Master metered buildings are lumped into the same bucket as common area because with both common area and master metered loads, the building owner is paying the power bill and can have a payback from solar just the same. They're also able to more easily finance their system.

In order to address the concern over including naturally occurring affordable housing (that it could become non-low-income), require rent restrictions in the eligibility for multifamily affordable housing.

Incentives should be set at a level that reduces project costs for multifamily affordable housing. Incentives can be based on achieving a range of savings for both tenants (e.g. 30%-50%) and common areas (based on max NEM or a percentage).

5. ***How should the concept of low-income be considered for non-profit and public facilities? Should all non-profits and public facilities be eligible for that Solar for All program, or should there be some nexus with low-income criteria?***

[8] http://www.psc.state.md.us/search-results/?keyword=215592&x.x=0&x.y=0&search=maillog

[9] Public Housing Authority or non-profit owned affordable housing with long-term rent restrictions; Establish minimum percentage (i.e. 50%) of affordable units. See details: California Public Utilities Code 2852 (a)(3)(A-B) as a reference for potential language http://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?lawCode=PUC&sectionNum=2852

e non-profits and public facilities ILSfA incentive should go to non-profit and public facility organizations that act as critical service providers (e.g. youth centers, hospitals, schools, homeless shelters, senior centers, places of worship, affordable housing providers) and/or serve at-risk or low-income individuals, families, and communities, including environmental justice and historically underserved communities, in their missions. If applicable, those organizations should seek to provide and allocate the benefits of locally generated solar energy to income-eligible households.

vernment and non-profit entities should be required to submit verification of their tax-exempt status to be eligible for the public facilities and non-profit incentives.

rd-party program administrators should set qualification criteria to make sure disproportionate amount of incentive money does not go to any one category or entity and adjust definitions of non-profits and public facilities accordingly. An application process or definitions to be deemed an eligible organization should be developed by the non-profit third-party program administrator. Similarly, third-party program administrators should provide feedback to the IPA on program uptake and usage of funds regularly, at least at the end each program year or within a program year if the third-party program administrators believes program changes or fund reallocation is necessary. Allow for definition changes or flexibility, as the ILSfA Program gets underway.

e IPA should consider awarding higher incentives to non-profits, which are less likely to have the financial backing available to public facilities. This makes non-profit projects more difficult to finance.

6. ***For Illinois Solar for All grassroots education efforts in rural areas, what opportunities are there for partnering with community organizations and institutions?***

ere are many opportunities to partner with community organizations and institutions in rural areas of the state. The IPA should include in its RFQ or RFP a requirement that upon award, the third-party program administrators should identify and work with community-based groups located in rural areas to conduct outreach and education and ensure consistent messaging about the ILSfA Program.

the extent feasible, the third-party program administrators should endeavor to begin outreach and education ahead of program(s) launch to ensure awareness of the various program benefits effectively reaches those who need them most across segments and geographies. If programs are launched in a staggered fashion, education and outreach should ideally precede each launch and continue after to support uptake and awareness.

e third-party program administrators should develop standardized marketing collateral and messaging framework for community-based groups to use with their networks (in the most relevant format).

There should be “ingredients/framework” provided by the third-party program administrators for the community-based groups to ensure consistent messaging about the programs, but it should be up to the community-based groups to determine which communication tool(s) works best within their networks.

Utility Funded and Administered Job Training Programs

7. ***In some instances, trainees may be unavailable to participate in project development (due, for instance, to the time to complete training programs or geographical constraints). What flexibility should be considered to account for the potential lack of availability of trainees to work on projects?***

This program should guarantee sufficient time between project approval and commissioning. Every effort should be made to ensure that training program's trainees are taken from the program to assist with projects.

As the trainees complete the program, their name goes on a waiting list for a project.

When Illinois Solar for All funding is used for a project, the contractor must employ trainees (or if the installer is a non-profit, provide free hands-on training). If for any reason a contractor elects not to use trainees, a dollar amount penalty will be deposited back into the training funds. Program administration should share a clear definition of a trainee for contractors to comply with. An example from California's SASH program is the following:

> Eligible job trainees come from PV installation and design training programs including those offered by a California Community College or other PV-training programs offered to the public by local government workforce development programs, community nonprofits, private enterprises or the electrical workers union with 40+ hours of instruction and/or hands-on PV installation and design training.

A similar definition can be created in IL.

There should also be a limit set on how long someone can be considered a trainee, for instance 12 months after their first qualifying install as a trainee.

8. ***How can the IPA ensure that project developers offer meaningful employment opportunities and career advancement to job trainees and others in the workforce development pipeline?***

Each trainee's work performance will be evaluated by the contractor using a standardized rubric. This would also provide other potential employers with a tracking indicator of the trainees performance through the entire program. Timesheets will be used to track on the job training experiences by task.

A majority of the tasks given to trainees should fall in line with items on the NABCEP PV Installer Job Task Analysis.

When hiring new solar employees, project developers should show preference for qualified IS4A program trainees. In addition, eligible employers/contractors should provide trainees with a brief

overview of their company describing career pathways within the company and the necessary skills for advancement opportunities. Opportunities described should include the various career tracks in the company, within and outside of installation and operations.

Once hired, employees' formal or informal training, cross-training, certifications and degrees should be recognized in a plan for career advancement.

Contractors should allow for at least two weeks for recruitment of trainees to participate on projects, allowing time for training organizations to refer appropriate candidates.

Clear goals for trainee engagement should be articulated to contractors and trainees. Feedback should be collected from both sides to evaluate quality of experience.

Environmental Justice Communities

9. ***In defining an Environmental Justice Community, how should the IPA weigh factors such as (i) Income, (ii) Race/Ethnicity, (iii) Environmental Impacts, (iv) Regional Economic Conditions, or (v) Other demographic factors? What environmental impacts should the IPA prioritize, and what other factors should the IPA consider?***

We recommend that the IPA consider a combination of the following available resources in defining an environmental justice community (EJ community) and weighing various factors: the baseline policy from the Illinois Environmental Protection Agency (IEPA) for defining a "potential environmental justice community" and the definition from the United States Environmental Protection Agency (USEPA) of "overburdened community"paired with CalEnviroScreen indicators and methodology for "disadvantaged community" and the USEPA EJSCREEN environmental justice screening and assessment tool. In combination, critical factors such as income, race, environmental impacts, and more can and should be jointly considered when defining and locating EJ communities in Illinois.

The current IEPA policy for defining a "potential" EJ community was developed for use in implementing a public participation strategy for permits, programs and actions in potential EJ communities. We recommend that the IPA utilize additional indicators that go above and beyond this baseline to more accurately capture both the environmental context and demographic characteristics of communities as the initial means of assessment of environmental justice communities in the state. This should be paired with the option for self-identification as discussed in the subsequent response to Question 10.

IEPA Policy for Defining a "Potential" EJ Community

For thoroughness, the current IEPA definition and methods are included as a baseline reference. The definition is as follows:

> *A "potential" EJ community is a community with a low-income and/or minority population greater than twice the statewide average. In addition, a community may be considered a*

> *potential EJ community if the low-income and/or minority population is less than twice the statewide average but greater than the statewide average and that has identified itself as an EJ community. If the low-income and/or minority population percentage is equal to or less than the statewide average, the community should not be considered a potential EJ community.*[10]

USEPA Definition of "Overburdened Community"

USEPA's definition of "overburdened community" considers demographic characteristics and adds crucial additional indications of vulnerability to environmental hazards:

> *Overburdened Community - Minority, low-income, tribal, or indigenous populations or geographic locations in the United States that potentially experience disproportionate environmental harms and risks. This disproportionality can be as a result of greater vulnerability to environmental hazards, lack of opportunity for public participation, or other factors. Increased vulnerability may be attributable to an accumulation of negative or lack of positive environmental, health, economic, or social conditions within these populations or places. The term describes situations where multiple factors, including both environmental and socio-economic stressors, may act cumulatively to affect health and the environment and contribute to persistent environmental health disparities.*[11]

CalEnviroScreen Indicators and Methodology

We recommend that the IPA look to a system utilized in California named CalEnviroScreen to assist in defining an EJ community as a guide for both a subset of specific indicators, as well as an accompanying methodology for implementing and weighing indicators that could be adopted in the State of Illinois. The set of indicators is more inclusive than the baseline definition utilized in Illinois that only focuses on demographic characteristics, as well as the USEPA guidance that points to categories of impact, but does not delineate specific indicators. While CalEnviroScreen includes a strong set of indicators, we recommend the IPA ensure that race is included in the ultimate set of indicators adopted by Illinois to reflect both the existing IEPA policy and the federal guidance on overburdened communities from USEPA.

