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A Turnkey Model for Leveraging Direct Pay to Advance Solar and Renewable Energy Finance

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TABLE OF CONTENTS

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In recent years, transformational federal legislation, including the Inflation Reduction Act, has unlocked a new era of clean energy. As we explore in this guide, through provisions like **Direct Pay**, this legislation can help democratize clean energy projects like community and residential solar by making it financially viable for low-to-moderate income households and communities.

But to fully capitalize on the opportunities, we need community lenders who are willing and able to help finance clean energy projects. Financing from **Community Development Financial Institutions** (CDFIs), **Minority Depository Institutions** (MDIs), and other **mission-driven lenders** are especially vital for marginalized communities that are otherwise underserved by the banking sector.

As the leaders of Rochdale Capital, a minority-led community development loan fund, and National Bankers Association, the only trade organization exclusively for minority banks, we are motivated to help mission-driven lenders participate in climate finance. We partnered together and in collaboration with WeSolar—the first Black woman founded solar developer firm—to provide this substantive blueprint for action for financing community-centered solar projects.

Our goal for this blueprint is twofold. First, we want to highlight how nonprofits, state/local/tribal governments, publicly owned utilities, and rural electric cooperatives can take advantage of Direct Pay. Second, we want to equip mission-driven lenders with how to provide additional capital to make these projects fully viable.

In Part I of this guide, we share insights from leading experts on what Direct Pay is, why it matters, and what is needed to fully realize its potential. In Part II, we present a **turnkey financial model** for financing community-focused solar. This section includes a hypothetical case study that digs into the details around funding sources, loan terms, financial projections and more. We also include a detailed impact measurement matrix and an appendix with a glossary of key terms.

We are grateful for the generosity of The Kresge Foundation who funded this project as part of its ongoing tangible commitment to advancing climate equity. The Kresge Foundation just celebrated its 100th anniversary, and we look forward to the next century of its philanthropic leadership.

This moment in time calls for bold action. Time is of the essence to safeguard our planet and protect our most vulnerable communities. And the clean energy revolution holds real potential to generate durable wealth, improve health outcomes, and create new jobs and opportunities for small businesses, including minority firms. It is our hope that this resource on Direct Pay will serve as a meaningful starting foundation for tapping into the opportunities ahead of us.

Sincerely,

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PART I: UNDERSTANDING THE LANDSCAPE

Recent **landmark climate legislation** has ignited new energy in the **clean energy sector**, but the truth is that many folks have been working hard in the trenches of the clean energy revolution for decades. To fully wrap our minds around this present moment, and what it will take to turn that moment into a sustainable movement, we conducted a series of interviews with several A-list leaders who shared insights from their years of experience. These interviews included the following people and organizations:

Curtis Wynn
CEO of SECO Energy

Dave Wright
Vice President of Energy Programs at Groundswell

Derek Gabriel
Head of originations at SunRocket Capital

Marina Ter-Sargsyan
Director of Organizational and Project Finance at Groundswell

Michael Swack
Director of the Center for Impact Finance at the Carsey School

Paula Glover
President of the Alliance to Save Energy

Trenton Allen
CEO of Sustainable Capital Advisors

Our interviewees emphasized the moral urgency of seizing this opportunity based on what is at stake for our planet and for vulnerable communities. We must rise to the moment to meet the needs in our communities; otherwise, as Dave from Groundswell stated, “disparities will just continue to grow. And solar and renewables will continue to be only for those who can afford it, for the early adopters, those who have the capital.” Moreover, Curtis from SECO Energy added that in the absence of bold action, a growing divide of this nature would also mean that “more of that overall cost from the **utility** is going to be shifted more towards those already burdened energy.”

Direct Pay, a mechanism that enables immediate payments for clean energy projects, represents a watershed moment to narrow this divide before it can grow worse. And in addition to the energy cost savings for consumers, the shift to clean and renewable energy will also have long-term benefits for community health and for **climate resiliency**. In the following section, we explore insights from our interviewees around four key themes: defining Direct Pay and its importance; addressing the challenges around market-building, product development, and underwriting; cultivating collaboration and capacity-building; and documenting and sharing the impact of our collective efforts.

What is Direct Pay and Why it Matters

Direct Pay is a financial mechanism designed to streamline investments in clean energy projects by allowing tax-exempt organizations – such as nonprofits, state/local/Tribal governments, homeowners associations, publicly owned utilities and rural electric cooperatives—to get paid in cash for the value of clean energy tax credits when they buy qualified clean energy property (like solar or batteries) and place that equipment in-service. This enables tax-exempt entities to take advantage of clean energy credits directly for the first time, instead of relying on a private developer or some more complex tax-equity partnership structure which does not allow them to capture the full benefit of the incentives. In the context of clean energy development, Direct Pay reduces the challenges to raising upfront capital to pay for development and construction, which is often a significant barrier for consumers, nonprofits, and community-based organizations. Stakeholders impacted by Direct Pay include consumers, nonprofits, utilities, and lenders, all of whom play crucial roles in the energy sector. This mechanism not only facilitates the installation of **renewable energy systems** but also supports the broader electrical grid by enhancing **energy efficiency** and reducing the demand for new energy plants.

Empowering Consumers through Direct Pay

To understand why Direct Pay matters for consumers, first consider the current status quo. While many consumers would benefit from installing solar panels to lower their energy bills, few can afford to bear the upfront costs, even if they are eligible to be reimbursed later. As Paula Glover, from the Alliance to Save Energy, phrased it, for most households, "I can choose to pay my light bill, or I can choose to invest in something that's going to lower my light bill. If I don't pay my light bill, they're gonna shut my lights off. They don't really care that I'm going to take the light bill money and invest in something to make it cheaper next month."

If consumers are able to subscribe to a community solar project, or for example a nonprofit affordable housing owner installs solar on a multifamily building where they live, consumers can avoid needing to install solar on their own roof and therefore do not need to pay for those costs upfront. By removing the need to bear upfront costs, Direct Pay makes it possible to make investments, and to make those investments right now. In Paula's words, "if we talk about speed and scale, you gotta get people [to] yes. And Direct Pay is absolutely gonna get you to yes faster." Several of our interviewees likewise described this innovation as democratizing because it levels the playing field for all consumers and communities regardless of their level of liquidity or overall wealth.

Transforming Nonprofits and Community Organizations

In addition to the benefits for consumers, several of our interviewees highlighted that Direct Pay is a gamechanger for nonprofits and community-based organizations that want to lead the charge on **community solar** and other clean energy initiatives in their communities. Prior to Direct Pay, nonprofits and other tax-exempt entities were not able to benefit directly from federal incentives around clean energy which come in the form of tax credits. Thus, these nonprofits would have to bring in another partner who could monetize the credits, but, as Dave from Groundswell explains, that meant "you've got additional complexity around the legal and the financing [and] you've also got a new party in the mix who needs to claim their share of the value of the project." In contrast, Dave shared, Direct Pay "allows for local direct ownership of the system and renewable assets" for those nonprofits and community-based organizations.

Utility Benefits and Grid Resilience

The benefits of Direct Pay for utilities are less direct but no less monumental. Multiple interviewees noted that projects that increase energy efficiency and drive down costs will help utilities avoid capacity problems and power outages in the short-term and minimize the need to spend as much on creating new energy plants in the longer-term. Thus, utilities have a vested interest in seeing widespread use of Direct Pay, including for both residential and **community solar** projects.

Driving Lender and Developer Engagement

For lenders, including mission-driven community lenders, Direct Pay can facilitate projects that will require additional capital in various stages of development. For example, Derek Gabriel, from SunRocket Capital, noted that a lot of developers will need pre-development capital to cover initial costs associated with things like permitting. Derek likewise noted that lenders will also be needed to finance small businesses and developers through loans and lines of credit as they purchase equipment, hire new staff, and scale their operations to meet the demand that Direct Pay helps create.

Taken together, Direct Pay has tremendous potential to create benefits that spill over across the full ecosystem of stakeholders. As Trenton Allen, from Sustainable Capital Advisors, observed, “it can have the ability to reduce the cost of capital potentially of these projects because they’re easier. The documentation time and costs are lower [and] all the other components of a deal can be simplified.” And these benefits may compound over time, particularly if productive relationships solidify between lenders, developers, community organizations, etc., thereby enabling ongoing partnerships on multiple projects.

Addressing Market-building, Product Development, and Underwriting

The Biden Administration’s Justice40 paradigm calls for at least 40% of all benefits from major legislation including the climate bill to flow to disadvantaged communities. While this is a laudable goal, bringing it to fruition will likely be difficult, particularly because the market for clean energy products at the consumer and community level is underdeveloped, and that’s especially the case in many already disadvantaged communities.

Building Stakeholder Awareness and Trust

At a basic level, there is a tremendous amount of work to be done simply to educate consumers and communities about what Direct Pay is and how it could meaningfully benefit them. And such education will require not just relaying facts but also building trust as the prerequisite for getting any commitment to move forward with a project. There is also similar education needed for many developers, particularly if we want to ensure that smaller minority developers get a chance to participate in these projects, rather than those projects simply being captured by incumbent firms. But even if there’s initial interest, creating a market will also require bringing all project participants including lenders, developers, contractors, etc., to the table, rather than simply expecting that a given consumer or community will know who to bring in for a project.

Collaborative Market-Building

In discussing market-building, Michael Swack, from the Center for Impact Finance at the Carsey School, observed that while everyone will benefit from market-building – including lenders, utilities, and developers, nobody wants to be on the hook for paying for it. But one way to address this problem is intentional collaboration on market-building activities that splits the initial costs based on a joint desire to glean the benefits.

As an example of what this can look like in practice, Curtis shared that his utility has made **"behind the meter"** investments to address "challenges like leaky roofs, inefficient heating and cooling units, inadequate insulation," activities which are often a prerequisite for installing solar or other renewables, and activities that benefit the utility from a profit standpoint and from a grid capacity standpoint. Similarly, on the lending side, Curtis highlighted the opportunity to provide capital to small businesses including developers who can also function as a channel for community outreach and additional market-building, thus "serving a dual role." Beyond these aligned-interest strategies, a couple of our interviewees noted that the philanthropic sector should focus a lot of its efforts on helping subsidize the cost of market-building, particularly around paying for education, based on the recognition that the social impacts that these philanthropic entities aim at addressing are downstream from creating the initial markets.

Innovative Financial Products and Responsive Underwriting

Beyond market-building, our interviewees also emphasized the need to create viable financial products that meet the needs of communities. They also stressed that product development is an activity that needs to go hand in hand with market-building, with both processes informing each other. Finally, as part of developing products, a couple of our interviewees highlighted the need for developing practices around effective underwriting. The interviewees were clear that simply trying to adapt existing underwriting practices from commercial real estate or residential mortgages is not going to work. Instead, lenders should seek to develop responsive underwriting that is customized to meet the needs of the solar industry.

In developing this underwriting expertise, multiple interviewees highlighted that lenders should think outside the box. For example, in the context of solar for commercial, Derek recommended that lenders shift their focus from whether or not a given developer has a certain credit score, to whether a project is investment grade, recognizing that "the collateral is the project itself, the contracted revenue, the power purchase agreement." Derek also emphasized that for many lenders, community solar will be a better entry point than individual residential solar, particularly as regards ensuring sufficient collateral in the underwriting.

Part II of this report will delve deeper into the development of financial models, products, and underwriting considerations, exploring innovative strategies and practices that can drive the clean energy market forward.

Cultivating Collaboration and Capacity-Building

All our interviewees were adamant that to tackle the challenges around market-building, product-development, and more, we need extensive collaboration across organizations, sectors, and community stakeholders. As Derek explained, "we need to have CDFIs, **CDEs [Community Development Entities]**, private industry along with public entities, to help promote and help guide a lot of these areas, [such as] how to implement the **tax credits** so that it can be utilized properly in these communities for the solar installations or battery installations." This kind of collaboration is especially important for addressing lack of experience or knowledge barriers. As Dave noted, "it's okay to not know exactly what you're doing. We're all learning. And it's going to take a village and a support network."

