



Community Choice in Alameda County: How to Meet Four Challenges in Building Out Local Renewable Energy Resources

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The following is a set of four briefing papers prepared by the East Bay Clean Power Alliance. These briefing papers address the most common questions posed regarding a vision of a Community Choice energy program that prioritizes development of local renewable energy resources.

Common Questions:

- 1. Business Planning:**
Why can't we get the Community Choice program up and running and then figure out how to build local renewable energy assets?
- 2. Demand Reduction:**
How would reducing energy use be good for a Community Choice program?
- 3. Generation Costs:**
Can a Community Choice program prioritize local, small-scale renewable electricity and still compete with the utility?
- 4. Financing:**
Where would the money for developing local renewable energy resources come from?

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Common Question # 1: Business Planning

Why can't we get the Community Choice program up and running and then figure out how to build local renewable energy assets?



A Community Choice program's business plan is essentially a blueprint for the program: it describes the various services to be provided by the program over time and provides a roadmap for the development, procurement, and integration of local renewable energy resources, including both demand reduction and new generation. The business plan describes how a Community Choice program will contribute to fostering local economic benefits, such as jobs creation, community energy programs, local power development, and other community benefit goals.

Like any business plan, it is meant to ensure the financial viability and success of the program.

If a Community Choice program is only buying and selling electricity on the market, then planning is relatively straightforward. However, if the program is attempting to reduce long-term customer costs while meeting community economic and environmental goals through the development of local renewable energy resources, the planning is more complex: it must consider the potential resources that can be developed and over what timeframe, how these resources are to be integrated with market purchase of electricity, what kind of investments need to be made, what kind of incentive programs and policies need to be developed, and how to quantify the economic and environmental benefits that will result.

Some people oppose such advance planning by arguing that a Community Choice program needs to learn to walk (administer a program) before it can learn to run (build local assets), that business planning costs too much money, or that such planning will delay the launch and result in the program paying higher prices for electricity contracts.

In a highly competitive and volatile energy market, postponement of business planning exposes a Community Choice program to a great deal of risk, as explained below.

A Guide to Initial Market Procurement

To meet community economic and environmental goals, a Community Choice program must transition over time from procuring electricity on the market to building local assets. Without a planned transition, there is no guide at program startup for how to procure energy on the market. Long-term contracts made at the launch of the program can lock out local development for many years, pushing key community economic benefits to the side. On the other hand, short-term contracts are expensive and can negatively impact the competitiveness of the program.

In other words, energy procurement planning—balancing the length and size of contracts—must be based on the rate of integration of local generation and reduced energy demand. This cannot be done without a roadmap of how these local resources will be developed.

Long-term Program Viability

The long-term financial viability of the Community Choice program depends on reducing demand and developing local renewable sources of generation to avoid the volatility of market purchased power. A local program to build out such local resources, which begins soon after the launch of the program and grows over time as conditions permit, will permit a Community Choice program to reduce both the size and the length of service for commercial power contracts.

In fact, advanced planning enhances the ability of a Community Choice program to achieve the lowest possible costs for power. Initially, the early appeal of the program will be based not only upon its ability to provide a high percentage of renewable power, but also to procure such power cost effectively. Commercially available power resources, especially those that are both renewable and less costly than utility contracts, will become highly competitive as Community Choice programs are established around the state. It is currently estimated that up to two-thirds of investor-owned utility residential customers will depart to Community Choice programs

within five years.¹ In order for a Community Choice program to establish a long-term stable source of renewable energy at competitive prices, it must be committed to the development of cost-effective, local renewable energy resources that are financially sound and community friendly.

Planning for local development should start before launch to ensure development can occur early in the program and grow.

Selection of Service Providers

In many cases, a Community Choice program will look to third party vendors to assist in the design and roll-out of the program. Without a business plan that describes the kind of program being established and includes a high-level roadmap for local renewable energy development, requests for proposals (RFPs) for service providers will not attract proposals from appropriately qualified vendors. The electricity sector has many vendors with traditional procurement experience, but only a few who also have the skills or experience needed for the new, diverse, highly-integrated, distributed energy resource model required to deliver economic and environmental benefits to our communities. An RFP needs to solicit vendors who can implement the kind of program called for in a business plan, otherwise a Community Choice program can easily revert to a traditional utility model.