California Environmental Protection Agency (CalEPA) Office of Environmental Health Hazard Assessment (OEHHA) developed CalEnviroScreen, and the tool has been utilized in defining "disadvantaged communities" for the purposes of receiving climate mitigation investment opportunities in California. Similarly, the definition of environmental justice communities for the Illinois Solar for All program is mandated for the purposes of distributing incentives and solar energy access in accordance with statutory goals.

[10] http://www.epa.illinois.gov/topics/environmental-justice/ej-policy/index

[11] https://www.epa.gov/environmentaljustice/ej-2020-glossary

CalEnviroScreen scores are calculated from the scores for two groups of indicators: Pollution Burden and Population Characteristics. Pollution Burden represents the potential exposures to pollutants and the adverse environmental conditions caused by pollution. The indicators for pollution burden include:

- Air Quality PM 2.5 and Ozone,
- Diesel Particulate Matter,
- Drinking Water Contaminants,
- Toxic Releases from Facilities,
- Traffic Density,
- Cleanup Sites,
- Groundwater Threats,
- Hazardous Waste Generators and Facilities,
- Impaired Water Bodies and Solid Waste Sites and Facilities.

Population Characteristics indicators represent biological traits, health status, or community characteristics that can result in increased vulnerability to pollution. The indicators for population characteristics are:

- Age: Children and Elderly,
- Asthma,
- Low Birth Weight Infants,
- Educational Attainment,
- Linguistic Isolation,
- Poverty and Unemployment.

Many environmental indicators utilized in CalEnviroScreen 2.0 are publicly available via Illinois databases housed at IEPA and Illinois Department of Public Health (IDPH), among others. CalEnviroScreen also utilizes federal public databases available through USEPA. The information from Illinois agencies can be paired with federal databases for use in Geographic Information Systems mapping and implementation of identification methodology.

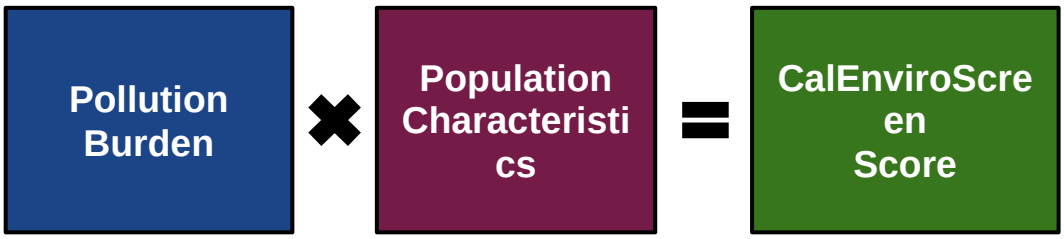
CalEnviroScreen Identification Methodology

The methodology that OEHHA uses to identify census tracts as disadvantaged communities in California combines the Pollution Burden and Population Characteristics. The overall score is calculated by combining the individual indicator scores within each of the two groups, then multiplying the Pollution Burden and Population Characteristics scores to produce a final score. Based on these final scores the census tracts across California are ranked relative to one another. Please see the text and models below for an explanation of how this method is used:

- Each census tract receives scores for as many of the 19 indicators as possible. Some census tracts will not have scores for every one of the indicators.
- For each indicator, the scores are put in order from highest to lowest. This allows us to calculate a percentile for all areas that have a score.
- The Population Characteristics score for a census tract is the average of the percentiles for all the Sensitive Populations indicators and Socioeconomic Factors indicators for that census tract.

- The Pollution Burden score is the average of the percentile scores from Environmental Effects and Exposures indicators.
- The Environmental Effects indicator percentiles are divided in half because California considers environmental effects to make a smaller contribution to pollution burden than exposures do.
- To get the CalEnviroScreen score, multiply the Pollution Burden score by the Population Characteristics score.
- Communities at the top 25% of scores relative to the state's range of scores qualify as disadvantaged.

Pollution Burden	***Population Characteristics***
osures • Ozone Concentrations • PM2.5 Concentrations • Diesel PM Emissions • Drinking Water Contaminants • Pesticide Use • Toxic Releases from Facilities • Traffic Density	nsitive Populations • Age: Children and Elderly • Asthma Emergency Department Visits • Low Birth Weight Infants
vironmental Effects • Cleanup Sites • Groundwater Threats • Hazardous Waste • Impaired Water Bodies • Solid Waste Sites and Facilities	cioeconomic Factors • Educational Attainment • Linguistic Isolation • Poverty • Unemployment



USEPA EJSCREEN

EJSCREEN[12] is a USEPA environmental justice screening and mapping tool that utilizes standard and nationally-consistent data to highlight places that may have higher environmental burdens and vulnerable populations. The tool provides both summary and detailed information at a high geographic resolution for both demographic and environmental indicators. While as a standalone tool, it is inappropriate to utilize EJSCREEN in identification of EJ communities, combined with the methodology from CalEnviroScreen and guidance from existing IEPA and USEPA baseline policies, it serves as a unique mapping resource that IPA can leverage in implementation.

[12] http://www.epa.gov/ejscreen

Collaboration & Ongoing Updating

We recommend the IPA collaborate closely with the Illinois Commission on Environmental Justice, the IEPA, the Illinois Department of Public Health, and the USEPA in both obtaining the necessary indicator data and leveraging mapping tools and capacity to implement methodology that allows the agency to weigh and incorporate the environmental and demographic indicators. We also recommend that the IPA include in its program design annual updates and additions to the initial criteria used in identification of "EJ communities" as state and federal databases are updated and new indicators are added and as additional relevant factors for environmental burdens and demographic vulnerability come to light via self-designation.

10. What level of community self-designation should be considered (or community ability to decline designation)?

Self-designation and ability to decline designation is critically important. Self-designation is particularly for communities who are in rural areas captured with less accuracy in environmental harms data, communities affected by recent environmental harms that would not be tracked in the most recent national and state databases, and communities affected by environmental harms for which database-level indicators and tracking is unavailable. Such communities should be given a means through which they can demonstrate environmental harms, demographic vulnerabilities, and qualitative and quantitative justification for self-designation as a supplement to methodology proposed on mapping environmental justice communities.

Additionally, the current IEPA policy for defining a "potential" EJ community referenced above in our response to Question 9 sets a baseline precedent for self-identification based on core demographic characteristics in Illinois. As with initial identification of environmental justice communities per our response to Question 9 above, we recommend that the IPA consider a broad range of indicators that speak to both environmental and demographic characteristics of communities when reviewing self-identification of environmental justice status from communities that are not clearly captured in any initial identification.

Consumer Protections

11. ***What additional consumer protections should be specific to the Illinois Solar for All programs above and beyond the consumer protections offered more generally to participants in the Adjustable Block Program?***[13]

The most insurmountable barrier for low-income homeowners is the financial barrier to access solar. [14]

[13] See slides 41 to 46 of the Illinois Solar for All workshop presentation, https://www.illinois.gov/sites/ipa/Documents/Solar-forAll-presentation-20170518.pdf, for an overview of some possible consumer protections.