Building Bridges to Boost Capacity and Knowledge

Each of our interviewees stressed that to meet the level of need at the speed that's required, we cannot afford to keep **climate finance** sequestered to an experienced few: it will take all of us. As knowledge is shared and opportunities to gain experience increase, capacity will also expand both for individual organizations and for sectors. In keeping with this vision, Michael noted that a good project is one that involves the full ecosystem described in this paper, and where more experienced participants can share their knowledge and expertise to bring others up to speed. For example, Michael shared that "if you're starting from a point where you're working with a skilled developer who's gone through this process or has those connections, you may be able to mediate some of the market development problems that face many lenders today who are trying to get into this space."

Harnessing the Power of Trade Organizations

Our interviewees also highlighted the importance of collaboration across trade organizations, including ones that represent mission-driven lending. Several interviewees noted that rather than reinventing the wheel or feeling like they need to recreate existing toolkits and trainings, trade organizations can instead leverage each other for knowledge-building. Our interviewees similarly highlighted that mission-driven lenders are often tempted to gate-keep knowledge or to see each other as competitors rather than potential partners. But few mission-driven lenders have the extensive experience in climate finance needed to provide financing at the scale that we need, and that Direct Pay aims for. Several of our interviewees thus called for creating lender coalitions that can collaboratively tackle market-building, developer education, product development, and other time, knowledge, and capacity-intensive tasks.

Uniting Industry Voices for a Greener Future

While collaboration with other mission-driven entities is vital, Paula also pointed out that "having an industry voice is important." By industry, Paula means "everything from manufacturers like Honeywell and Johnson controls to utility companies. Because everyone has an interest in this, but they have an interest in it for a different reason." Notably, there is also no room for pearl-clutching in forming these collaborations. In Paula's words, "we need a broad coalition, and we have to get over, like, why they're sitting there. What do I care what your motivation is as long as we're trying to do the same thing?" To use an example from earlier, for example, a utility might be interested in partnering purely to address grid capacity issues, and that's a perfectly acceptable reason to welcome them at the table.

Forging Local Partnerships for Sustainable Impact

Finally, our interviewees stressed the need for collaborations with existing community stakeholders as local government agencies, neighborhood associations, faith-based organizations, and grassroots environmental groups, in the places where we are hoping to build markets and develop projects. A couple interviewees emphasized that community engagement is essential at the onset to ensure strong buy-in. As Curtis shared with us, "one of the things we learned is that there's more resistance when you ask a person to come and join you for something you've already mapped out versus [inviting] them to come in and plan, help you plan a process that will lead to a more sustainable [outcome.]" As noted previously, this kind of community engagement can also ensure that product development and underwriting fits with the unique needs of the consumers and communities we are hoping to serve.

Measuring Our Impact

As the whole ecosystem begins to scale up clean energy projects, our interviewees underscored the importance of being able to measure the impact and to share those impact stories with policymakers, funders, and other key stakeholders. Currently, impact reporting for clean energy is a bit of a Wild West. In this context, Paula emphasized the initial need for standardization: "There's got to be some sort of standard, right. [A] set of questions or markers…and I think it does have to be a collective because you don't want people trying to shop, right. But [a basic agreed upon standard] that says look, every project's going to have to meet ABCDEF. This is what we're measuring." But while recognizing the value of standardization, other interviewees noted that we will also need to stay nimble to ensure that we are using the right indicators, and that we are defining impact in the same way that the end-users and communities are experiencing that impact. For example, Marina Ter-Sargsyan noted that common industry metrics like "number of community engagement sessions held" do not actually provide much insight into the nature of those sessions, nor do they provide clear insight into whether community members and stakeholders feel well-served.

Tracking Direct Pay Utilization

At a basic level, measuring impact involves tracking how much Direct Pay is actually being utilized. For example, Trenton Allen noted that identifying "the sheer volume is important, how many projects have been executed with Direct Pay?" He also added a slightly more difficult but related metric of timing: how long did it take to execute various Direct Pay deals relative to the time it took to execute prior to Direct Pay? Capturing and publicly reporting statistics like this will be vital for proving the initial use case value of this program. Here, Trenton, "I think trade associations have a wonderful space where basically they can aggregate the data that's coming from their particular members."

Assessing Outcome-Oriented Impact

While outputs matter, the more substantive impact measurement will be about outcomes. In the words of Michael, "the overriding question of impact really is, how are people's lives better off? This can be a tricky question to answer, especially in a precisely causal manner. Indeed, social scientists have created a whole arsenal of elaborate research designs to try and answer this basic question, but as Michael noted, "evaluation is always limited by what are your resources and how long you [are] trying to measure for." Still, as a baseline, our interviewees highlighted three outcome-oriented areas of impact that will be important.

Evaluating Energy Cost Savings

First and most obviously, our interviewees noted the need to measure actual energy cost savings. Tracking this metric requires establishing a pre-project baseline and then following up afterward (perhaps at multiple intervals) to record costs, to allow for a comparative analysis.

Measuring Workforce and Community Development

Second, in addition to what is delivered, the how of delivery matters too. Our interviewees highlighted the importance of capturing metrics around workforce development and training, quality jobs that hire community members, inclusive supply chains, and projects that bring minority developers to the table and that help build the capacity of small businesses. Marina noted that in addition to "number of jobs created," we need to define metrics around the education pipeline that eventually culminated in those jobs. Similarly, Derek underscored that this area of impact is also necessary for accountability purposes and to ensure that there is not an extractive dynamic: we need to "make sure that that [the] developer is also utilizing resources in the community. They're hiring in the community. They're educating in the community as they go and as they build these projects."

Engaging Communities Effectively

Third, the degree of community engagement and involvement is an important component to capture. As Marina observed, “the success and the social impact is going to be determined by how well the needs of that specific community were addressed versus any like academic social impact assessment.” Documenting this dimension of impact will likely need to rely on extensive surveying including open-ended questions and qualitative interviews.

Utilizing Impact Data Strategically

Finally, in addition to capturing impact data, we also need to leverage that data strategically. As Paula noted “storytelling is really important, but understanding who you’re telling your story to is equally as important.” She added that for some audiences, leading with statistics around equitable wealth-building or environmental impact will matter most, while other audiences will respond more to statistics around job growth and support for small businesses.

In Part II, we will delve deeper into the tools and specific **key performance indicators (KPIs)** practitioners should consider for effective impact measurement and storytelling.

Sustaining The Momentum

As we ended our conversations, we asked each interviewee how we can sustain the energy needed for widespread change. Derek told us that “we have a movement, but that movement needs to be protected,” and ultimately that is where “the CDFIs, the MDIs, the nonprofits, the community-based organizations,” really matter, because it’s these entities that can ensure all consumers are served and that all communities can be made climate resilient. Meanwhile, Paula emphasized that we need to “stay focused and diligent and persistent. Cause it’s not gonna be easy,” but it will be worthwhile. Finally, Trenton Allen emphasized to “not take the first no as a ‘I told you these folks didn’t want it’” but rather an indication that the timing isn’t quite right. It will take time to form relationships and build trust, but ultimately making that investment will pay dividends.

Ultimately, each of our interviewees expressed optimism about the future. For all of them, Direct Pay and the broader climate legislation that has enabled it, represents the single largest investment into clean energy that they’ve ever seen. It is from that place of optimism and gratitude that each of them encourage all of us to continue the hard work of creating resilient communities and safeguarding the earth as our precious common home.

PART II: PRACTICAL IMPLEMENTATION STRATEGIES

Part II serves as a practical guide, delving into the technical intricacies of implementing Direct Pay mechanisms in renewable energy projects. This segment offers detailed guidance for practitioners, encompassing crucial elements such as financial models, loan product development strategies, and underwriting considerations. It includes illustrative case studies, success metrics, scalability strategies, funding considerations, policy implications, and actionable recommendations aimed at propelling the clean energy market forward.

Resource Needs for Direct Pay Initiatives

Securing adequate funding and resources for a Direct Pay-eligible project is crucial to ensure the long-term viability and impact of these projects. As the renewable energy sector seeks to expand its reach and inclusivity, addressing the unique financial challenges associated with monetizing clean energy tax credits using Direct Pay becomes a pivotal element of strategic planning. This section delves into the potential sources of funding that can support projects leveraging Direct Pay, explores methods to overcome financial hurdles through monetization and access to loan products, and highlights the importance of resource allocation to bolster local contractors and community-based initiatives.

Financial Resources

Renewable energy projects often require substantial capital investment upfront, which necessitates a strategic approach to funding. Also, in order for a tax-exempt entity to file for and claim a clean energy tax credit using Direct Pay, the filer needs to have bought and placed the qualified energy property in-service in the tax year in which they are claiming the credit, so in other words, the project developer needs to fund and build the system before they can get the value of the credit paid back to them through Direct Pay. Identifying a diverse array of funding sources is imperative to support these initiatives. Potential sources of funding include **tax incentives and credits**, financial institutions and lenders, government grants and subsidies, private sector investments, philanthropic contributions, community investment, and public-private partnerships, each providing a different level of support and influence.

Tax Incentives and Credits

The Inflation Reduction Act of 2022 (IRA) introduced several clean energy tax credits available to various entities including businesses, tax-exempt organizations, state and local governments, and individuals. Among these, the elective pay provision, also known as Direct Pay, allows tax-exempt entities to receive direct payments for 12 clean energy tax credits. Some of the most relevant clean energy tax credits and provisions for nonprofits and community-based organizations include:

Production Tax Credit (PTC) for Electricity from Renewables (§ 45)

- Applicable for the production of electricity from renewable sources like wind, biomass, geothermal, and solar.
- Credit Amount: Up to 2.75 cents/kW if prevailing wage and apprenticeship (PWA) requirements are met.

Investment Tax Credit (ITC) for Energy Property (§ 48)

- Applicable for investments in renewable energy projects including solar, geothermal, and energy storage.
- Credit Amount: 6% of qualified investment (basis); 30% if PWA requirements are met.

Low-Income Communities Bonus Credit (§ 48(e), 48E(h))

- Additional ITC for projects on Indian land, federally subsidized housing, and in low-income communities.
- Credit Amount: 10% or 20% increase on base investment tax credit.

A Turnkey Model for Leveraging Direct Pay to Advance Solar and Renewable Energy Finance

Tax-exempt entities, such as non-profits and local governments, historically faced significant challenges in benefiting from these tax incentives for renewable energy projects due to their lack of tax liability. For the first time ever, tax-exempt entities can capture the value of these credits in the form of Direct Pay. The process of accessing direct payments equivalent to these credits is complex and administratively demanding. Additionally, these entities often struggle with securing upfront capital and financing, as financial institutions may view their projects as high-risk. They also face administrative burdens in managing the application and compliance processes for these incentives. Furthermore, the ever-changing policy and regulatory environment adds uncertainty, making it challenging for tax-exempt entities to stay compliant and eligible for these benefits. Many organizations are now offering resources to assist tax-exempt entities with navigating the complexities of Direct Pay (called "Elective Pay" by the U.S. Treasury Department, one useful example is the Lawyers for Good Government (https://www.lawyersforgoodgovernment.org/elective-pay-ira-tax-incentives).

Financial Institutions and Lenders

Securing loans for renewable energy projects presents another layer of complexity. Financial institutions may perceive these projects, particularly those involving newer technologies, as high-risk investments. This perception can make it challenging to obtain the necessary financing to initiate and sustain renewable energy initiatives. Additionally, the lack of historical performance data or lack of familiarity among lenders when considering new technologies can further exacerbate these concerns, leading to higher interest rates or stricter lending terms. Moreover, smaller tax-exempt entities might lack the creditworthiness or collateral needed to secure favorable loan conditions. Consequently, the financial viability of renewable energy projects can be significantly impacted, slowing down their adoption and implementation.