Meeting Regulatory Challenges

A Community Choice program is subject to the Power Charge Indifference Adjustment (PCIA). The PCIA is a mechanism for reimbursing the monopoly utilities for losses resulting from having procured electricity on behalf of consumers now being served by Community Choice programs. Earlier this year the California Public Utilities Commission (CPUC) allowed PG&E to nearly double the PCIA fee imposed on Community Choice customers in its service territory.²

The table to the right shows the composition of a typical electric bill for a Marin Clean Energy (MCE)³ consumer using the average monthly amount of power in their jurisdiction (463 kilowatt-hours). The column marked 'PG&E' shows the bill the utility would provide, the column marked 'MCE' shows the Marin Clean Energy bill. Rates are current as of September 1, 2016.

Marin Clean Energy (MCE) Rate Table Res-I/E-I		
	PG&E	MCE
Generation Rate (\$/kwh)	\$0.0968	\$0.0720
Delivery Rate (\$/kwh)	\$0.1027	\$0.1027
PCIA (\$/kwh)	NA	\$0.0238
Total (463 kwh)	\$92.37	\$91.91

One can see how the PCIA adjustment can easily overwhelm any generation savings. Business planning must also address the impact of rising PCIA fees, otherwise a Community Choice program could easily be in jeopardy of higher electric bills than the incumbent utility.

Planning is Not That Difficult or Expensive

Much of the data needed for planning the development of renewable energy resources is available to a Community Choice program from the incumbent investor-owned utility and from Federal and State sources. In addition, the cost of planning is recoverable from Community Choice program revenues—it constitutes a very small percentage of first-year revenues.

¹ Samuel Golding, *Response of the County of Los Angeles to Optional Homework Assignment in Preparation for the March 8 Workshop on PCIA Reform*, February, 16, 2016, p.6. Retrieved from: <http://bit.ly/2cuxhjb>

² Johnson, Lizzie. "Customers of clean energy programs hit with fee increase." San Francisco Chronicle. December 17, 2015; Johnson, Lizzie. "PG&E looking to raise fee on clean energy." SF Gate. December 10, 2015.

³ Marin Clean Energy is the County of Marin's Community Choice program. Refer to MCE rates: <https://www.mcecleanenergy.org/rates/>

Common Question # 2: Demand Reduction

How would reducing energy use be good for a Community Choice program?



Demand reduction refers to reducing the amount of electricity required to serve the needs of the Community Choice customer base. This can be achieved through energy efficiency improvements and conservation to reduce overall consumption, and through initiatives to reduce peak load.

Some people have suggested that demand reduction might be a problem for a Community Choice program: that it could cut into a Community Choice program's revenues from electricity sales or could leave the program with stranded electricity purchases as demand decreases. Can a Community Choice program actually benefit financially from reducing demand?

In fact, demand reduction is one of the key methods for a Community Choice energy program to meet community goals related to lowering and stabilizing costs for consumers, reducing greenhouse gas emissions, creating local jobs, and ensuring a robust, financially sustainable program.

Lowering System Costs by Lowering Peaks

Peak load refers to the point of highest overall customer consumption of electricity. While there are daily peaks in electricity consumption, as well as peaking patterns over the course of a year, peak demand is generally limited in duration. Yet peak demand dictates the capacity required for electricity generation, transmission lines, and the full electricity distribution system needed to serve customers. Typically in the US, 10% of electric system capacity is built to meet peak demand of only 1% of hours during the year.¹

Peak demand is typically met through special power plants known as peaking power plants or 'peakers'. Because they are normally idle and have to be ramped up rapidly, peaking power plants provide electricity at a higher cost per kilowatt-hour than base load power plants, which are better utilized and run continuously. A key strategy for cutting system costs of electricity is to flatten electricity demand by lowering and spreading out the peaks.²

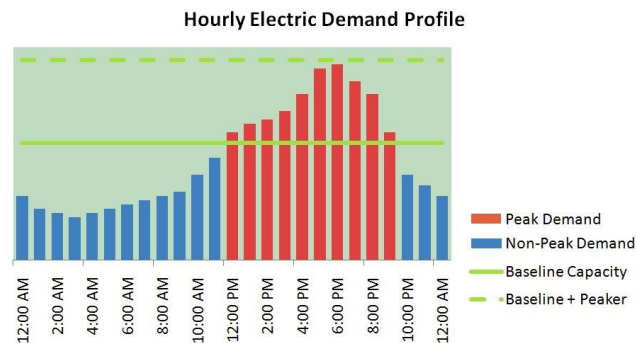


Figure 1: Electricity Demand Profile

A Community Choice energy program has access to customer load data and can therefore pinpoint the main contributors to peak load. On this basis it is well suited to implementing a demand reduction program specifically focused on lowering those peaks. This can be achieved through targeting specific customers or sectors and, more generally, incentivizing and encouraging customers to reduce energy consumption during peak times and/or shift electricity consumption to different parts of the day. Many approaches, including rate structures and new "demand response" technologies are available to accomplish this. A recent study demonstrated that for every \$1 spent on reducing peak demand at least \$2.62 would be saved by ratepayers in Illinois, and \$3.26 by ratepayers in Massachusetts.³