[14] "SB 350 Low-Income Barriers Study, Part A - Commission Final Report," December 15, 2016, pg. 35-37. http://docketpublic.energy.ca.gov/PublicDocuments/16-OIR-02/TN214830_20161215T184655_SB_350_LowIncome_Barriers_Study_Part_A__Commission_Final_Report.pdf

Low-income homeowners generally are unable to contribute out-of-pocket financing toward a solar electric system. They typically are adverse to taking on more debt with a loan, even a low or no interest loan, and generally lack the credit-worthiness or capital necessary to purchase or finance rooftop solar. Moreover, income-eligible homeowners are less likely to have the tax liability to allow them to take advantage of the federal Investment Tax Credit (ITC). Consumer protection issues can arise from this financial barrier if families are offered a subprime solar deal that may not result in long-term savings, or a solar loan/lease product that could result in a negative economic outcome.

The ILSfA third-party program administrators should all be non-profits to ensure that the maximum economic benefit and interests of income-eligible participants are at the forefront of the ILSfA Program areas, including ensuring opportunities for auxiliary benefits. A dedicated third-party program administrator that can act as a consumer advocate and offer participants contractual support and guidance throughout the process. The IPA should utilize multiple third-party program administrators that have expertise in certain project types and program areas. Using multiple administrators who have greater specialization in the program areas will ensure dedicated commitment to consumer protections within each program area, especially for single-family rooftop projects.

Consumer protection issues will arise around financing solar if low-income families are not protected from subprime solar financing schemes or are offered options that will not have a long-term net positive economic benefit. Dedicated attention to prevention is a critical role for the third-party program administrators.

Distributed Generation

Under ILSfA, the DG Program should adopt a similar third-party program administrator role to California's Single-family Affordable Solar Homes (SASH) program to ensure consumer protections for single-family rooftop projects – both host customer owned and third-party owned (TPO) systems. The statewide program administrator for SASH ensures that all systems are cash-flow positive for a low-income household from day one. Incentives are deliberately set at a level to cover a significant percentage of the system cost. Any gaps in financing between the available incentive and the system cost are filled by the program administrator, a non-profit organization that contributes proceeds from a third-party ownership (TPO) arrangement and its own philanthropic fundraising to projects. Under the SASH TPO offering, participating households have no financial liability to the system owner. The SASH program's TPO model must meet 12 baseline consumer protection minimum standards[15], including ensuring customers receive at least 50% of the savings, as compared to standard utility rates, from the solar generating equipment. The baseline consumer protection standards are listed below and were developed with stakeholder input, including extensive input from the SASH program administrator.

1. Ensure SASH customers receive at least 50% of the savings, as compared to standard utility rates, from the solar generating equipment;
2. Reduce or eliminate barriers for customers with poor credit (low FICO scores) to qualify and participate;

[15] Decision 15-01-027, January 29, 2015. "Decision Extending the Multifamily Affordable Solar Housing and Single-family Affordable Solar Homes Programs within the California Solar Initiative," pg. 56.

3. Address concerns that homeowners may have about moving or selling their home during the TPO contract term;
4. Cover maintenance, operations, inverter replacement, and monitoring;
5. Prohibit liens on homes;
6. Minimize the risk to the low-income customer that the solar system would be removed for delinquent payments;
7. Ensure that all costs are apparent and up front and that there is no risk that the TPO deal would result in an additional financial burden to the family;
8. Standardize financial terms for low-income customers where possible;
9. Protect the customer against terms that could change after contract signing;
10. Require that TPO agreements note the potential for additional costs associated with the contract, if applicable;
11. Require the TPO provider to clearly explain that rate changes will affect the economics of a power purchase agreement; and
12. Require that TPO agreement provisions spell out what happens in the event that the solar financing company defaults.

In practice, the minimum 50% savings is a "floor," as most SASH households participating in the TPO model realize 80% savings or higher. (However, the ILSfA notes that if the appropriate incentives do not exist, then developers should not be required to meet a 50% reduction in energy bill savings but should still be responsible for providing tangible economic benefits flow directly to program participants.) The SASH program administrator serves as a liaison between the third-party system owner and the low-income household, and functions as a consumer advocate. In addition to the ILSfA DG Program TPO offering meeting or exceeding the 12 baseline consumer protection standards in the SASH TPO model, it is important that participating families in the TPO structure:

- Have support and guidance from a trusted, third-party (such as a program administrator) to review contractual terms, rights, and obligations.
- Receive accurate cost savings estimates based on current utility rates and net energy metering, and system production, and are advised that utility rates and structures can change.
- Understand all rights and obligations, specifically around maintaining shading at the site, allowing access for service calls, etc.
- Understand options for system removal at the end of the agreement term.
- Are aware of the process for transferring the agreement if they move or sell their house during the agreement term.
- Are provided a production guarantee and operations and maintenance coverage for the entire agreement term.
- Have marketing materials, documents and contractual explanations translated into the language they speak in the home.

The DG Program third-party program administrator should be responsible for all marketing and outreach (via its direct outreach partners, including community based organizations (CBOs)), application intake/income verification, developing financing models (including TPO), installations, coordinating with subcontractors, publishing semi-annual program reports, and ensuring free hands-on and paid job training opportunities are available statewide. Installation contracts should also be directly with the

program administrator (i.e. contractor of record).

Community Solar

Capacity. Developers that take advantage of ILSfA incentives should be required to keep capacity allocated to low-income subscribers for the life of the project years (so developers don't switch capacity to non low-income after 5 years).

Disclosures and Marketing Materials. The third-party program administrator should produce a disclosure form and guide(s) similar to the materials used in Minnesota's Xcel Energy Community Solar Garden program.[16] Additionally, the third-party administrator should produce standardized marketing and outreach material. The third-party program administrator should offer training to prospective community solar providers regarding marketing guidelines and disclosures.

Standard contracts. The third-party program administrator should develop standard contracts that community solar operators will use to transact with low-income subscribers. In unique situations in which a standard contract may not apply, the third-party program administrator can provide technical assistance to arrive at a workable solution.

Creditworthiness. Similar to Maryland's three-year Community Solar Energy Generating Systems (CSEGS) pilot program, a developer or subscriber organization should apply uniform income, security deposit, and credit standards for the purpose of making a decision as to whether to offer a subscription to customers within a given class, provided that the developer or subscriber organization may apply separate sets of uniform standards for the purpose of promoting participation by income-eligible retail electric customers.

Consumer Protection Measures. All of the California SASH TPO program consumer protection measures that are not solely applicable to rooftop installation should apply to community solar. The minimum standards are described above.

Bonds. The IPA could consider requiring a modest bond from community solar providers under the ILSfA Program. As described in our answer to question C-15, care should be taken to ensure any such requirements do not impede the successful development of projects.

12. *What does providing that "tangible economic benefits flow directly to program participants" imply in terms of either upfront payments to participants and/or assurances that participation creates a positive cash flow?*

Income-eligible household participants in ILSfA should have a cash-flow positive experience from day one and have, ideally, no financial liability to the system owner; however, should any particular financing model require financial liability from eligible households, then the savings from the solar should far exceed the payment.

[16] http://www.cleanenergyresourceteams.org/sites/default/files/CommunitySolarGarden_DisclosureChecklist_12-11-14_0.pdf

Additional value/benefits/incentives should be added to the wholesale market value of the energy for eligible low-income participants in order to get to a tangible economic benefit that ensures eligible participants are cash-flow positive from day one and receive maximized savings at the household level as a result of solar access under ILSfA. Yet another reason it is imperative that projects built under the ILSfA Program have access to the ABP to ensure a cash-flow positive experience and that tangible economic benefits flow directly to program participants.

Appendix D

Matrix of Key Program Elements

Prepared by Elevate Energy

The following matrix illustrates how various program segments could interact with program elements, including system size, incentive levels and eligibility. These are intended to simply illustrate the connections between program elements and not necessarily to advocate for specific definitions or levels. However, these elements were included based on what is likely a realistic starting point for their individual values.