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Other Financial Resources

Additional sources and financial considerations include the following:

- **Government Grants and Subsidies:** Government grants and subsidies can provide significant financial support to renewable energy projects by reducing initial capital expenditure and operational costs, making these projects more financially attractive and feasible. For example, the U.S. Department of Energy's (DOE) Solar Energy Technologies Office (SETO) provides grants through programs like the Solar Energy Innovator Program. This program supports solar energy research and development to lower the cost of solar electricity, improve grid reliability, and increase the efficiency of solar energy systems. In 2020, SETO awarded over $130 million to 67 projects, including community solar initiatives aimed at expanding access to solar energy for underserved communities and increasing local solar workforce development.
- **Private Sector Investments:** Engaging the private sector can bring substantial capital to community solar projects. Private investors, including venture capitalists and green energy funds, are increasingly interested in funding projects that promise sustainable returns and align with environmental, social, and governance (ESG) criteria. For instance, private companies like SunPower and the nonprofit GRID Alternatives collaborate to develop community solar projects that allow residents, particularly in low-income neighborhoods, to benefit from shared solar energy systems without the need for individual rooftop installations.
- **Philanthropic Contributions:** Philanthropic organizations and foundations can offer grants and donations to support community solar projects. These contributions can be particularly valuable for projects led by non-profit organizations, providing essential funding without the expectation of financial returns. For example, the Kresge Foundation has supported community solar projects in Detroit, Michigan, providing grants to local non-profits to develop solar installations that reduce energy costs for low-income residents and promote environmental sustainability.
- **Community Investment:** Community investment initiatives, such as local bonds or crowdfunding, can mobilize financial resources directly from the community for community solar projects. These investments foster local engagement and ownership of renewable energy projects, ensuring that the economic benefits are retained within the community. An example of this is Co-op Power in Massachusetts, or Raise Green which works nationally to allow local residents to invest in community solar projects. These projects provide clean energy to the community, reduce energy bills, and generate returns for local investors, promoting broader access to renewable energy and local economic development.

Support for Contractors and Local Initiatives

Beyond securing funds, the equitable distribution of resources is essential to foster a balanced and inclusive development of renewable energy infrastructure. Direct Pay initiatives must prioritize the provision of adequate resources to contractors responsible for the installation and development of these projects. This involves not only financial support but also access to training, tools, and technology that enable them to execute projects efficiently and effectively.[1]

Empowering local contractors is particularly vital in promoting community-driven initiatives. By ensuring that these contractors have the necessary support, Direct Pay initiatives can facilitate greater local engagement and ownership of renewable energy projects. This approach not only enhances the capacity of local economies but also ensures that the benefits of renewable energy development are more widely and equitably distributed. Strategies such as offering micro-loans to contractors, providing technical assistance, and fostering partnerships between local businesses and larger entities are key to achieving these goals.

Ultimately, the success of Direct Pay initiatives hinges on a well-rounded approach that addresses both financial and resource-based challenges. By identifying diverse funding sources, overcoming financial barriers through innovative monetization and loan strategies, and ensuring equitable resource distribution, we can lay the groundwork for a more sustainable and inclusive renewable energy future.

Turnkey Financial Model Overview

In the quest to democratize access to renewable energy, the turnkey financial model stands out for its innovation and inclusivity. This model is meticulously designed to facilitate equitable access to capital for solar and renewable energy projects, particularly in under-resourced neighborhoods. By weaving together various financial instruments and **community-based financing** mechanisms, the model aims to break down barriers that have historically impeded sustainable development in these areas.

The following financial model is a comprehensive framework designed to support community-based organizations by integrating Direct Pay incentives with various financial tools. Developed by Housing Sustainability Advisors and modified by Franz Hochstrasser and WeSolar, a certified MWBE community solar developer based out of Baltimore, Maryland, this streamlined template ensures developers focus on key success factors and risk management while customizing for specific community-led solar development needs.

[1]Said, E., Neuberger, J., & Walker, C. (2021, November 29). The US clean energy transition isn't equitable — but it could be. World Resources Institute

Key Components

Financial modeling templates help developers estimate costs, revenues, and risks, enhancing project planning and management. Additionally, sensitivity analyses should be conducted to assess the impact of different variables on the project's financial performance. These models illustrate a seamless pathway from project inception to completion, designed to enable project developers and lenders to mitigate financial barriers.

Project Scope

Figure A provides a detailed example that encompasses many of these assumptions. It illustrates how these technical aspects come together to form a comprehensive project plan. Components of the project scope typically include location, system size, energy production, cost savings, performance projections, and economic & social impact.

Sources and Uses

The Sources and Uses section includes an analysis of the upfront expenses required for installation and the sources of funding to cover these costs. This model includes upfront debt in the form of a bridge loan as one significant source of funding. Tax incentives claimed through Direct Pay also play a crucial role in funding the project in its permanent capacity, and allow the tax-exempt owner of the project to pay back the bridge loan. Additionally, an equity sponsor and various grants contribute to the necessary capital.

Proforma

The proforma provides a year-over-year calculation of the ongoing revenue and expenses for a project. This template (Figure C) includes expectations regarding the amount and timing of repayments to investors. A robust financial model for community-focused solar projects should include the project scope, sources and uses of funds, a proforma, sponsor returns, and incentives. These tools, developed as tabs in a Microsoft Excel workbook, incorporate essential elements such as loan terms, operating budgets, and revenue and expense projections.

Sponsor Returns

This section outlines the financial benefits for the project sponsor, including a one-time development fee, an annual management fee, and the sponsor's equity investment. The model also provides data pertaining to community benefits, such as annual energy savings, direct financial incentives, and job training value.

Incentives

This section details the financial incentives for the project, including an upfront grant and income from Solar Renewable Energy Certificates (SRECs). The model accounts for annual efficiency declines in solar panels and uses price hedging to ensure predictable income.

Financial Model Analysis

The financial model for Prosperity Community Initiative's Rooftop Solar project is a hypothetical case study that reflects how a tax-exempt entity would monetize Direct Pay to receive direct reimbursements for their project and use this funding to encourage further financing from outside sources. Additionally, the model incorporates several elements that align with this approach, including the energy savings being reflected as Income in the Proforma tab.

The modified version of the model aims to express a rooftop solar system entirely owned by a nonprofit tax-exempt entity, which also owns its building. The system is sized to reduce energy generation costs, although the entity remains connected to the grid and incurs some transmission and distribution charges as a result. This model also assumes an upfront bridge loan to cover initial costs, which is repaid upon receipt of the tax credits in the form of Direct (elective) Pay. The nonprofit entity does not need to finance the system with a permanent loan after the construction period.

Several key considerations were addressed in this modified model:

1. **Energy Savings (Avoided Energy Costs):** The energy savings derived from the system should be counted as income in the "Sponsor Returns" tab, reflecting the financial benefit of reduced energy costs. This should also be appropriately reflected in the "Project Scope" tab to provide a comprehensive view of the project's financial benefit.
2. **Cost Segmentation of the Tax Basis:** This model features detailed segmentation of costs related to the tax basis on the "Sources and Uses" tab which is crucial for this kind of system. This segmentation provides valuable insights into the financial structure and ensures accurate tax credit calculations.
3. **Direct (Elective) Pay Tax Credit Refund:** Properly reflecting the Direct Pay tax credit refund in the "Sources and Uses" tab is essential. This refund provides a substantial initial boost to cash flow, critical for covering early project costs and ensuring financial viability without the need for long-term debt financing.

Prosperity Community Initiatives: A Hypothetical Case Study

To illustrate the practical application and transformative potential of this model, consider a hypothetical example involving Prosperity Community Initiatives (PCI), a **Community Development Corporation** (CDC) operating in Baltimore City, Maryland. PCI, dedicated to holistic community development and economic empowerment, operates in an economically challenged area with rich potential for sustainable development.

Project Scope

PCI has embarked on a strategic initiative to install a 51kW solar system on its headquarters which houses various community serving non and for profits. This initiative is driven by the PCI's Board of Directors' desire to improve community resiliency by reducing energy costs and promoting environmental sustainability. By installing solar panels on its properties, PCI aims to lower its energy expenses, freeing up resources to reinvest in community programs. Additionally, the shift to renewable energy aligns with PCI's wider broader plan to develop their headquarters into a community resiliency hub.

Prosperity Community Initiatives Rooftop Solar

Scope												
Site Name	Address	Approx. System size (kW)	Solar Production Coefficient	Annual Solar production (kWh)	Annual SREC production	Market Rate Price ($/kWh)	Total Production Value @ Market Rate	Assumed Discount from Market Rate (15%)	New Electricity Price ($/kWh)	Total Production Value @ Reduced Rate	System cost ($/Watt)	Total System Cost
Prosperity Community Initiatives Headquarters	1234 Elm Street, Baltimore, MD, 21230	51	1,213	61,794	62	$0.16	$9,887	25%	$0.12	$7,415	$2.20	$111,995
		51		61,794			$9,887			$7,415		111,995
1	# of Projects											

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Figure A.

Project Scope Inputs:

- **Approx. System Size (kW):** The total capacity of the solar energy system.
  - Value: 51 kW
  - Calculation/Determination: Calculated based on energy needs and available rooftop space (a flat rooftop installation with 106L x 485W monocrystalline panels).
- **Solar Production Coefficient (kWh/kW):** The amount of electricity generated per kW of installed solar capacity.
  - Value: 1,213 kWh/kW
  - Calculation/Determination: Based on historical data and local solar insolation levels.
- **Market Rate Price ($/kWh):** The prevailing rate for electricity in the local market.
  - Value: $0.16/kWh
  - Calculation/Determination: Derived from local utility rates and market conditions.
- **Assumed Discount from Market Rate:** A reduction applied to the market rate to determine a more competitive or fair price for the generated electricity.
  - Value: 25%
  - Calculation/Determination: Typically set to make the project attractive to buyers or off-takers, however in this case reflects savings to the nonprofit owner.
- **System Cost ($/Watt):** The cost to install the solar system per watt of capacity.
  - Value: $2.20/Watt
  - Calculation/Determination: Based on market prices for solar installation, including equipment and labor.

A Turnkey Model for Leveraging Direct Pay to Advance Solar and Renewable Energy Finance

Project Scope Outputs:

- **Annual Solar Production (kWh):** The total amount of electricity generated by the solar system in a year.
  - Value: 61,794 kWh
  - Calculation/Determination: System Size (51 kW) × Solar Production Coefficient (1,213 kWh/kW).
- **Annual Solar Renewable Energy Credit (SREC) Production:** The number of SRECs generated annually.
  - Value: 62 SRECs
  - Calculation/Determination: Annual Solar Production (61,794 kWh) / 1,000.
- **Total Production Value at Market Rate:** The monetary value of the electricity generated at the market rate.
  - Value: $9,887
  - Calculation/Determination: Annual Solar Production (61,794 kWh) × Market Rate Price ($0.16/kWh).
- **New Electricity Price ($/kWh):** The effective price of electricity after applying the discount.
  - Value: $0.12/kWh
  - Calculation/Determination: Market Rate Price ($0.16) × (1 - Discount Rate (0.25)).
- **Total Production Value at Reduced Rate:** The value of the electricity generated at the reduced rate.
  - Value: $7,415
  - Calculation/Determination: Annual Solar Production (61,794 kWh) × New Electricity Price ($0.12/kWh).
- **Total System Cost:** The total expenditure to install the solar system.
  - Value: $111,995
  - Calculation/Determination: System Size (51,000 Watts) × System Cost ($2.20/Watt).

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Sources and Uses

The financial journey of PCI's solar integration project begins with identifying and securing diverse sources of funding.