Another way the Community Choice program can lower the cost of meeting peak demand is by incentivizing rooftop solar. Peak demand typically occurs around 4-7pm. Part of that period coincides with peak rooftop solar generation in the afternoon. Households with rooftop solar, especially those with local battery storage, can meet their electricity needs at these peak periods with their behind-the-meter generated solar energy, decreasing the amount of electricity that must be provided through the grid.⁴

Reducing peak load will also lower the Community Choice program's cost of meeting Resource Adequacy requirements. The California Public Utilities Commission established a Resource Adequacy program which requires that all load-serving entities—including Community Choice programs—demonstrate that they have secured capacity commitments of no less than 115% of their peak loads to ensure system reliability.⁵ With a lower peak load, those capacity commitments decrease, saving the Community Choice program money.

Efficiency is the Cheapest & Cleanest Energy Source

An aggressive program of demand reduction, which meets pre-determined goals, will reduce system costs of the Community Choice program. Along with increased energy efficiency, households and businesses can also lower monthly energy bills by reducing consumption through low- and no-cost conservation measures.

Further, energy efficiency improvements in buildings and appliances are consistently some of the lowest cost (or negative lifetime cost) and highest impact measures for greenhouse gas emissions reduction.⁶ These improvements include lighting retrofits; improved heating, ventilation, and air conditioning systems; building envelope upgrades; and advanced building control systems.

As demand for electricity decreases in response to demand reduction programs, a Community Choice energy program can shape its market procurement contracts to match a decreasing load and thereby avoid the problem of stranded purchase contracts.

The purpose of a Community Choice program is to provide energy services to the community, rather than to make a profit for shareholders. Reducing overall electricity consumption can result in lower procurement costs for the program, lower bills for consumers, cost-effective greenhouse gas emission emissions reduction, and creation of local jobs to implement energy efficiency improvements at the building level.

Focusing on Local Needs

A locally managed energy efficiency program delivered through a Community Choice program will allow program customization and flexibility not possible from the incumbent utility, which must provide services to millions of customers spread across many counties.⁷ Further, unlike incumbent utilities, Community Choice programs are not motivated to build expensive additional infrastructure in order to increase the rate-base and grow revenues. The local control of a Community Choice program enables it to focus on the most beneficial energy efficiency improvements, from the perspective of savings, local economic benefits, greenhouse gas emissions reduction, health, waste reduction, and equity, rather than on delivering the high shareholder returns that are essential to an investor-owned, publicly traded utility.

Creating Jobs and Strengthening Community Resilience

A demand reduction program can create local job opportunities and stimulate local businesses. The energy efficiency upgrades and building retrofits key to demand reduction require local, skilled labor. By investing in local demand reduction, rather than purchasing imported power, Community Choice programs can prioritize local workforce development (with union and prevailing wage jobs), provide improved air quality and health outcomes, and enable consumers to retain more money in the local economy. These benefits will be particularly impactful in low income communities and communities of color.

¹ Advanced Energy Economy, "New Report: Reducing Peak Demand Saves Money for Electricity Customers." October 15, 2015. Retrieved 8/18/2016 from: <https://www.aee.net/articles/new-report-reducing-peak-demand-saves-money-for-electricity-customers>.

² Image from: "First-of-its-kind energy storage facility in Australia." January 24, 2014. Retrieved 8/30/2016 from: <http://www.eco-foryou.com/posts/view/first-of-its-kind-energy-storage-facility-in-australia>.

³ Navigant Consulting for Advanced Energy Economy, Peak Demand Reduction Strategy. 2015. p.35.

⁴ Navigant Consulting, 2015. p.38.

⁵ Makler, Alex. "What is resource adequacy?" PowerMag. October 15, 2007. Retrieved 8/18/2016 from: <http://www.powermag.com/what-is-resource-adequacy/>; California Public Utilities Commission, "Resource Adequacy." Retrieved 8/18/2016 from: <http://www.cpuc.ca.gov/ra/>.