Program	Size	Incentive	Eligibility	Energy Efficiency Integration		
				Level 1	Level 2	Level 3
Single-family	2 kW to 5 kW	Fully installed	Owner-occupied, permanency, < 80% AMI	No Verified Energy Efficiency work	Verified Measures taken (X # of EPA recommended	Energy Star certified
				Up to 2 kW; no upfront costs	*Up to 3 kW; no upfront costs*	*Up to 5 kW; no upfront costs*
2-4 units (same as or part of single-family)	2 kW to 5 kW	Fully installed	Owner-occupied, permanency, < 80% AMI	No Verified Energy Efficiency work	Verified Measures taken (X # of EPA recommended measures)	Energy Star certified
				Up to 2 kW; no upfront costs	*Up to 3 kW; no upfront costs*	*Up to 5 kW; no upfront costs*
5+ units	5 kW to 10 kW	$.75 - $1.50 /Wt	Census tracts with < 80% AMI or verified income of at least x% of tenants.	No Verified Energy Efficiency work	Verified Measures taken (X # of EPA recommended measures)	Energy Star certified
				Up to 5 kW	*Up to 10 kW*	*Up to 25 kW*
				$.75 / Watt; 20-30% of installed cost	*$1.00 / Watt; 20-30% of installed cost*	*$1.50 / Watt; 20-30% of installed cost*
Nonprofit/Public Sector	Up to 500 kW	$.75 - $1.50 /Wt	Nonprofit or Public Sector owned property	No Verified Energy Efficiency work	Verified Measures taken (X # of EPA recommended	Energy Star certified
				Up to 100 kW; 20-30% of installed cost	*Up to 250 kW; 20-30% of installed cost*	*Up to 500 kW; 20-30% of installed cost*
Community solar incentives	Up to 100% of load	25% to 50% of the monthly panel lease cost; 25% to 50% of upfront panel purchase price. *(no panel purchase perhaps?)*	< 80% of AMI for household	NA	NA	NA

Appendix E

Sample Community Solar Registry

Prepared by Mark Burger, Consultant, Seven Generations Ahead

I have been concerned with how the community solar market will work, particularly for the low and moderate income household markets. Concerns include transparency of transactions and the ability to gauge the market. Therefore I created a straw man of what a registry of community solar markets might be. This is borrowed from an online directory program for alternative retail electricity suppliers (ARES) though in greater detail. The information that could be available would flow from what the directory entity deems appropriate in program administration as well as from other administrative actions like standard offerings, forms, etc. The idea here is that a perspective subscriber could look at one place for community solar offerings, in terms of price, term lengths, geographic and Restrictions. This would be posted on the directory agency site. Even If much of the public doesn't access this site, it will serve as a market indicator. I put this brief sample of a spreadsheet to see what interest there would be in using such a resource and how it could finally look.

Thanks,
Mark Burger, Consultant, Seven Generations Ahead

SAMPLE COMMUNITY SOLAR REGISTRY DRAFT 7/5/17

PROJECT	ZIP	SIZE	ACCEPTING CUSTOMERS	ELECTRIC SUPPLY COSTS $/KWH	NON PROFIT LMI COST $/KWH	TERMS	DEVELOPER	CUSTOMER MNGMT ORG	WEBSITE	NOTES
Southland Community	ABCDE	2 MW	Yes	$0.055	$0.048	3 yr min, 1 yr min nonprofit lo mod inc	SAC ASSCS, LLC	South Land Solar	SouthLandSolar.com	Priority for zip codes BCDEF, CDEFG, DEFGH, EFGHI, FGHIJ
Green Lagoon Commercial	GHIJK	2 MW	YES	$0.041	NA	Minimum purchase 100,000 kWh-yr, 7 yrs	XYZ SOLAR, INC	XYZ SOLAR, INC	XYZSOLAR.C0M	
Grove Hill Development	HIJKL	100 kW	YES	$0.059	$0.049	1 yr minimum	Grove Hill Solar	South Land Solar	SouthLandSolar.com	Priority for IJKLM zip code
People's Power	JKLMN	200 kW	NO	$0.058	$0.044		Peoples Venture, Inc	South Land Solar	SouthLandSolar.com	Accepting applications when capacity

Appendix F

Pyramid Block Structure

Prepared by Central Road Energy

Pyramid Block Structure

by

Central Road Energy, LLC

Jay Corgiat, Ph.D.
Managing Member

July 4, 2017

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2 INTRODUCTION

In the past, the IPA has conducted power procurement with a very simple goal – to get the best price from the market. The Future Energy Jobs Act (FEJA) has tasked the Illinois Power Agency (IPA) with creating an Adjustable Block Program (ABP) to award REC contracts for the development of new solar energy projects in Illinois and to distribute money from the Renewable Energy Resources Fund to provide low income (LI) residents with access to the benefits of solar power under the Illinois Solar for All Program (ILSfA). The FEJA requires the IPA to meet many additional considerations in these programs beyond just low price including equitable geographic distribution of projects, encouragement of particular ownership scenarios, and maximizing benefits to LI participants. In addition, stakeholders have advocated for many goals on top of these requirements such as the encouragement of residential community solar over commercial and industrial community solar.

We advocate a pyramid block structure for both the ABP and for the ILSfA program. The pyramid block program is simple, transparent and allows the IPA to systematically meet the many requirements and goals of the FEJA. With a pyramid block structure, projects can choose to participate in the block that provides them the best chance for project selection at the price that they need to make the project economically viable. This structure also helps safeguard rate payers by limiting the potential impact of the IPA setting a block price that is too high.

2.1 The Pyramid Block Structure

The Pyramid block structure consists of three to four blocks per program subcategory (e.g., project <=10 kW) with the number of RECs offered in the higher priced blocks smaller than that offered in the lower priced blocks (hence the pyramid). A second tier of pyramid blocks should be available for projects that qualify for the ILSfA program. These subsidies would be treated as "adders" to the ABP REC contract.

To qualify for a particular block within a subcategory, the project must have a "score" that meets a pre-determined block minimum (a "qualifying score"). The qualifying score is based on a point system, where desirable project attributes score points for the project. The total amount of all the block sizes should be based on the number of RECs needed for the year divided by the number of projected block openings. Block sizing should be consistent between events or slightly larger in the initial event. The program would close for the year when the money allocated for the program for that year is committed. The goal would be to have blocks opening and closing throughout the entire year.

An example of a pyramid block structure for the ILSfA adder is shown in Figure 1. Figure 2 shows an example of some potential criteria with values. The process for awarding REC contracts and ILSfA adders would consist of project qualification, scoring, block opening and closing, and contracting. These components of the process are discussed in the following sections.

Figure 1. Example pyramid block structure for the ILSfA program

	SFA Total Block REC	175,000			
	LI Community Solar Pilot	25%			
		43,750			
		DG		**Non Profit/Public**	**LI Comm Solar**
		22.5%		37.5%	25.0%
	Stakeholder Adjustment	0.0%		0.0%	0.0%
		22.5%		37.5%	25.0%
		34,743		57,904	38,603
		DG Small (<=10 kW)	DG Large (>10kW)		
		25%	75%		
	Total Allocation	6%	17%		
	Total Allocation RECs	8,686	26,057		
		points			
50+ Point Block	Allocation	10%	6%	2.5%	7%
	Price	$200	$100	$115	$85
	Size (RECs Annual)	869	1,563	1,448	2,702
	Total Block Offer	$2,605,699	$2,345,129	$2,497,128	$3,445,313
20+ Point Block	Allocation	15%	33%	26%	30%
	Price	$150	$75	$100	$65
	Size (RECs)	1,303	8,599	15,055	11,581
	Total Block Offer	$2,931,411	$9,673,656	$22,582,721	$11,291,360
10+ Point Block	Allocation	75%	61%	72%	63%
	Price	$100	$50	$85	$45
	Size (RECs)	6,514	15,895	41,402	24,320
	Total Block Offer	$9,771,369	$11,921,071	$52,787,109	$16,415,901
	Rec Sum	8,686	26,057	57,904	38,603
	Offer Sum	$15,308,479	$23,939,855	$77,866,958	$31,152,574
	Total:				**$148,267,865**

Note: The numbers used in this Figure are not recommendations but are rather to show how the model interrelates between the different project types within the ILSfA program.