Prosperity Community Initiatives Rooftop Solar

Sources and Uses

Uses		Total Cost	Tax Basis
Solar Installation		$ 111,995	$ 111,995
Site Preparation	0	$ -	$ -
Legal Fees	2%	$ 1,000	
Development Fee	25%	$ 27,999	$ 27,999
3rd-party Engineering	0	$ -	$ -
Owner's Rep	0	$ -	$ -
Accounting	1%	$ 200	
Contingency	8.0%	$ 8,960	$ 8,960
Bridge Loan Origination	2.0%	$ 1,000	$ -
Operating Reserve		$ 10,255	$ -
Uses Pre-Bridge Loan Interest		**$ 161,408**	**$ 148,953**
Bridge Loan Period Interest	6.5%	$ 3,250	$ 3,250
Total Uses		**$ 164,658**	**$ 152,203**
Sources			
Debt	30%	$ 50,000	
Sponsor Equity	39%	$ 63,728	
Grant	31%	$ 50,930	
Total Sources	100%	**$ 164,658**	
Surplus/(GAP)		$ -	

Tax Credit Calculations

Eligible Basis	$152,203
Eligible Baseline Percentage	**30%**
Eligible LMI Bonus Percentage	**10%**
Federal Solar Investment Tax Credits	60,866
100% Ownership	60,866
$/Credit	$1.00
Total Tax Credit	$60,866

Permanent Sources

Sources		
Direct Pay Tax Credit Refund	37%	$ 60,866
Grants	32%	$ 50,930
Permanent Sponsor Equity	32%	$ 52,862
Total Sources	101%	**$ 164,658**
Surplus/(GAP)		$ -

Figure B.

Uses:

- **Solar Installation:** Cost of purchasing and installing the solar panels and related equipment necessary for the 51 kW community solar project.
- **Site Preparation:** Costs associated with preparing the site for installation, including land clearing, grading, and other preparatory activities.
- **Legal Fees:** Fees for legal services required during the project, including contract review and compliance with regulations. Legal fees are calculated as a percentage (2%) of the total debt.
- **Development Fee:** Fee charged for project development services, covering planning, management, and other pre-construction activities, calculated as a percentage (25%) of the solar installation project cost.
- **3rd-party Engineering:** Fees for engineering services provided by third-party firms to ensure the technical feasibility and safety of the project.

- **Owner's Representation:** Costs for services provided by an owner's representative to oversee the project and ensure it meets the required standards and timelines.
- **Accounting:** Fees for accounting services to manage the financial aspects of the project, including bookkeeping and financial reporting. These fees are calculated as a small percentage of the solar installation project cost.
- **Contingency:** A reserve amount set aside to cover unexpected costs or overruns during the project implementation, ensuring financial stability. Contingency expense is calculated as a percentage (8%) of the solar installation project cost.
- **Loan Origination:** Costs associated with securing financing or loans for the project, including application fees and administrative costs. The loan origination fee is calculated as a percentage (2%) of the total debt.
- **Operating Reserve:** Funds set aside to cover operating expenses in the early stages of the project to ensure smooth operation and financial stability.
- **Uses Pre-Bridge Loan Interest:** The total uses of funding excluding the interest payments that will be due on the bridge loan.
- **Bridge Loan Period Interest:** Interest accrued on borrowed funds during the construction phase, which needs to be paid until the project becomes operational and generates revenue. Bridge loan interest is calculated as a percentage (6.5%) of the total debt.
- **Total Uses:** Summation of all expenditures required to complete and initiate the solar project, ensuring a comprehensive budget is planned.

Sources:

- **Debt (30%):** This is the bridge loan face value derived from funds borrowed from financial institutions or other lenders to finance part of the project costs, which will need to be repaid over time.
- **Sponsor Equity (39%):** Investment from project sponsors or developers, representing the portion of the project financed by stakeholders without the expectation of immediate repayment.
- **Grant (31%):** Non-repayable funds provided by government or other institutions to support the project, significantly reducing the initial financial burden.
- **Total Sources:** Total funding raised to cover all project costs, ensuring a balanced budget with no surplus or deficit.
- **Surplus/(GAP):** Indicates whether all projected costs are fully covered by the sources of funds, ensuring no financial shortfall or excess.

Permanent Sources:

- **Direct Pay Tax Credit Refund (37%):** Federal tax credits converted to direct payments under the elective pay provision, providing immediate financial support without the need for tax liability. Note that this includes both the Section 48 Investment Tax Credit value calculated off of the Total Uses of the Tax Basis, as well as a 10% adder from the Section 48e Low Income Communities Bonus Credit, because our example property is deemed to be eligible for this adder based on its location in a Low Income and Disadvantaged Community according to the Climate and Environmental Justice Screening Tool (https://screeningtool.geoplatform.gov/en/). In order to claim the 48e adder a property owner must apply for and be accepted for the credit before being able to claim the credit (https://www.energy.gov/justice/low-income-communities-bonus-credit-program).
- **Grants (32%):** Non-repayable funds provided by government or other institutions to support the project, significantly reducing the initial financial burden.
- **Permanent Sponsor Equity (32%):** Investment from project sponsors or developers, representing the portion of the project financed by stakeholders without the expectation of immediate repayment, which the project will maintain permanently.
- **Surplus/(GAP):** Indicates whether all projected costs are fully covered by the sources of funds, ensuring no financial shortfall or excess.

A Turnkey Model for Leveraging Direct Pay to Advance Solar and Renewable Energy Finance

Tax Credit Calculations:

- **Eligible Basis:** The portion of total project costs that are eligible for federal tax credits, excluding non-eligible items.
- **Eligible Baseline Percentage:** The percentage of the Eligible Basis that is eligible for the Section 48 Federal Investment Tax Credit which equals 30%.
- **Eligible LMI Bonus Percentage:** The percentage of the Eligible Basis that is eligible for the Section 48e Low Income Communities Bonus Credit which equals 10%.
- **Federal Solar Investment Tax Credits (30%):** The actual tax credit amount in dollars calculated by multiplying the Eligible Basis by the two percentages of the Eligible tax credits, providing significant financial incentives from the federal government.
- **100% Ownership:** Indicates that the project is fully owned by the tax-exempt entity or its sponsor, qualifying them for the full amount of the calculated tax credits.
- **$/Credit:** The value of each tax credit unit, reflecting a direct conversion rate for the credits earned based on the eligible project costs. Because the tax-exempt entity owns their system, they claim $1.00 for each dollar of tax credit they're eligible for.
- **Total Equity:** The total value of the tax credits, contributing to the financial viability and reducing the net cost of the solar project.

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A Turnkey Model for Leveraging Direct Pay to Advance Solar and Renewable Energy Finance

Proforma

Prosperity Community Initiatives Rooftop Solar

Proforma

		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Year 13	Year 14	Year 15	Year 16	Year 17	Year 18	Year 19	Year 20
		2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041
Production	0.5%	61,794	61,485	61,178	60,872	60,567	60,265	59,963	59,663	59,365	59,068	58,773	58,479	58,187	57,896	57,606	57,318	57,032	56,746	56,463	56,180
Income																					
Energy Savings	2.0%	$ 7,415	$ 7,564	$ 7,715	$ 7,869	$ 8,027	$ 8,187	$ 8,351	$ 8,518	$ 8,688	$ 8,862	$ 9,039	$ 9,220	$ 9,404	$ 9,592	$ 9,784	$ 9,980	$ 10,180	$ 10,383	$ 10,591	$ 10,803
SREC Income (https://news.maryland.gov/mea/20		$ 2,937	$ 2,922	$ 2,907	$ 2,170	$ 2,159	$ 2,148	$ 2,137	$ 2,116	$ 2,105	$ 2,095	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Direct Pay		$ 60,866																			
Total: Income		**$ 71,218**	**$ 10,485**	**$ 10,622**	**$ 10,039**	**$ 10,185**	**$ 10,335**	**$ 10,488**	**$ 10,634**	**$ 10,793**	**$ 10,957**	**$ 9,039**	**$ 9,220**	**$ 9,404**	**$ 9,592**	**$ 9,784**	**$ 9,980**	**$ 10,180**	**$ 10,383**	**$ 10,591**	**$ 10,803**
Expenses																					
Site Lease Fee	$0	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Tax and Audit	2.0%	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Insurance	2.0%	$ (1,120)	$ (1,142)	$ (1,165)	$ (1,189)	$ (1,212)	$ (1,237)	$ (1,261)	$ (1,286)	$ (1,312)	$ (1,338)	$ (1,365)	$ (1,393)	$ (1,420)	$ (1,449)	$ (1,478)	$ (1,507)	$ (1,537)	$ (1,568)	$ (1,600)	$ (1,632)
O&M Contract	2.0%	$ (1,000)	$ (1,020)	$ (1,040)	$ (1,061)	$ (1,082)	$ (1,104)	$ (1,126)	$ (1,149)	$ (1,172)	$ (1,195)	$ (1,219)	$ (1,243)	$ (1,268)	$ (1,294)	$ (1,319)	$ (1,346)	$ (1,373)	$ (1,400)	$ (1,428)	$ (1,457)
Subscriber Management	2.0%	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Total: Expenses		**$ (2,120)**	**$ (2,162)**	**$ (2,206)**	**$ (2,250)**	**$ (2,295)**	**$ (2,341)**	**$ (2,387)**	**$ (2,435)**	**$ (2,484)**	**$ (2,534)**	**$ (2,584)**	**$ (2,636)**	**$ (2,689)**	**$ (2,742)**	**$ (2,797)**	**$ (2,853)**	**$ (2,910)**	**$ (2,968)**	**$ (3,028)**	**$ (3,088)**
NOI		**$ 69,098**	**$ 8,323**	**$ 8,416**	**$ 7,789**	**$ 7,891**	**$ 7,994**	**$ 8,101**	**$ 8,198**	**$ 8,310**	**$ 8,423**	**$ 6,455**	**$ 6,584**	**$ 6,716**	**$ 6,850**	**$ 6,987**	**$ 7,127**	**$ 7,269**	**$ 7,415**	**$ 7,563**	**$ 7,714**
Loan Payment		$ (18,389)	$ (18,389)	$ (3,065)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Debt Service Coverage		3.76	0.45	2.75	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Net Cash Flow		**$ 50,709**	**$ (10,066)**	**$ 5,352**	**$ 7,789**	**$ 7,891**	**$ 7,994**	**$ 8,101**	**$ 8,198**	**$ 8,310**	**$ 8,423**	**$ 6,455**	**$ 6,584**	**$ 6,716**	**$ 6,850**	**$ 6,987**	**$ 7,127**	**$ 7,269**	**$ 7,415**	**$ 7,563**	**$ 7,714**
Management Fees & Reserves																					
Investor Preferred Return	**0.0%**	$ -	$ -	$ -	$ -	$ -															
Company Management Fee	$2,000	$ (2,000)	$ (2,000)	$ (2,000)	$ (2,000)	$ (2,000)	$ (2,000)	$ (2,000)	$ (2,000)	$ (2,000)	$ (2,000)	$ (2,000)	$ (2,000)	$ (2,000)	$ (2,000)	$ (2,000)	$ (2,000)	$ (2,000)	$ (2,000)	$ (2,000)	$ (2,000)
Replacement Reserve	$2,000	$ (2,000)	$ (2,000)	$ (2,000)	$ (2,000)	$ (2,000)	$ (2,000)	$ (2,000)	$ (2,000)	$ (2,000)	$ (2,000)	$ (2,000)	$ (2,000)	$ (2,000)	$ (2,000)	$ (2,000)	$ (2,000)	$ (2,000)	$ (2,000)	$ (2,000)	$ (2,000)
Cash Flow for Distribution		$ 46,709	$ (14,066)	$ 1,352	$ 3,789	$ 3,891	$ 3,994	$ 4,101	$ 4,198	$ 4,310	$ 4,423	$ 2,455	$ 2,584	$ 2,716	$ 2,850	$ 2,987	$ 3,127	$ 3,269	$ 3,415	$ 3,563	$ 3,714
Return of Equity																					
Equity Investment	**$63,728**	$ (46,709)	$ -	$ (1,352)	$ (3,789)	$ (3,891)	$ (3,994)	$ (3,994)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Remaining Equity Investment		$ 17,020	$ 17,020	$ 15,668	$ 11,879	$ 7,988	$ 3,994	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Cash Flow After Equity Payment (including avoided costs)		$ -	$ (14,066)	$ -	$ -	$ -	$ -	$ 106	$ 4,198	$ 4,310	$ 4,423	$ 2,455	$ 2,584	$ 2,716	$ 2,850	$ 2,987	$ 3,127	$ 3,269	$ 3,415	$ 3,563	$ 3,714

This Community Solar Financial Model Template is the intellectual property of Housing Sustainability Partners / Modified by F. Hochstrasser

Figure C.