⁶ McKinsey & Company. "Reducing Greenhouse Gas Emissions: How Much at What Cost?" 2007. Accessed 8/18/2016 from: <http://www.mckinsey.com/business-functions/sustainability-and-resource-productivity/our-insights/reducing-us-greenhouse-gas-emissions>.

McKinsey & Company. "Pathways to a Low Carbon Economy." 2013. Accessed 8/18/2016 from: <http://www.mckinsey.com/business-functions/sustainability-and-resource-productivity/our-insights/reducing-us-greenhouse-gas-emissions>.

⁷ For example, PG&E services 15 million customers across 47 counties.

Common Question # 3: Generation Costs

Can a Community Choice program prioritize local, small-scale renewable electricity and still compete with the utility?



Many people question how a Community Choice program can prioritize more expensive local renewable generation and still compete with utility-scale generated electricity of the incumbent utility. In addressing this question, it is useful to consider the following points.

Electric Rates Are Not Based Only on the Cost of Generating Electricity

While the cost of generation for community-scale, decentralized renewable energy is decreasing rapidly, it is currently higher per kilowatt hour than centralized, large-scale renewable energy. Nevertheless, it is still possible for a Community Choice program to procure local renewable energy and match or beat the electricity rates that utilities charge customers. This is because the rates that a Community Choice program charges customers depend on overall system costs, not solely the cost of energy generation.

Unlike for-profit, investor-owned utilities, whose incentives are aligned with a growing electricity load, a non-profit Community Choice program's incentives are aligned with an optimized energy system. As such, a Community Choice program can invest in methods to lower overall electricity costs and pass those savings on to customers through lower electricity rates.

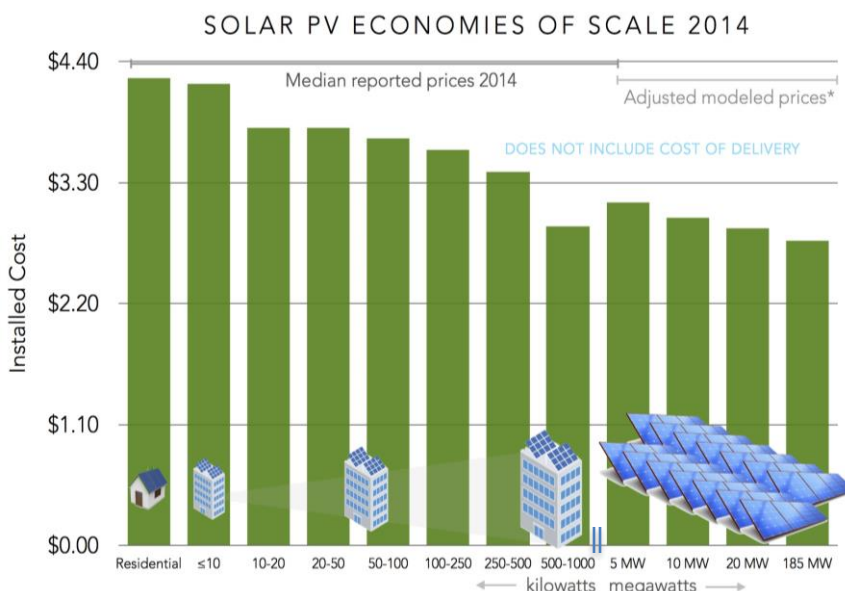
One method of optimizing the energy system is by reducing peak load requirements. Energy efficiency programs, incentive structures that encourage consumers to change electricity use patterns, and increasing rooftop solar all contribute to reducing peak load, which can significantly reduce the overall cost of electricity, and thereby enable lower rates for customers.

Local Generation Does Not Have to Cost More

A Community Choice program can institute many practices that reduce the cost of locally generated electricity.

Economies of Scale

A common argument for centralizing energy generation is to achieve economies of scale—costs per kilowatt hour come down as generating capacity goes up, mostly due to reduced transaction costs related to siting, permitting, designing, and financing projects. These benefits of scale kick in at relatively small generating capacity. There is a 15% decrease in installed cost for projects sized from less than 10 kilowatt to the 100-250 kilowatt range, and another 20% decrease in the cost for projects in the 500-1000 kilowatt range.¹ As such, medium-sized projects in the 100-1000 kilowatt range, owned by multiple individuals or organizations, as in the case of shared solar facilities, can enjoy the benefits of economies of scale, as demonstrated in chart. Likewise, aggregating rooftop solar projects can also result in significant cost-saving.