Figure 2. Examples of Possible Point Criteria

Criteria		
	Ownership	
	Minority/Female Owned	5
	Comm Org Participation	10
	100% Comm Org	20
	Location Criteria	
	Solar Array in Env Justice Comm	5
	Beneficiaries In EJC	20
	Brownfield	5
	Geographic considerations	
	Cook County	20
	Collar Counties	10
	Array Size	
	<100kW	10
	100-500 kW	5
	>500 kW	1
	Economic value of electricity (%EVE)	
	>90%	10
	>60%	5
	>50%	Minimum

Note: The numbers used in this Figure are not recommendations but are rather to illustrate how scoring can reward projects for meeting the stated goals of the FEJA. This list is not comprehensive.

3 PROJECT QUALIFICATION

In the qualification process, an applicant would go to a web page to register their potential project for participation in the ABP and, if the project meets program requirements, the ILSfA adder. Included in the registration process would be a list of project attributes for which points can be awarded to the project. The possible point total for those attributes, the documentation that must be provided to award the points to the project, and the approval of the third-party administrator for those points would be included in, and conducted as part of, the qualification process. The qualification process would be continually open with project registration good for a set time (e.g., one year from the time of approval). During that set time, the project can request a contract for RECs in any open block or adder for which they qualify.

3.1 Minimum ABP Qualifications

An applicant to the ABP (and the ILSfA adder) should be required to demonstrate control of the proposed site location (e.g., site ownership, option to buy, site lease, or option for site lease), have filed an interconnection application, and have the necessary property entitlements in hand such as letters of intent with community organizations or potential subscribers and local permits and zoning approvals.

The applicant should be provided the standard agreements, permits, licenses, guarantees, certifications, and/or warranties that will be required of the project. As part of their bid package the bidder should sign an agreement that they have reviewed and understand these legal documents and are willing to sign them if their project is awarded a REC contract.

The applicant should include a description of the ownership structure for the project that includes a description of the corporate entity, a list of owners of the entity (or description of targeted LI owners if the project is so structured), management or responsible parties, and the percentages of ownership for each entity (or how the percentage will be determined). Each owner should specify if they are non-profit, governmental, or private entities and if any of the owners have been involved in a bankruptcy, criminal investigation, or litigation. If applicable, ownership percentages that change over the course of the project and at the end of the project should be described. The IPA should vet ownership to disqualify "bad actors" from participating in the program. Qualification applications from owners or with leadership that has a history of bankruptcy, criminal investigations, and litigation that is not readily explainable should be rejected.

For community solar projects, a minimum subscription percentage should be required. At least 40% of the project should have a subscriber, which is the maximum size of a single subscriber.

A demonstration of financial wherewithal by the applicant ensures that the project can move forward expeditiously if the RECs are awarded and that money is available to complete and operate the project if the applicant starts but fails to complete construction or cannot successfully operate the project. Financial wherewithal can be demonstrated by a refundable deposit, a letter of credit (LOC) or a cash deposit. The total dollar amount for REC bidding at the IPA is currently based on the number of RECs in the bid and a fixed $/REC amount (currently $4/REC). This money is held by the IPA until the project is energized and returned to the bidder if the project is not selected. A similar requirement could be employed for the ABP.

The IPA should also charge a non-refundable qualification application fee that helps defer the costs associated with running the pyramid block programs. This fee could be reduced or waived for private-non-profit partnerships, non-profits, and governmental entities.

3.2 Minimum ILSfA Qualifications

In addition to the minimum submittal requirements for the ABP, the ILSfA program has additional unique requirements that should be addressed as part of the qualification procedures. One of the most important

ILSfA criteria of the law is the requirement that the "Program shall include an approach, as set forth in the long-term renewable resources procurement plans, to ensure the wholesale market value of the energy is credited to participating low-income customers or organizations and to ensure tangible economic benefits flow directly to program participants." The qualification application for an ILSfA project should clearly state the LI (LI) beneficiaries targeted by the project, reasonably estimate the percentage of the economic value of the energy (%EVE) generated that will benefit the LI beneficiaries, the projected number of beneficiaries served, and the yearly dollar value of the benefits per beneficiary. The assumptions (e.g., power pricing, electrical usage of the LI beneficiary) and calculations used in this determination should be documented. An estimate of any revenue generated through energy production that does not flow to the beneficiaries (e.g., Operation and Maintenance) should be subtracted from the total amount of projected energy revenue. Based on the above calculations and using the maximum % allowed by the law for the anchor tenant (40%), the minimum total benefit to LI beneficiaries should be a %EVE of 60%. The applicant should also describe any additional economic value beyond %EVE that may accrue from the project to the LI Beneficiaries.

For example, a community solar project that has an anchor tenant with 15% of the project would be expected to provide the economic value of 85% of the power generated to the LI Beneficiaries. This assumes that the money generated by the sales of electricity to the anchor tenant is not going to the beneficiaries but rather is the sole source of money used to pay for operations, maintenance, and management. For a 2 MW project and using a 9000 kWh/yr average usage for an Illinois house, a capacity factor of 14.38%, and an energy supply price of $0.05/kWh, the value of the benefit to the LI beneficiaries is $107,073/yr. Using a 50% power offset subscription, the potential number of beneficiaries served for the above described scenario is 476, each of whom would each receive $225/yr or $18.75/month. This evaluation may require outreach and education for developers on the part of the program administrator as well as standard set of assumptions. The program administrator could provide standardized tools (e.g., pre-formatted spreadsheets) to perform and submit these calculations.

An additional goal of the program is to encourage community and community organizer ownership of projects. The law requires that "The developer of each project shall identify its partnership with community stakeholders regarding the location, development, and participation in the project." The greater the involvement of the community, the more likely the long-term success of the project. Consequently, the applicant should describe the community outreach conducted and the community and community organizer ownership that will occur over the life of the project.

The law also requires that "a minimum of 25% of the incentives for this program be allocated to community photovoltaic projects in environmental justice communities." Consequently, the application for participation should include a map showing the location of the proposed project and the location of the community the plant is intended to serve. The application should specify if the project and/or the LI beneficiaries are in an environmental justice community.

4 SCORING

Different scoring criteria should be applied to the different type of solar projects to meet the goals and requirements laid out by the FEJA and expressed as desirable by stakeholders. The following describes different criteria within the law or stakeholder goals of the program and how points can be awarded to meet those criteria and goals.

4.1 Adjustable Block Program Scoring

One concern expressed by stakeholders is the differential cost between different project sizes that would not be addressed with a single block price without creating many different blocks. Beyond the major break

points (e.g., 10 kW) that warrant the establishment of individual pyramid blocks, the pyramid block structure can address the cost differential between finer subdivisions of DG project size by awarding the project size that the IPA wants to encourage with more points. This would help qualify the project for a higher block price within its subcategory without limiting other worthwhile projects that also qualify for a particular block. If the IPA does not see adequate participation at a particular system-size level, additional points can be awarded for that particular system size to incentivize additional development and/or the block price can be adjusted.

One possible approach to address concerns related to the distribution of projects in the state is for the state to be divided into regions and SREC amounts assigned to each region based on rate payer contribution to the program. Each region would have a pyramid block structure established for that region. For example, the state could be divided into a ComEd region, an Ameren St. Louis Metro Region, and a MidAmerican/Ameren (non-St Louis Metro) Region. An example of this type of structure is shown in Figure 3 for the ILSfA program. The numbers used in the example are placeholders for illustration purposes only.

Figure 3. Geographic Distribution of RECs Available for Blocks

SFA Total Block REC	175,000		
LI Community Solar Pilot	25%		
	43,750		
	Ameren - St Louis Metro Region	ComEd Region	MidAmerican/Ameren (non-St Louis Metro) Region
Geographic Distribution	15%	75%	10%
SFA Region Block (RECs)	19,688	98,438	13,125

Note: The numbers used in this Figure are not recommendations but are rather to illustrate how a multi-pyramid approach can help accomplish the geographic diversity goals of FEJA

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With the pyramid block structure within each region, further fine tuning of geographic distribution issues can be addressed by providing additional points to more specific geographic regions.