The PCI Rooftop Solar Project proforma outlines several key assumptions and financial projections that influence the project's feasibility and attractiveness to potential lenders.

Production Rate:

- The energy production is projected to start at 61,794 kWh in Year 1, with a 0.5% annual degradation. This decline in efficiency over time is typical for solar panels and has been factored into the financial model to provide a realistic outlook on energy generation and associated income.

Income:

- **Energy Savings:** Expected to increase by 2% annually, reflecting potential increases in electricity rates or improved energy efficiency. This conservative growth rate starts at $7,415 in Year 1.
- **SREC Income:** Income from Solar Renewable Energy Credits (SRECs) is projected to slightly decrease annually, starting at $2,937 in Year 1. This assumes a market where the value of SRECs may fluctuate or decline.
- **Direct Pay:** A significant one-time income of $60,866 from Direct Pay tax credits is included in Year 1. This upfront boost is crucial for initial project financing and demonstrates the leveraging of federal incentives.

Expenses:

- As PCI owns the property, the proforma includes no site lease fee, which simplifies the expense structure.
- Tax and Audit, Insurance, O&M Contract, and Subscriber Management: Each of these expense categories is set at 2% of income, with slight annual increases to account for inflation and operational cost rises. This ensures a realistic projection of ongoing costs.

Loan Payment:

- **Debt Service Coverage Ratio (DSCR):** The DSCR is strong at 3.76 in Year 1, due to the initial influx of Direct Pay credits, but drops to 0.45 in Year 2. This significant drop indicates that initial loan terms may be too aggressive. To make the project more attractive to lenders, the loan terms may need adjustment, which might include a covenant that stipulates that when the borrower (tax-exempt owner of the system) gets their Direct Pay check from the IRS that they pay down the loan accordingly. Another alternative for the lender could be to extend the amortization period or restructure the payments after the Direct Pay credit is received to ensure a DSCR consistently above 1.2x.
- **Loan Terms:** This model also assumes an upfront, interest only (non-amortizing) bridge loan of $50,000 at 6.5% to cover initial costs, which is repaid upon receipt of the tax credits in the form of Direct (elective) Pay. A balloon payment is due at the end of the 2-year term when the tax credit payment is expected to be received to pay off the bridge loan. The initial loan payment of $18,389 annually suggests a high initial debt burden, however, the face value of the loan is covered by the expected payment from the tax credits claimed through Direct Pay. Adjustments are necessary to maintain financial stability and lender confidence.

Net Cash Flow:

- Positive net cash flow in Year 1 ($50,709) due to the Direct Pay income, but turns negative in Year 2 (-$10,066). It stabilizes and becomes positive again in subsequent years, highlighting the need for careful financial management in the early years to ensure project sustainability.

Management Fees & Reserves:

- **Investor Preferred Return:** Not included, which simplifies the financial structure but may limit investor attractiveness.
- **Company Management Fee and Replacement Reserve:** Both are fixed at $2,000 annually, ensuring that funds are available for ongoing management and unexpected major repairs.

Return of Equity:

- The model reflects $46,709 of the initial equity investment being recovered in Year 1 leaving a remaining equity investment of $17,020 to be paid down in subsequent years, with subsequent cash flow available for distribution after equity repayment. Note that no equity repayment is made in Year 2 since the cash flows are being used to pay down the bridge loan in Year 2, but once the bridge loan is repaid the remaining equity investment is paid off and value accrues to the tax-exempt owner/operator. This repayment can enhance investor confidence and attractiveness.

Key Considerations for the Proforma

Initial Loan Payment and Terms: The significant drop in DSCR from Year 1 to Year 2 indicates a need to consider unique bridge loan terms. Adjusting to a more consistent payment schedule or extending the amortization of the loan term can improve DSCR stability and lender appeal. Alternatively, if the tax-exempt entity still has outstanding loans even after applying the Direct Pay payment to their debt, restructuring loan terms could result in a smoother DSCR.

Tax Credit Payment: The Direct Pay tax credit provides a substantial initial boost to cash flow, which can secure initial financing and demonstrate leveraging of federal incentives. This upfront payment is critical for covering early project costs.

Year-by-Year Increases: The proforma assumes modest annual increases in income from energy savings and SRECs, aligning with inflation and market trends. Expenses are also projected to increase incrementally, maintaining a realistic financial outlook.

Feasibility: The project shows a positive net cash flow from Year 3 onwards, indicating long-term sustainability. Ensuring consistent loan payments and managing operational costs are crucial for maintaining financial health and meeting lender requirements.

Note also that this model is very conservative about the amount of Energy Savings that the tax-exempt owner/operator would derive from the system, since it is likely the solar system could be designed to bring their annual energy costs down close to zero, and therefore may allow PCI to maintain a strong DSCR throughout, or even take out a much larger loan. The Prosperity Community Initiative Rooftop Solar Project proforma presents a detailed financial model that demonstrates potential feasibility and sustainability, given certain adjustments to loan terms to stabilize DSCR and ensure consistent cash flow. The upfront Direct Pay tax credit is a significant advantage, providing the initial financial boost necessary for project launch. Careful management of expenses and strategic financial planning will be essential to maintaining long-term project viability and lender confidence.

Sponsor Returns

Prosperity Community Initiatives Rooftop Solar

Sponsor Returns

		Year 1 2022	Year 2 2023	Year 3 2024	Year 4 2025	Year 5 2026	Year 6 2027	Year 7 2028	Year 8 2029	Year 9 2030	Year 10 2031	Year 11 2032	Year 12 2033	Year 13 2034	Year 14 2035	Year 15 2036	Year 16 2037	Year 17 2038	Year 18 2039	Year 19 2040	Year 20 2041
Development Fee	$ 27,999																				
Company Management Fee		$ 2,000	$ 2,000	$ 2,000	$ 2,000	$ 2,000	$ 2,000	$ 2,000	$ 2,000	$ 2,000	$ 2,000	$ 2,000	$ 2,000	$ 2,000	$ 2,000	$ 2,000	$ 2,000	$ 2,000	$ 2,000	$ 2,000	$ 2,000
Return on Equity																					
Income																					
Cash Flow Remaining to Pay Principle		$ 46,709	$ (14,066)	$ 1,352	$ 3,789	$ 3,891	$ 3,994	$ 4,101	$ 4,198	$ 4,310	$ 4,423	$ 2,455	$ 2,584	$ 2,716	$ 2,850	$ 2,987	$ 3,127	$ 3,269	$ 3,415	$ 3,563	$ 3,714
Energy Savings (avoided costs)		$ 7,415	$ 7,564	$ 7,715	$ 7,869	$ 8,027	$ 8,187	$ 8,351	$ 8,518	$ 8,688	$ 8,862	$ 9,039	$ 9,220	$ 9,404	$ 9,592	$ 9,784	$ 9,980	$ 10,180	$ 10,383	$ 10,591	$ 10,803
Return of Operating Reserve																					$ 10,255
Expenses																					
Sponsor Equity Investment	$ (63,728)																				
Total Cash Flow	$ (63,728)	$ 54,124	$ (6,503)	$ 9,066	$ 11,658	$ 11,917	$ 12,181	$ 12,451	$ 12,716	$ 12,998	$ 13,285	$ 11,494	$ 11,804	$ 12,120	$ 12,443	$ 12,771	$ 13,107	$ 13,449	$ 13,798	$ 14,154	$ 24,772
IRR	**27.7%**	85%	-10%	14%	18%	19%	19%	20%	20%	20%	21%	18%	19%	19%	20%	20%	21%	21%	22%	22%	39%
Total Cash Flow	$ 220,078																				
Development Fee	$ 27,999																				

Community Benefits

		Year 1 2022	Year 2 2023	Year 3 2024	Year 4 2025	Year 5 2026	Year 6 2027	Year 7 2028	Year 8 2029	Year 9 2030	Year 10 2031	Year 11 2032	Year 12 2033	Year 13 2034	Year 14 2035	Year 15 2036	Year 16 2037	Year 17 2038	Year 18 2039	Year 19 2040	Year 20 2041
Energy Savings	**2%**	$ 2,472	$ 2,521	$ 2,572	$ 2,623	$ 2,676	$ 2,729	$ 2,784	$ 2,839	$ 2,896	$ 2,954	$ 3,013	$ 3,073	$ 3,135	$ 3,197	$ 3,261	$ 3,327	$ 3,393	$ 3,461	$ 3,530	$ 3,601
Lease Payments to Property Owners		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Community Benefits Payments		$ 2,000	$ 2,000	$ 2,000	$ 2,000	$ 2,000	$ 2,000	$ 2,000	$ 2,000	$ 2,000	$ 2,000	$ 2,000	$ 2,000	$ 2,000	$ 2,000	$ 2,000	$ 2,000	$ 2,000	$ 2,000	$ 2,000	$ 2,000
Value of Job Training	**2%**	$ 25,000	$ 25,500	$ 26,010	$ 26,530	$ 27,061	$ 27,602	$ 28,154	$ 28,717	$ 29,291	$ 29,877	$ 30,475	$ 31,084	$ 31,706	$ 32,340	$ 32,987	$ 33,647	$ 34,320	$ 35,006	$ 35,706	$ 36,420
Total Benefits (Annual)		$ 29,472	$ 30,021	$ 30,582	$ 31,153	$ 31,736	$ 32,331	$ 32,938	$ 33,556	$ 34,188	$ 34,831	$ 35,488	$ 36,158	$ 36,841	$ 37,538	$ 38,248	$ 38,973	$ 39,713	$ 40,467	$ 41,236	$ 42,021
Total Benefits (20 Years)		$ 707,492																			

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Figure D.

Development Fee:

- A one-time development fee of $27,999 is accounted for in Year 1 (2022), representing the initial cost of setting up the project.

Company Management Fee:

- A fixed annual company management fee of $2,000 is included from Year 1 (2022) to Year 20 (2041). This fee covers the ongoing management and administrative costs associated with the project.

Return on Equity:

- **Income:**
  - Cash Flow Remaining to Pay Principal: Starting at $46,709 in Year 1, this value fluctuates annually due to the variable income and expenses, reflecting the cash available after operational costs to pay down the principal of any debt.
  - Energy Savings (avoided costs): Begins at $7,415 in Year 1 and is expected to increase by 2% annually, reflecting potential increases in electricity rates or improved energy efficiency. As noted above, this is a conservative estimate of the amount of savings that PCI could derive from installing solar.
  - Return of Operating Reserve: This is not explicitly detailed in the provided sheet but would typically include funds set aside for unexpected expenses, contributing to the project's financial stability.
- **Expenses:**
  - Sponsor Equity Investment: An initial equity investment of $63,728 in Year 1, indicating the sponsor's upfront contribution to the project's capital needs.

Total Cash Flow and IRR:

- **Total Cash Flow:** The project starts with a negative cash flow of $63,728 when the tax-exempt entity installs the system in Year 1, turning positive by the end of Year 1 with $54,124 coming back in from the Direct Pay credit. It then goes negative in Year 2 briefly while the bridge loan is repaid, before stabilizing for the life of the asset. The total cash flow over the 20 years is projected to be $220,078.
- **IRR (Internal Rate of Return):** The overall project IRR is 27.7%, and begins peaking at 85% in Year 1, drops to -10% in Year 2, then stabilizes around 20% in the subsequent years, reflecting the project's profitability over time.

Community Benefits:

Energy Savings:

- Starting at $2,472 in Year 1, energy savings increase by 2% annually. This reflects the financial benefits of reduced energy costs for the community.

Lease Payments to Property Owners:

- These are not included in the provided financial model, indicating that there may be no lease payments required, possibly because the project uses community-owned property or has different financial arrangements.

Community Benefits Payments:

- A fixed annual payment of $2,000 is included, representing direct financial benefits or incentives provided to the community.

Value of Job Training:

- Job training value starts at $25,000 in Year 1 and increases by 2% annually. This represents the investment in community workforce development, enhancing local skills and employment opportunities.

Total Benefits (Annual and 20 Years):

- Total Benefits (Annual): Starting at $29,472 in Year 1, increasing steadily each year. By Year 20, the annual benefits amount to $42,021.
- Total Benefits (20 Years): The cumulative benefits over the 20-year period total $707,492, showcasing the long-term positive impact on the community. These benefits include energy savings, lease payments to property owners, community benefit payments, the value of job training, and a reduction of 43 metric tons of CO2 annually.

Key Considerations for Sponsor Returns

Initial Cash Flow and IRR: The high IRR in the initial years, driven by early-stage cash inflows and the one-time development fee, indicates strong initial project viability. However, maintaining positive cash flow and a stable IRR over the long term is crucial for sustained project success.

Management Fees and Reserves: Fixed annual fees ensure that management costs are predictable and controlled. Establishing an operating reserve enhances financial stability, providing a buffer against unforeseen expenses.

Equity Investment and Return: Early repayment of the initial equity investment starting in Year 1 improves investor confidence and attractiveness, as it demonstrates the project's ability to generate returns quickly.

Sustainability and Community Impact: The model emphasizes not only financial returns but also significant community benefits, including energy savings and job training. This dual focus on profitability and social impact aligns with the goals of community-led solar projects, fostering both economic and environmental sustainability.

Incentives

Prosperity Community Initiatives Rooftop Solar

Upfront Incentive: Grant	
Total KW Installed	51
Total Watts Installed	50,930
$/Watt Incentive	$1.00
Total Incentive	$50,930

Production Incentive: SRECs Income					
Year	SREC Cap Price	Price Hedge	SREC Contract Price	Annual SREC Production	Total SREC Income
			Panel Degredation Factor	0.5%	
2022	$100	80%	$80	62	$4,944
2023	$60	80%	$48	61	$2,951
2024	$60	80%	$48	61	$2,937
2025	$60	80%	$48	61	$2,922
2026	$60	80%	$48	61	$2,907
2027	$60	60%	$36	60	$2,170
2028	$60	60%	$36	60	$2,159
2029	$60	60%	$36	60	$2,148
2030	$60	60%	$36	59	$2,137
2031	$60	60%	$36	59	$2,126
2032	$60	60%	$36	59	$2,116
2033	$60	60%	$36	58	$2,105
2034	$60	60%	$36	58	$2,095
2035	$60	60%	$36	58	$2,084
2036	$60	60%	$36	58	$2,074
2037	$60	60%	$36	57	$2,063
2038	$60	60%	$36	57	$2,053
2039	$60	60%	$36	57	$2,043
2040	$60	60%	$36	56	$2,033
2041	$60	60%	$36	56	$2,022

Figure E.

Upfront Incentive: Grant

Total KW Installed: The project installs a total of 51 kilowatts (KW) of solar capacity.

Total Watts Installed: The total wattage installed is 50,930 watts.

$/Watt Incentive: The incentive rate is $1.00 per watt installed.

Total Incentive: The total upfront grant incentive amounts to $50,930, calculated by multiplying the total watts installed by the incentive rate per watt.

Production Incentive: SRECs Income

Yearly Breakdown: The table provides a year-by-year breakdown of the income from Solar Renewable Energy Certificates (SRECs) over a 20-year period.

SREC Cap Price: The cap price of SRECs is set at $100 in 2022, dropping to $60 from 2023 onwards. This cap price represents the maximum potential price for SRECs.

Price Hedge: The price hedge percentage remains constant at 80% from 2022 to 2026, then drops to 60% from 2027 onwards. This hedge provides a buffer against price volatility, ensuring a minimum guaranteed price for SRECs.

SREC Contract Price: The contract price for SRECs is calculated by applying the price hedge to the SREC cap price. For instance, in 2022, the contract price is $80 (80% of $100), and from 2023 onwards, it is $48 (80% of $60) until 2026, after which it is $36 (60% of $60).

Annual SREC Production: The annual production of SRECs starts at 62 in 2022 and gradually decreases by 0.5% each year due to the panel degradation factor. This reflects the typical decline in efficiency of solar panels over time.

Total SREC Income:

- **Year 2022:** With an SREC contract price of $80 and production of 62, the total income is $4,944.
- **Year 2023:** The contract price drops to $48 with a production of 61, resulting in $2,951 in total income.
- **Subsequent Years:** The total income continues to decline slightly each year due to the combined effects of the reduced contract price and panel degradation. For example, in 2024, the income is $2,937, and by 2041, it decreases to $2,022.

Key Considerations for Incentives

Panel Degradation Factor: The financial model incorporates a 0.5% annual degradation factor, accounting for the gradual decrease in solar panel efficiency over time. This conservative estimate ensures a realistic outlook on long-term energy production and associated SREC income.

Price Volatility and Hedging: By setting a price hedge, the project mitigates risks associated with market fluctuations in SREC prices. This hedge provides a more predictable income stream, crucial for long-term financial planning and stability.

Sustainability and Financial Planning: The upfront grant of $50,930 significantly boosts the initial financial viability of the project, reducing the need for debt financing or additional equity. The steady decline in SREC income underscores the importance of continuous financial monitoring and potential reinvestment in newer, more efficient solar technologies over time.

Impact on Community and Investors: The model not only provides a sustainable income stream through SRECs but also ensures that the community benefits from the long-term financial stability of the project. The predictability in income and the upfront grant make the project attractive to both community stakeholders and potential investors.

The turnkey financial model represents a transformative approach to financing renewable energy projects in under-resourced communities. Through the strategic integration of grant funding, low-interest loans, federal tax credits, and community-based financing, this model provides a comprehensive solution to the financial challenges faced by Community Development Corporations like the hypothetical Prosperity Community Initiatives. As PCI's hypothetical case study demonstrates, this model not only facilitates the adoption of sustainable energy practices but also empowers communities to take control of their energy future, promoting long-term economic and environmental resilience.

Loan Products and Underwriting Considerations

To effectively serve low-to-moderate oncome (LMI) communities with solar energy solutions, a multi-faceted approach that prioritizes inclusivity and accessibility is essential. Community Development Financial Institutions (CDFIs) and Minority Depository Institutions (MDIs) are pivotal in making solar energy accessible to LMI communities by providing tailored financial products with favorable terms and minimal upfront costs. Their deep understanding of these communities' unique economic challenges allows them to effectively mitigate risks and foster trust through community engagement and educational initiatives. By leveraging partnerships and focusing on social and **environmental justice**, CDFIs/MDIs ensure that the benefits of the renewable energy transition are equitably distributed, enhancing both sustainability and quality of life for underserved populations. These institutions are uniquely positioned to tailor financial products and services to the specific needs of LMI communities, making them invaluable partners in the transition to sustainable energy.

To comprehensively address the needs of LMI communities, tax-exempt entities must understand the financing structures while lenders, such as CDFI's/MDIs must also adopt strategic approaches to product development and underwriting tailored to these communities. Solar projects demand significant upfront capital, often sourced from a blend of equity, debt, tax equity, and grants. Each of these financial sources serves a critical role in ensuring the project's viability and sustainability.

Developing Loan Products for LMI Communities

- **Flexible Terms:**
  - Tailored Repayment Plans: Implement loan products with repayment schedules that match the income cycles of LMI communities, such as monthly, bi-weekly, or seasonal payments. This ensures payments are manageable and align with the community's cash flow patterns.
  - Grace Periods: Introduce grace periods for loan repayments during times of financial hardship or low-income periods to prevent defaults and support financial stability.
- **Lower Interest Rates:**
  - Subsidized Interest Rates: Utilize federal and state funds, such as the Greenhouse Gas Reduction Fund (GGRF) and IRA tax credits, to offer subsidized interest rates on loans for community-led solar projects. This makes financing more affordable and accessible.
  - Rate Discounts: Provide additional interest rate discounts for community members who achieve specific milestones in solar adoption or participation in related sustainability programs.
- **Minimal Upfront Costs:**
  - No-Down Payment Options: Offer loan products with no-down payment options or deferred initial payments until the solar systems are operational and generating savings, reducing the financial barrier to entry.
  - Grant Integration: Combine loans with available grants or incentives to cover initial costs, leveraging programs like the Solar for All competition to minimize upfront expenses for LMI communities.
- **Customizing Underwriting Practices:**
  - Community-Based Credit Assessments: Develop credit assessment criteria that consider community financial health, collective payment history, and participation in other assistance programs rather than just individual credit scores.
  - Solar Project Specific Underwriting: Focus on the projected savings and revenue generation of the solar project itself as part of the creditworthiness evaluation, emphasizing the long-term financial benefits of renewable energy adoption.

Key Considerations for Underwriting Practices

- **Mitigating Risk:**
  - Comprehensive Risk Framework: Implement a risk assessment framework that accounts for site-specific factors, regulatory environment, and long-term sustainability of solar projects. Use tools like the Climate and Energy Justice Screening Tool (CEJST) and EJScreen for informed decision-making.
  - Community Guarantees: Utilize community guarantees or pooled risk funds to spread and mitigate individual project risks, ensuring broader participation and financial security.
- **Maximizing Impact:**
  - Impact Metrics: Establish metrics to measure environmental and social benefits, prioritizing projects that significantly benefit underserved communities. Use the criteria from the Solar for All competition to guide project selection and evaluation.
  - Community Engagement: Involve community members in project planning and decision-making to enhance project relevance, acceptance, and ownership.
- **Technical Viability:**
  - Technology Assessment: Conduct thorough evaluations of the proposed solar technologies, focusing on reliability, efficiency, and maintenance requirements. Leverage technical assistance provided by organizations like CESA.
  - Site Suitability Studies: Assess the suitability of project sites, considering factors like sunlight exposure, local climate, and grid connectivity to ensure the technical feasibility of solar installations.

Loan and Portfolio Level Risk Parameters

- **Creditworthiness Assessment:**
  - Alternative Credit Models: Use alternative credit assessment models that incorporate factors like utility bill payment history and community reputation, aligning with the inclusive criteria outlined in the Solar for All competition.
  - Local Economic Conditions: Consider the local economic conditions and employment rates to gauge the long-term viability of loan repayments, using tools like the DOE's LEAD tool and NREL SLOPE data viewer.
- **Collateral Requirements:**
  - Solar Equipment as Collateral: Use the installed solar equipment as collateral, with the understanding that the equipment retains value and can be redeployed if necessary.
  - Community Assets: Allow for community-owned assets or funds to be used as collateral, spreading the risk across multiple parties and leveraging community support.
- **Diversification:**
  - Project Variety: Include a mix of residential, commercial, and community solar projects within the portfolio to spread risk and ensure broad-based benefits.
  - Geographic Spread: Diversify projects geographically to reduce exposure to regional economic downturns or natural disasters, enhancing the resilience of the solar financing program.
- **Loan Covenants:**
  - Performance Covenants: Set performance covenants requiring borrowers to maintain a minimum level of solar energy production and system maintenance, ensuring long-term project success.
  - Financial Health Covenants: Implement covenants that ensure borrowers adhere to agreed-upon financial health metrics, such as maintaining a certain debt-to-income ratio, aligning with the sustainable financing goals of the GGRF and other federal programs.