The pyramid block program also provides a means to address issues related to co-location, should it become a problem or if the IPA wants to discourage this practice. Co-location can be addressed by subtracting points for projects that are co-owned or co-developed and are located within a specified distance (e.g., 5 miles) of each other. For example, if an owner is proposing a new project that is within 5 miles of an existing project, the score for the new project should lose 10 points. If two projects are pending for a block at the same time, one of the projects should have the points subtracted.

4.1.1 Community Solar-Specific Scoring

For community solar to be successful, projects must get constructed, especially at the start of the program. Speculation that fails to build and energize solar projects could sour the industry for residents and businesses. To discourage speculation, especially at the start of the ABP and the ILSfA programs, the IPA should encourage projects that have subscribers lined up prior to development. Points should be awarded for subscriptions to a project, so the more fully subscribed the project, the better the chance the project has for being selected for a REC contract. For example, for a project that is 100% subscribed, 15 points could be awarded. The 15 points could be multiplied by the % subscription rate for anything less than 100% (e.g., a project that was 75% subscribed would get 11.25 points). The awarded points can be adjusted to allow speculation as the industry matures.

Furthermore, we feel that robust participation by residential subscribers is very important to the long-term acceptance and adoption of solar power policies in the state. The IPA should target 85% residential/15% C&I mix of community solar projects. The pyramid block scheme can be used to meet this target. The

IPA could use the point system to differentiate between commercial and industrial (C&I) and residential community solar projects. For example, the IPA could award 20 points to a residential community solar project and 10 points to a C&I community solar project. A project that was 50% residential with a 75% subscriber base for the residential portion and a 100% subscriber base for the C&I would be awarded 12.5 points (20 points * 50% *75% + 10*50% = 12.5). The amount of points awarded for C&I solar projects can be decreased substantially (or even made negative) if the IPA determines that too much C&I solar is being developed.

4.2 ILSfA Scoring

The value of the benefit to the LI community should be the major scoring factor in the block qualification process. A higher %EVE project should be favored over a lower %EVE project. For example, a 100% EVE could score 30 points. The amount of points scored for a project with less than 100% EVE should be the %EVE multiplied by 30. There should be a mechanism to favor the selection of projects that demonstrate additional economic value beyond the %EVE. For example, a project that can demonstrate that benefits beyond the term of REC contract will be provided to LI beneficiaries should score additional points.

Another example of a standard that exists for the ILSfA but not the ABP is the electrical efficiency clause in the law. The law states "The objectives of the Illinois Solar for All Program are …to integrate, through interaction with stakeholders, with existing energy efficiency initiatives…". Furthermore, an unintended consequence of supplying subsidized power may be an increase in energy usage by the beneficiaries. Therefore, the registration process should include a means to submit any plans that the applicant may have to implement or encourage energy efficiency for the LI beneficiaries.

The plan should describe how the project will encourage, educate, and/or incentivize energy efficiency measures amongst the LI beneficiaries the project will serve. If possible, the applicant will describe the metrics that will help evaluate the success of the energy efficiency efforts. These metrics should be included in annual reports to the program administrator. The better the electrical efficiency implementation, the more favored the project should be for selection. The project should be awarded points for the ILSfA pyramid block for an effective plan. For example, a plan can be awarded a score of one to five points by the ILSfA third-party administrator based on criteria they establish for an effective plan.

For the ILSfA, a goal of the law is to have projects proportionally distributed to LI communities throughout the state. Furthermore, the law requires that "a minimum of 25% of the incentives for this program be allocated to community photovoltaic projects in environmental justice communities." ILSfA block points should be awarded for the location of a project and/or LI beneficiaries that are within an environmental justice community. By increasing a potential project's points total, the applicant has the ability to participate in a higher priced block effectively creating "differentiated pricing".

The pyramid block structure also can address issues related to solar installations at ILSfA-qualified multi-family buildings. An ILSfA pyramid block specifically for multi-family building can be established or additional points awarded to multi-family building projects under existing blocks. We advocate the prioritization of non-profit and public facilities solar development for those non-profits and public facilities that serve or are associated with LI communities. If the pyramid block structure were adapted, points could be awarded to projects that meet these criteria.

5 BLOCK OPENING AND CLOSING

The blocks that comprise a pyramid should open and close together on a regularly scheduled basis. A pyramid of blocks would be open for a short time (e.g., a week) during which qualifying projects could

request REC contracts at the offered block price for any block for which the project qualifies. When a pyramid of blocks closes, the next pyramid of blocks should be opened as soon as possible. For small DG, the goal should be to have a pyramid of blocks open continuously. For larger projects that consume more of the REC money, the pyramid of blocks can open once monthly or at even lesser intervals depending on response and program goals.

After the blocks close, a project's score would prioritize that project's selection within a block. If necessary, projects with identical scores within a block should be chosen by lottery. This incentivizes a project to bid into the lowest-priced block that works for the project because a higher scoring project would have a better chance to be selected within a lower qualifying-score block.

5.1 Block Pricing

5.1.1 Initial Block Pricing

For the ABP. the initial block pricing should be estimated using a probabilistic cost model. Probabilistic cost estimating involves defining distributions of potential values for each uncertain variable (input) in a spreadsheet cost model. The inputs for the model should draw from current literature and stakeholder involvement. Once the distributions have been defined for each input, the model is analyzed using Monte Carlo simulation. In a Monte Carlo simulation, a single value is randomly generated from the defined distribution of potential values for each of the input variables in the model. This process is repeated 10,000 times (or as many times as the modeler chooses) and the results of each "trial" are tracked. Once the simulation is complete, the results are statistically analyzed providing a range of possible outcomes as well as the probability of a particular outcome occurring. In addition, modeling could help quantify and address the risk associated with the inputs as well as quantify input sensitivity to model output.

A probabilistic cost model should be established for each different subset of project that has a block set (e.g., DG projects <=10kW, community solar). Developers could be invited to provide unit costs to the third-party administrator for consideration for incorporation in the model. The results of this modeling readily fit the pyramid block structure and could be the basis for the initial block offers. The outputs for projected total project costs in $/kW from the model are provided as a range of values with a probability for a particular value. For example, the top and smallest block of the pyramid could be initially set at the 85^{th} percentile value for that particular subset of project, The middle block at the 65^{th} percentile and the largest and lowest block at the 45^{th} percentile.

The NERL's SAM model provides a comprehensive financial analysis and can be found at: https://sam.nrel.gov/

Elevate Energy has developed a comprehensive model for community solar projects in Illinois available at:

http://www.elevateenergy.org/communitysolar/communitysolarbusinesscasetool/

Both these models would need to be modified for a probabilistic approach.

For the ILSfA program, the end value of the paired ABP and ILSfA incentives must be an incentive level that allows developers, installers, or the non-profit third-party program administrators to offer solar at no upfront cost to the income-qualified participant with near term significant economic savings realized by the household. For this goal to be achieved, the ILSfA pyramid blocks could initially be set using a cost-based approach similar to that described above for the ABP using input provided from stakeholders.

5.1.2 Subsequent Block Offers

After the first block, a market based approach should be used. Adjustments to the block offer and/or qualifying score adjustments can be made by the IPA based on participation rate within each block and the goals of the program. For example, if a particular geographic area is getting a disproportionate share of solar projects, the points awarded for "location" can be decreased for that particular area. If a block is oversubscribed and the block below is undersubscribed, The IPA could increase the undersubscribed block offer or, conversely, lower the oversubscribed block offer or change the point total required to qualify for a particular block.

6 CONTACTING

A REC contract should include a definitive amount of time to build, energize, and register a project in an applicable tracking system to deliver RECs to the contract counterparty (i.e., the utility). The current process gives the awardee 12 months from the bid date. Because of the added complexity of coordinating community organizations and LI subscribers, a more realistic timeframe may be 18 months for ILSfA community solar projects. As with the current process, a bidder should be able to request a six-month extension upon demonstration of project delays that do not otherwise jeopardize the successful completion of the project; that extension should be granted at the IPA's sole discretion.