Role of CDFIs, Banks, and Other Lenders in Solar Project Financing

Developers and contractors need various types of capital injections to respond to and drive market demand for solar projects. Financial institutions play critical roles in funding these projects, especially in Low-to-Moderate Income (LMI) communities, by offering different types of loans with specific terms and purposes.

Types of Capital Injections and Lending Products

Type of Capital	Purpose	Terms	Usage	Direct Pay Context
Seed Capital	Early-stage project development and feasibility studies.	Short-term, typically up to 18 months.	Covers initial costs to determine project viability.	Provides necessary funds to start projects that could later qualify for Direct Pay benefits, helping to offset early risk and proving feasibility to attract further investment.
Predevelopment Loans	Early-stage project development activities, such as site assessment and permitting.	Short-term, usually up to 18 months.	Helps developers move projects to the construction-ready phase.	Enables early development activities that can position a project to meet Direct Pay eligibility requirements, such as those needed for compliance with tax credit prerequisites.
Bridge Financing	Manage cash flow gaps between construction completion and long-term financing or operational revenue.	Typically 6-24 months.	Covers costs during construction or until tax equity and grant funds are available.	Supports liquidity until Direct Pay credits are processed and received, bridging the gap between immediate expenses and long-term funding solutions.
Construction Financing	Cover the costs of building and installing solar systems.	Typically 12-24 months.	Funds labor, materials, and other construction-related expenses.	Ensures ongoing construction work is funded, anticipating that Direct Pay incentives will reduce overall financing costs upon project completion and compliance verification.
Working Capital	Operational expenses during the construction phase.	Typically 6-18 months.	Funds day-to-day operational costs to keep the project running smoothly.	Provides operational liquidity, with the expectation that Direct Pay benefits will soon be realized, allowing for smoother cash flow management.
Acquisition Loans	Financing the purchase of land or existing solar facilities.	Varies, often 3-7 years.	Facilitates the acquisition of key assets needed for project development.	Assists in acquiring assets essential for projects eligible for Direct Pay incentives, reducing upfront capital burdens through expected future tax credit monetization.
Mini-Permanent Loans	Bridging the gap between construction completion and securing long-term permanent financing.	Generally 3-5 years.	Provides stability until the project generates consistent cash flow.	Acts as intermediate funding, offering stability until the project qualifies and receives Direct Pay credits, which then help secure long-term financing solutions.
Permanent Loans	Long-term financing for operational solar projects.	10-20 years, depending on the project's expected life and revenue generation.	Ensures the project's long-term financial sustainability.	Offers long-term financing aligned with the receipt of Direct Pay incentives, ensuring that the long-term viability of the project is supported by the anticipated steady inflow of Direct Pay-related benefits.

Figure F.

By offering these diverse lending products, Community Development Financial Institutions (CDFIs), banks, and other financial institutions can effectively support the financing needs of solar projects in LMI communities, ensuring these projects are financially viable and capable of delivering long-term benefits.

Technical Assistance and Capacity Building

Navigating the complexities of renewable energy projects, especially in under-resourced neighborhoods, requires more than just financial resources. Technical assistance and capacity building are pivotal components that ensure the successful implementation and sustainability of these initiatives. Support provided by expert organizations plays an indispensable role throughout all stages of solar project development, from initial planning to long-term maintenance. This support guides community organizations through the technical intricacies of solar energy and empowers them to take ownership of their renewable energy future, enabling them to replicate their success in other communities.

Initial Technical Needs Assessment

The journey to integrating solar energy begins with a comprehensive technical needs assessment conducted by experts. This assessment identifies the specific requirements and challenges of the proposed solar project. Based on these findings, experts provide tailored technical assistance to help navigate the labyrinth of regulatory approvals, system design, and technology selection.

Development Phase Support

During the development phase, expert support includes providing access to technical experts who guide through the intricate process of designing a solar energy system that meets energy needs and budget constraints. This assistance extends to identifying the most suitable locations for solar panel installations, optimizing system performance, and ensuring compliance with local regulations and standards. Such guidance is critical in mitigating risks and avoiding costly mistakes that could derail the project.

Capacity Building for Sustainability

Beyond the initial development phase, capacity building initiatives are essential for sustaining and expanding renewable energy efforts. Experts and their partners offer comprehensive training programs aimed at equipping staff with the necessary skills to manage and maintain solar energy systems. This training covers a broad spectrum, from basic solar energy concepts to advanced system management techniques.

Replication and Resource Development

Capacity building goes hand-in-hand with providing the tools and resources needed to replicate success. This includes the development of sample templates and guidance documents that serve as blueprints for future projects. By creating a repository of best practices and operational guidelines, organizations can streamline their processes and share these resources with other community organizations seeking to embark on similar renewable energy initiatives.

Empowerment and Ownership

Empowerment through capacity building also means enabling community organizations to take an active role in the ownership and management of renewable energy assets. With technical assistance and training, organizations are positioned to become leaders in community-driven renewable energy projects. This shift towards ownership allows them to generate revenue from their solar installations, which can be reinvested into other community development programs, thus creating a virtuous cycle of economic empowerment and sustainable development.

Scaling Strategies and Regional Partnerships

The true potential of solar projects lies in their ability to be scaled and replicated across other under-resourced neighborhoods. Drawing from successful case studies, strategies can be developed to promote broader community adoption of direct pay-enabled financing models, fostering regional partnerships and collaborative efforts.

Community Engagement and Support

To encourage other communities to embrace renewable energy initiatives, experience and resources can be leveraged to provide guidance and support. This could involve hosting workshops or informational sessions to share insights and lessons learned from successful solar projects. Additionally, developing and disseminating success stories and case studies can inspire and motivate other community organizations to pursue similar paths.

Importance of Regional Partnerships

Regional partnerships are crucial in pooling resources and expanding the reach of renewable energy projects. Collaboration with local governments, community development corporations (CDCs), and private sector entities can form a network of support for renewable energy development. These partnerships can facilitate shared funding opportunities, technical expertise, and policy advocacy efforts aimed at creating a conducive environment for renewable energy adoption in under-resourced areas.

Leveraging Shared Resources

The approach to regional partnerships involves leveraging shared resources to amplify the impact of renewable energy initiatives. This could include joint ventures for larger-scale projects or collective bargaining for better financial terms with suppliers and contractors. By working together, organizations can achieve economies of scale and reduce the costs associated with renewable energy projects, making them more accessible and feasible for a broader range of communities.

Integration of Clear Sustainability Objectives

Integrating solar energy into community initiatives illustrates the transformative power of turnkey financial models when combined with robust technical assistance and capacity building. By setting clear sustainability objectives and employing comprehensive impact measurement strategies, long-term success and adaptability of projects can be ensured. Moreover, fostering regional partnerships and promoting broader community adoption can catalyze a wave of renewable energy initiatives that extend beyond immediate operations, driving sustainable development and empowerment across under-resourced neighborhoods. Through these efforts, there is not only a contribution to environmental sustainability but also a championing of the economic and social resilience of the communities served.

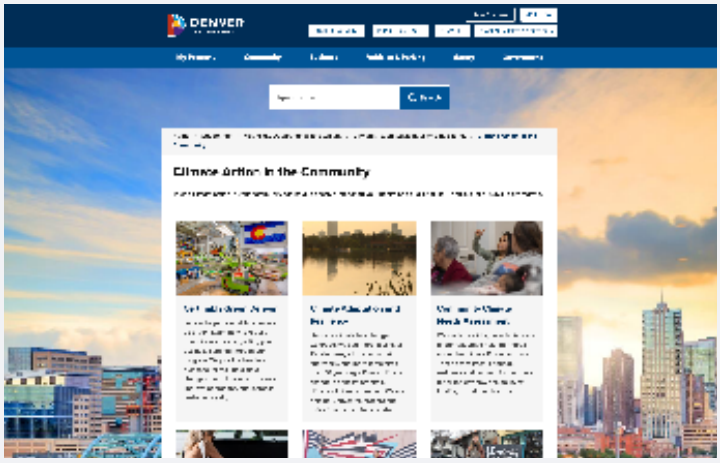
Evaluating Success Metrics and Impact of Direct Pay Investments

Direct or elective pay, where tax-exempt entities like local governments, schools, hospitals, public utilities, churches, and non-profit organizations can access federal tax credits to build renewable energy projects like solar systems or EV charging stations, holds promise for accelerating the transition to clean energy. Denver, one of the most populous cities in the Rocky Mountain West and Groundswell, a 501c3 nonprofit, both exemplify how tax-exempt entities successfully use Direct Pay mechanisms for clean energy projects.[2] However, to ensure these investments deliver the intended benefits, a robust evaluation framework is crucial, particularly in underserved communities that are disproportionately impacted by climate change. This framework should include tailored metrics that address the specific needs and vulnerabilities of these communities, ensuring that renewable energy projects not only mitigate environmental impacts but also enhance resilience and provide equitable economic and social benefits.

[2] Local Infrastructure Hub. (2023, December 13). Climate Protection Fund Denver, CO. ; Moore, M., & Moleka, E. (2023, October 19). How the IRA's 'direct pay' provision is driving community ownership and resilience. Impact Alpha.

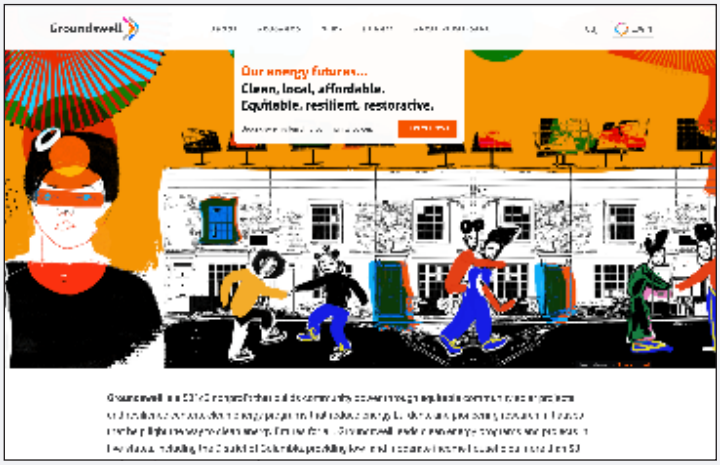
Denver's Use of Direct Pay for Climate Action

In Denver, the Climate Protection Fund (CPF) was established in 2020 through a local sales tax to raise approximately $40 million annually for climate action. With the passage of the Inflation Reduction Act (IRA) in 2022, Denver began supplementing this fund with Direct Pay rebates for eligible projects. The city has used these rebates to support various renewable energy initiatives, including community solar gardens. For instance, Denver partnered with Denver Public Schools to install a 309 kW solar carport at Northeast College High School. This project, part of a $26 million investment in community solar gardens, will produce 9.6 million kWh annually, reducing emissions and saving low-income families approximately $700 per year on electricity costs. Direct Pay has enabled Denver to leverage additional federal resources, increasing the financial capacity and impact of their climate action projects.



Groundswell's Use of Direct Pay for Community Solar

Groundswell, a non-profit organization focused on equitable community solar projects, has effectively utilized Direct Pay to fund its initiatives. By leveraging Direct Pay provisions, Groundswell has been able to secure upfront capital for the development of community solar installations. These projects not only provide renewable energy to underserved communities but also offer substantial energy cost savings to participating households. For example, Groundswell's community solar projects often include partnerships with local organizations to ensure that low-income residents benefit from lower electricity rates, demonstrating how Direct Pay can facilitate the expansion of renewable energy access and financial savings for vulnerable populations.



Framework for a Successful Evaluation

Impact Category	Measure	Description	Quantitative Examples	Qualitative Examples
Financial Accessibility	**Equitable Funding Access**	Assessing the extent to which the financing model enables equitable access to funding for renewable energy projects, particularly for underserved communities. This includes evaluating the inclusivity of financing mechanisms and their ability to address financial barriers and disparities.	Percentage of funding allocated to underserved communities compared to total funding.	Feedback from community stakeholders on their perception of fairness and inclusivity in accessing funding opportunities.
	Affordability and Cost-Effectiveness	Evaluating the affordability and cost-effectiveness of the financing model for community stakeholders, including residents, businesses, and local organizations. This involves analyzing interest rates, repayment terms, and overall project costs to ensure financial sustainability and community buy-in.	Average interest rates offered by the financing model compared to market rates.	Interviews or surveys with community members to assess their satisfaction with the affordability of financing options and overall project costs.
Community Empowerment	**Ownership and Participation**	Measuring the level of community ownership and participation facilitated by the financing model in renewable energy projects. This includes assessing the extent to which community stakeholders are involved in decision-making processes, project governance, and revenue-sharing mechanisms.	Percentage of community stakeholders involved in decision-making processes related to renewable energy projects.	Case studies or testimonials highlighting examples of community members participating in project governance and revenue-sharing mechanisms.
	Capacity Building and Skills Development	Evaluating the financing model's contribution to building local capacity and skills in renewable energy development, including workforce training, technical assistance, and knowledge transfer initiatives. This involves assessing the model's effectiveness in promoting community empowerment, job creation, and economic resilience.	Number of individuals trained in renewable energy technologies through programs supported by the financing model.	Evaluation of project feasibility and environmental impact assessments conducted during project planning stages, considering factors such as land use, biodiversity preservation, and emission reductions.
Environmental Sustainability	**Resource Allocation and Project Viability**	Assessing the effectiveness of the financing model in allocating resources, managing financial risks, and ensuring the viability of renewable energy projects. This includes analyzing project feasibility, financial sustainability, and environmental impact mitigation strategies supported by the financing model.	Quantifying the amount of CO2 emissions avoided annually compared to traditional energy sources.	Evaluation of project feasibility and environmental impact assessments conducted during project planning stages, considering factors such as land use, biodiversity preservation, and emission reductions.

Figure G.

This framework was developed off the Investment Impact Index, incorporating its standards into a comprehensive impact measurement system. It categorizes impact into Financial Accessibility, Community Empowerment, and Environmental Sustainability, with specific measures such as Equitable Funding Access, Affordability and Cost-Effectiveness, Ownership and Participation, Capacity Building and Skills Development, and Resource Allocation and Project Viability. These measures prioritize outcomes that directly influence the mission of community-led solar financing initiatives. Detailed descriptions and both quantitative and qualitative examples are provided for each measure to ensure comprehensive assessment. Quantitative examples, such as the percentage of funding allocated to underserved communities and the number of individuals trained in renewable energy technologies, offer clear, measurable indicators of success, while qualitative data like community feedback and case studies provide contextual insights, adhering to the framework's emphasis on triangulating data.

Developed with a robust theory of change, this framework ensures that expected outcomes are clearly linked to specific activities, prioritizing the most relevant outcomes and balancing rigorous, objective data with narrative evidence. By aligning with the Investment Impact Index's guidance on selecting appropriate data sources and tools, using existing data where possible, and developing new tools as needed, this table offers a practical yet comprehensive approach to impact measurement. This alignment ensures that the strategies for community-led solar financing are not only clear and measurable but also consistent with best practices in impact measurement and management, providing a robust framework for assessing and reporting the impact of these initiatives.

PCI Sustainability and Impact Measurement (Hypothetical Case Study Continued)

Achieving sustainability in renewable energy projects is about more than just reducing energy costs or cutting greenhouse gas emissions; it's about fostering long-term community resilience and empowerment. For our hypothetical CDC, Prosperity Community Initiative, setting clear sustainability objectives and performance metrics is crucial to measure the success and impact of their solar integration project.

PCI's sustainability objectives for their solar project are multi-faceted. Primarily, they aim to achieve significant energy savings by reducing their reliance on conventional energy sources. This objective is quantified through measurable outcomes such as the reduction in kilowatt-hours (kWh) consumed from the grid and the corresponding decrease in energy expenses.

In tandem with energy savings, PCI is committed to reducing greenhouse gas emissions. This goal is tracked by calculating the amount of carbon dioxide equivalent (CO_2e) emissions avoided through the use of solar energy. These metrics provide tangible evidence of PCI's contribution to environmental sustainability and their role in combating climate change.

To ensure continuous improvement and adaptation, PCI must adopt a comprehensive strategy for evaluating the long-term impact of their solar project. This involves regular monitoring and analysis of both operational and financial performance metrics. For instance, tracking the financial savings generated by the solar installation allows PCI to assess the project's impact on their financial stability and sustainability.

Moreover, the evaluation framework should include qualitative assessments of community empowerment. This could involve surveying community members to gauge the project's impact on their quality of life, such as increased energy security or enhanced local job opportunities through the project. By coupling these insights with quantitative data, PCI can gain a holistic understanding of the project's success and areas for improvement.

Policy Implications and Future Directions for Direct Pay Adoption

In the rapidly evolving landscape of renewable energy, policy advocacy emerges as a crucial force in promoting the adoption of Direct Pay initiatives and ensuring equitable energy access. The complex interplay of federal and state policies significantly impacts the feasibility and success of these initiatives, shaping the opportunities and constraints faced by community-based organizations. To drive systemic change and foster sustainable community development, stakeholders must actively engage with policymakers, advocate for inclusive policies, and build robust partnerships with government agencies.

Policy Advocacy and Awareness

At the heart of advancing Direct Pay initiatives is the need to navigate and influence the existing policy environment. Federal and state policies can either act as catalysts or barriers to the adoption of Direct Pay mechanisms in renewable energy projects. For example, policies that provide tax incentives or grants can significantly lower the financial barriers for community organizations to invest in renewable energy. Conversely, regulatory hurdles and complex compliance requirements can stifle innovation and deter participation from smaller, resource-constrained entities.

Opportunities for collaboration with government agencies are abundant and critical. Engaging with these agencies can help align policy frameworks with the unique needs of community-based financing models. Advocacy efforts should focus on simplifying the regulatory landscape, making it more accessible for under-resourced neighborhoods to leverage Direct Pay incentives effectively. This involves pushing for policies that streamline application processes for financial incentives, reduce bureaucratic red tape, and provide technical assistance to navigate compliance requirements.

Raising awareness among policymakers about the benefits of Direct Pay initiatives is equally vital. This can be achieved through targeted advocacy campaigns, data-driven policy briefs, and direct engagement with legislators and regulatory bodies. By highlighting successful case studies and presenting compelling evidence of the economic and social benefits of direct pay-enabled projects, stakeholders can build a persuasive case for policy reform that supports broader community adoption of renewable energy solutions.

Vision for Sustainable Community Development

Looking ahead, the vision for sustainable community development hinges on the adoption of equitable energy policies and initiatives that empower communities to take charge of their renewable energy futures. Community Development Financial Institutions (CDFIs) and mission-driven banks, such as Rochdale Capital, play a pivotal role in this vision by providing the necessary capital and support to drive long-term impact in under-resourced areas. These institutions can act as financial conduits, facilitating the flow of funds into community-driven renewable energy projects and ensuring that the economic benefits are broadly shared.

Future policy directions should focus on creating a supportive ecosystem that encourages the proliferation of community-driven renewable energy solutions. This involves not only financial incentives but also educational programs and capacity-building initiatives that equip communities with the knowledge and skills to manage and sustain their renewable energy projects. Policies that promote inclusivity and remove barriers for marginalized groups are essential to ensure that the transition to renewable energy benefits all segments of society.

Furthermore, fostering partnerships between public, private, and non-profit sectors can amplify the impact of Direct Pay initiatives. Collaborative efforts can lead to innovative financing models, shared resources, and collective advocacy that strengthen the overall ecosystem for renewable energy development. By building strong alliances with government agencies, industry leaders, and community organizations, stakeholders can create a united front to advance equitable energy policies and promote sustainable community development.

In conclusion, the future of Direct Pay adoption and renewable energy access lies in a concerted effort to influence policy, build awareness, and forge partnerships that pave the way for inclusive and sustainable development. As stakeholders engage with policymakers and advocate for equitable policies, they lay the groundwork for a future where renewable energy is accessible to all, driving economic empowerment and environmental resilience in communities nationwide.

PART III: GLOSSARY

Behind the meter: Refers to energy-related activities, like generation or storage, that occur on the customer's side of the utility meter, typically involving renewable energy sources or energy efficiency measures.

Community Development Financial Institutions (CDFIs): Financial institutions dedicated to providing financial services and resources to underserved communities, including low-to-moderate income (LMI) neighborhoods. CDFIs often offer tailored loan products and financial assistance to support community development initiatives, such as renewable energy projects.

Community Development Entities (CDEs): Organizations that provide loans, investments, or financial counseling in low-income communities.

Clean Energy Sector: The industry focused on producing energy from renewable and sustainable sources, such as solar and wind power.

Climate Resiliency: The ability of a community or system to adapt to and recover from the impacts of climate change.

Community-based Financing: Financial models that leverage local community resources and investments to fund projects, ensuring community involvement and benefit.

Community Development Corporation (CDC): A non-profit organization focused on improving the welfare of a community.

Community Solar: Solar power projects where the benefits are shared among multiple community members or organizations.

Direct Pay: A federal incentive that allows entities to receive a Direct Payment instead of tax credits for clean energy projects.

Energy Efficiency: The goal of reducing the amount of energy required to provide products and services.

Environmental Justice: The fair treatment and involvement of all people in environmental policies, ensuring that no group bears a disproportionate share of negative environmental consequences.

Grid Resilience: The ability of the electrical grid to withstand and recover from disruptions, ensuring a stable and reliable energy supply.

Justice40 Initiative: A policy framework that mandates at least 40% of the benefits from major legislation, including climate-related bills, to flow to disadvantaged communities.

Key Performance Indicators (KPIs): Metrics used to evaluate the success of a project across various dimensions.

Landmark Climate Legislation: The Inflation Reduction Act of 2022 (IRA) introduced several clean energy tax credits available to various entities including businesses, tax-exempt organizations, state and local governments, and individuals. Among these, the elective pay provision, also known as Direct Pay, allows tax-exempt entities to receive direct payments for certain clean energy tax credits.

Minority Depository Institutions (MDIs): Financial institutions that primarily serve minority communities and are owned or controlled by minorities.

Mission-driven Lenders: Financial institutions that prioritize social and environmental goals alongside financial returns.

Renewable Energy Systems: Energy production systems that use renewable sources such as solar, wind, and hydroelectric power to generate electricity.

Solar Production Coefficient: The ratio of electricity generated per kilowatt (kW) of installed solar capacity, measured in kilowatt-hours (kWh) per kW.

Solar Renewable Energy Credits (SRECs): Tradable certificates representing the environmental benefits of generating one megawatt-hour (MWh) of electricity from a renewable source, such as solar energy.

System Cost: The total expenditure required to purchase and install the solar system, typically measured in dollars per watt ($/Watt).

Tax Incentives and Credits: Financial incentives provided by governments to encourage investment in renewable energy projects, including production tax credits (PTC) and investment tax credits (ITC).

Turnkey Financial Model: A comprehensive financial model designed to support community-based renewable energy projects, integrating various financial instruments and community financing mechanisms to facilitate access to capital.

Upfront Incentive: A financial incentive provided at the beginning of the project to reduce initial costs and enhance financial viability.

Utility: A company that provides essential services such as electricity, water, or natural gas to the public.