The REC contracts for facilities over a certain size or aggregators that aggregate REC contracts over the size limit (e.g., 3000 RECs) should define the requirements under which the facility or projects must be built and operated. The contract should include the reporting requirements for the facility or aggregator, the financial assurance requirements, and the fines/penalties that the facility would incur should it not meet the requirements of the permit. For example, ILSfA projects require information from owners for program evaluation by the third-party administrator. What information, how this information is to be provided, and when the information is due to the third-party administrator should be defined in the REC contract. The contract should also define penalties in the event that the permit is violated. The REC contract should not be considered fulfilled until all the RECs promised are delivered to the IPA regardless of the time it may take to produce those RECs, whether shorter or longer than the projected 15 years.

The contract should also define how the transfer of ownership of a facility must occur and the requirements for that transfer. The new owners must assume the responsibility for providing financial assurance and insurance. In addition, the new owners must demonstrate, agree to, and provide whatever documentation is required as part of application to participate in the adjustable block program (and the ILSfA program, if the project is an ILSfA project). Once the required documentation of ownership, financial assurance, and insurance are provided to the IPA, the IPA can issue a new contract for the facility/aggregator to the new owner.

6.1 Clawback Provisions

REC contracts for greater than a specified amount (e.g. 3,000 total) should require a performance bond to ensure construction of the facility. The performance bond can be set at a specified $/REC$_l$ rate. For example, a facility requesting a contract for 3,000 REC would need to post a $270,000 performance bond based on a $90/REC rate. The permit requirement that defines the necessary amount for the performance bond requirement could include a clause that specifies that the requirement no longer applies upon energization of the project. We believe these requirements are also prudent for the ILSfA program. Without this demonstration of financial wherewithal, ILSfA adders would be tied up with speculative projects for as long as two years before they failed and the money for the committed adders could be re-entered into the program. The success of the ILSfA program is contingent on projects getting built and operating.

Clawback or financial assurance mechanisms are vitally important to preventing abuse of the significant upfront funds that the State will be committing for the RECs from new solar projects, especially within the ILSfA program and its first-year upfront payment. We feel that larger projects that are loaded with debt either prior to or after completion are the most likely to fail. Consequently, we advocate basing financial insurance requirements on the project size and the amount of debt taken on by the project. For example, DG projects less than 10kW should not require financial assurance. However, aggregators that hold a total amount of small DG REC contracts greater than a specified amount (e.g., 3000 RECs) should be required to post financial assurance. Ownership, rather than company structure, should be the deciding factor in amount of solar aggregated. This prevents an owner or group of owners from forming a series of LLCs to stay below the specified total kW.

For projects or aggregate ownership over the IPA-specified REC amount, the project should post financial assurance to the contract counterparty (e.g., the utility for the ABP projects) in the form of a cash deposit, surety bond, or letter of credit. The amount of the financial assurance should be based on the amount of debt backed by the facility's assets relative to the project (or aggregate) size in kW multiplied by an "asset value" multiplier (AVM). If a project has greater than 50% debt to "asset value", financial assurance must be provided for every debt dollar over that amount. For example, if a 2 MWac project had a REC contract for $3M and the AVM was $1.50 /Wac, the amount of debt that the project could take on without providing financial assurance would be 50% of $3M or $1.5M. If the project had $2M worth of debt, financial assurance would be required on $500K. As part of the facility/ aggregator permit, the financial assurance amount should be recalculated yearly or when additional debt is taken on by the facility (i.e., the facility is used as collateral for new debt)

In addition to financial assurance, the REC contract and the permit should require adequate insurance and name the REC contract counterparty (e.g., the utility for the ABP) as an additional insured. Adequate insurance coverage should cover replacement cost for the solar installation in the event the solar array is destroyed or rendered non-functioning or the amount of the outstanding RECs, whichever is less.

A community solar project should post financial assurance to the contract counterparty for any unsubscribed portion of the facility's capacity below 95% in the form of a cash deposit, surety bond, or letter of credit. The amount of this additional financial assurance should be equivalent to the total amount of the outstanding REC contract multiplied by the % unsubscribed under 95%. This amount should be adjusted yearly over the first three years of the project. Three years after energization, the facility should have a 95% subscription rate. The IPA should have the ability to grant a one year extension to meet the prescribed subscription rate for extenuating circumstances. If the facility has not met the prescribed subscription rate within the time allowed by the IPA, the facility should forfeit the financial assurance and the permit rewritten to reflect the size of the facility that meets the 95% subscription rate. The RECs generated from the entire plant including the portion that is no longer deemed "community solar" continues to be the property of the contract counterparty until the contract's original number of RECs are received.

A community solar facility must maintain a 95% subscription rate. If the subscription rate falls below 95% for two years in a row, financial assurance will be required to be posted for the shortfall. The amount of financial assurance should be calculated as described above. The facility's permit should include the reporting and financial assurance requirements, if any, for subscription rates.

Financial assurance requirements become even more important for projects under the ILSfA program because these subsidies are paid in full upon energization. In addition, ILSfA community solar financial assurance requirements can encourage ownership structures that meet the stated goal of FEJA for the involvement of community organizations in ownership. By implementing financial assurance requirements and encouraging ownership or partial ownership of projects by legitimate, responsible community

organizations, "bad actors" can be discouraged from participating. A completely privately-owned enterprise or a "shell" community organization set up just for an ILSfA community solar project (herein referred to as a "Special Entity Community Organization") are the most likely ownership structures to abuse the subsidy. Consequently, these types of project structures should have the highest financial assurance requirements. Conversely, the risk of contract default diminishes with the participation of legitimate established community organizations and public entities (e.g., a housing authority). With the lowered risk, the amount of financial assurance can be reduced. Lower financial assurance costs will encourage these ownership scenarios.

The purpose of the ILSfA program is to bring the benefits of solar to LI individuals and households. Consequently, the commitment to deliver those benefits is as important as the commitment to deliver the RECs. The %EVE for ILSfA reported in the registration process should be a guarantee of the solar plant owners. The %EVE should be documented in the permit and should be required to be reported to the program administer annually. If the %EVE is not achieved, the owners can propose remedies and, if the owners do not meet their commitment to remedy the shortfall to the satisfaction of the program administrator and the IPA or the remedy agreement is violated, the IPA can trigger the financial assurance mechanisms of the REC contract.

We suggest that financial assurance requirements for ILSfA projects or aggregators over the IPA-designated minimum REC contract size be as follows:

- Privately-owned or Special Entity Community Organization: Cash deposit, surety bond, or letter of credit for 50% of the total outstanding RECs, 50% of the total estimated economic value of the energy (EEVE), and 50% of any debt taken on by the plant above the asset value calculation described above. The amount of the LOC can be recalculated yearly to reflect the reduction in the EEVE, the RECs delivered, and any debt paydown. The EEVE should be based on the %EVE commitment of the owner of the facility multipied by an IPA-issued energy value multiplier and the total amount of outstanding RECs under contract. For example, a 2 MW facility the commits to providing an 85% EVE would need to provide $461,000 in EEVE financial assurance for the first year of operation based on a $2.50/REC energy value multiplier and the 43,586 outstanding RECs.

- Private-LI community partnership and non-profit/LI community ownership: A non-profit, LI community organization ownership or a LI community partner must be an established organization that provides services beyond just the community solar project itself. To prevent the misuse of these non-profit companies (e.g., setting up a Special Entity Community Organization in a private-non-profit partnership), they must demonstrate a history of significant community involvement, have independent boards/leadership from any teaming partners, and have a history in the actual or similar LI community that the project is planning to serve. The non-profit, LI community organization ownership or a LI community partner must be an owner in the project and have a significant role in company management. A cash deposit, surety bond, or letter of credit for 25% of the total estimated economic value of the energy dedicated to the LI beneficiaries and 25% of any debt taken on by the plant above the asset value calculation described above. The amount of the financial assurance can be recalculated yearly to reflect the reduction in the EEVE commitment and the debt paydown.

There should be no waiver for financial assurance or insurance requirements. However, the IPA should have the discretion to not invoke the provided financial assurance based on the circumstances that cause the potential delay in REC delivery or, for the ILSfA, the EEVE. For example, the destruction of a solar array by a weather event may cause the facility to not meet its REC obligation for a particular year. The

facility owner should supply a plan to the IPA to bring the facility back on line in a timely fashion and an agreement to replace the RECs lost (e.g., through an extension of the contract). The IPA should request a bond or other form of assurance that the insurance money will be used to reconstruct the facility or pay back the outstanding RECs. Should the plan be approved by the IPA, the financial assurance claims provisions would be waived while the plan is being implemented. Should the facility not be brought back on-line in accordance with the plan, the IPA can make claims against the financial assurance mechanism. The cost of outstanding RECs, if they are to be replaced rather than the facility rebuilt, should be based on the initial price paid for the RECs with interest based on a rate chosen by the IPA and a buyback penalty. The buyback penalty should cover the costs to replace the RECs that have been returned and the expenses incurred by the IPA to procure said RECs.

The ILSfA contract should state that "Revenue received for RECs should not hinder participants' eligibility in other benefits programs." The major received-revenue issues that would impact a subscriber's benefits should be expressly prohibited such as a cash payment. However, it is not possible to guarantee how a particular benefit from solar might impact an individual's benefits, especially with future unforeseen changes to tax and LI assistance laws.

Appendix G

Job Training Requirements from California Low-Income Solar Programs

This document contains text from California's Single Family Affordable Solar Homes (SASH) and Multifamily Affordable Solar Housing (MASH) programs that highlight how job training opportunities are incorporated into the requirements for the contractors carrying out the work.

SASH Job Training Requirements: Text pulled from SASH Handbook[2]

2.7 Job Training/Workforce Development Requirements

The SASH 2.0 Program is uniquely designed to incorporate job training programs intended to promote green-collar jobs in low-income communities and to develop a trained workforce that will help foster a sustainable solar industry in California. The SASH 2.0 Program is legislatively mandated to include a job training opportunity at every installation. In 2010, the SASH program administrator launched the Sub-contractor Partnership Program (SPP) in order to meet installation targets within the SASH program and provide paid job trainee workdays. If the project is installed in the SPP program, the sub-contractor must hire at least one eligible job trainee[3] to work on the installation. Both the sub-contractor and the job trainee must complete the SASH 2.0 SPP affidavit certifying the job training opportunity was provided.

In order to align with the industry standards, the below categories from the Affidavit are broken into the NABCEP job task analysis categories:

Directly work on solar installation

- Installing Electrical Components
- Installing Mechanical Components
- Completing System Installation
- Conducting Maintenance and Troubleshooting Activities

Project Design/Project Engineering

- Designing Systems

[2] http://www.gosolarcalifornia.ca.gov/documents/SASH_Handbook.pdf

[3] [From handbook] *"Eligible job trainees come from PV installation and design training programs including those offered by a California Community College or other PV-training programs offered to the public by local government workforce development programs, community nonprofits, private enterprises or the electrical workers union with 40+ hours of instruction and/or hands-on PV installation and design training."*

Project management/coordination

- Managing the Project

If the project is installed using the SASH program administrator's volunteer-based installation model, the project must include an opportunity for either a Team Leader[4], a SolarCorps[5], or at least three individuals from a specified job training organization or program to participate as volunteers. Below are brief definitions of each eligible group and Additional information on these programs and requirements can be found at: www.gridalternatives.org/programs/workforce-development.

Team Leader: the SASH program administrator's' Team Leader Program offers experienced volunteers more comprehensive, in-depth training to further develop their skills and increase employment opportunities in the growing solar jobs market. In addition to building their own skills, Team Leaders provide guidance for other volunteers, ensure all participants have a positive and safe experience, and supervise all work to make sure it meets quality standards. Team Leaders log a minimum of 40 hours on the SASH program administrator's' installations, complete a suite of six certifications on technical skills, attend a leadership skills workshop, and complete two installations to sign-off on skills with a GRID installation supervisor.

SolarCorps: SolarCorps opportunities with the SASH program administrator include fellowships in project management, system design, marketing and outreach, communications, job trainee and volunteer management, market development, construction, and fundraising. These are one year paid fellowships that are based on the Americorps program and are sometimes combined with additional funding from the Corporation for National and Community Service.

Job training organization groups: Some of the SASH program administrator's in-house installations are reserved for job training groups of students from job training programs. These are students from community colleges, vocational high schools, or community job training programs that generally have completed a PV-classroom component, but utilize GRID's installation as the hands-on, real-world application of the skills they are learning in a classroom.[6] Volunteers in GRID's Installer Basic Training (IBT) Certificate Program can count for the group job training requirement if they have attended a volunteer orientation, completed at least one skill in the IBT Certification Program, and are actively working on attaining more skill certifications in the program. A minimum of three (3) students from a job training organization group must participate on the installation to meet the requirement.

[4] These are individuals who have earned a series of installation skill certificates with the SASH program administrator and are approved to support in the management of other on the volunteer site. Most individuals join the Team Leader Program (now the Installation Basics Program) with GRID to train for solar jobs.

[5] These are individuals doing year long fellowships with the SASH program administrator.http://www.gridalternatives.org/what-we-do/workforce-development/solarcorps-fellowships

[6] [From handbook] *"In September 2016, GRID launched an in-house Installation Basics Training (IBT) Certification Program that includes twelve specialized certifications on technical skills divided into Array IBT and Electrical IBT. The program is designed to provide formal evidence of skilled volunteer work and training akin to a job training program offered outside of GRID volunteer installations."*

MASH Job Training Requirements

The following is an excerpt from the job training affidavit[7] that contractors in this program are responsible for filling out as part of the program:

MASH program Job Training Requirements for Contractors

The MASH Job Training Requirements are:

- Contractors must agree to the MASH job training requirements information described below.
- Contractor's insurance must cover the employment of the MASH job training hires, including temporary hires if the job training organization/program does not provide liability coverage for its trainees.
- Contractor and MASH job trainee must complete and sign this affidavit after the installation is completed describing and verifying the job training experience.

Workforce Training Requirement & Basic Agreement

The contractor agrees to hire, in order to be eligible for a MASH incentive, at least one student or graduate of a job training program with at least one full paid day (8 hour day) of work for each 10kW (CEC-AC) of system size up to 50kW.

System Size (CEC-AC)	Job Training Opportunities (JTO)
0 -10kW	1 JTO and no less than 8 hours
10kW - 20 kW	2 JTO and no less than 16 hours
20kW - 30kW	3 JTOs and no less than 24 hours
30kW - 40kW	4 JTOs and no less than 36 hours
40kW and greater	5 JTOs and no less than 40 hours

The training can be completed on either the MASH solar installation or in a support role on the specific MASH solar project indicated in the MASH Project Address below, including but not limited to direct work on solar project installation, project design/project engineering, or project management/coordination. For time spent on each MASH installation, contractor must pay job trainee(s) at a rate consistent with the contractor's entry level or temporary worker wage. Contractor is responsible for hiring the job trainee(s) for each MASH installation and will need to provide the corresponding MASH Administrator with the names of the eligible job training program and job trainee(s) used for each MASH installation. A current contractor employee who graduated from an eligible job training program within 12 months of the MASH installation project would fulfill the workforce partnership requirement to participate as one of the trainees.

Eligible job training programs include those offered by a California Community College or other PV-training programs offered to the public by local government workforce development programs, community non-profits, private enterprises, or the electrical workers union with 40+ hours of instructional and/or hands-on PV installation and design training.

If there are differences between the MASH Handbook and this Affidavit, the MASH Handbook shall prevail.

7 https://energycenter.org/sites/default/files/docs/nav/buildings/businesses/solar_pv/mash/MASH_Job_Training_Affadavit.pdf