Transaction Costs

As a public electric service agency, a Community Choice program can enhance the cost-competitiveness of smaller-sized local facilities through collaboration with local governments to reduce transaction costs for smaller-scale projects by streamlining permitting and zoning procedures. A report by Sunrun found that local permitting for solar added \$.50 per watt to the installation costs of solar systems.² The Community Choice program of the city of Lancaster has become a model for streamlined solar permitting in its drive to become a net zero energy city by 2020.³ A recent report by the Rocky Mountain Institute found that measures such as volume aggregation and lowering the cost of borrowing could reduce the cost of community-scale solar projects by 40%, putting them on a cost-parity with utility-scale projects.⁴

Transmission Costs

Lastly, many cost comparisons do not include the high transmission costs and line-loss costs associated with centralized, remote, utility-scale generation. Particularly when combined with the consequences of ecosystem and social disruptions caused by the construction of new transmission lines, those costs can be very significant.

However, under current regulations investor-owned utilities charge transmission costs to Community Choice customers, even if the program only purchases locally-generated power. It is estimated that these transmission costs amount to about \$.03 per kilowatt hour (about 25% of average electricity rates). These transmission costs prevent Community Choice customers from exploiting one of the key potential cost savings of locally-generated electricity. There are efforts underway at the California Integrated Systems Operator (CAISO) to correct this market distortion. If successful, the relative cost of local renewable generation will fall significantly.⁵

What About the Benefits?

In addition to considerations of cost, locally-generated electricity produces benefits to communities that remote utility-scale generation does not. The value of Community Choice depends not on costs alone, but on a cost/benefit analysis.

Community-owned and other behind-the-meter generation infrastructure, like rooftop solar, keeps wealth created by electricity generation in local communities. Large executive salaries and shareholder dividends at investor-owned utilities, on the other hand, cause wealth to leave communities. As demonstrated by the Institute for Local Self Reliance, a 1 megawatt locally owned solar facility generates as much as \$5.7 million of economic development benefits for a community over its lifetime, nearly twice as much as if it were owned by a remote leasing company.⁶

Community Choice programs have the opportunity to ensure that these benefits are distributed equitably throughout the community and not just reserved for higher income homeowners, for example, by enabling shared ownership of resources for renters and others who do not have usable rooftops. Economic development and local ownership also create local employment opportunities and reduce strain on local governments by reducing costs such as unemployment pay-outs, public assistance, policing, and incarceration. With cleaner energy, reduced air pollution, greater wealth retention, higher employment, and lower crime, Community Choice programs can contribute to healthier and more resilient communities.

¹ Chart and information from: Farrell, John. "Questioning Solar Energy Economies of Scale." Feb 22, 2016. [Renewable Energy World](http://www.renewableenergyworld.com/ugc/blogs/2016/02/questioning_solaren.html). Retrieved from: http://www.renewableenergyworld.com/ugc/blogs/2016/02/questioning_solaren.html.

² Sunrun. "The Impact of Local Permitting on the Cost of Solar Power". Retrieved from: <https://www.sunrun.com/solar-lease/cost-of-solar/local-permitting>

³ Center for Sustainable Energy. "Case Study: Lancaster's ZNE Goal." Retrieved from: <http://energycenter.org/case-study-lancasters-zne-goal>

⁴ Rocky Mountain Institute. "Community-Scale Solar: Why Developers and Consumers Should Focus on this High-Potential Market Segment." March 2016 Retrieved from: <http://rmi.org/Content/Files/RMI-Shine-Report-CommunityScaleSolarMarketPotential-201603-Final.pdf>

⁵ For more information on efforts to reform 'Transmission Access Charges,' see: <http://www.clean-coalition.org/our-work/tac/>

⁶ Farrell, John. "Advantage Local: Why Local Energy Ownership Matters." Institute for Local Self Reliance, September 2014. Retrieved from: http://ilsr.org/wp-content/uploads/downloads/2014/09/Advantage_Local-FINAL.pdf

Common Question # 4: Financing

Where would the money for developing local renewable energy resources come from?



A Community Choice program can build local renewable energy resources directly by developing demand reduction programs and local renewable generation facilities and, indirectly, by creating incentives for residents, businesses, and participating municipalities to develop clean energy resources.

The financial resources available to a Community Choice program for investment in building local renewable resources are many, and they change as the program establishes a good track record. In the early years of the program, using net revenues to build a reserve—rather than to finance development projects—eventually will allow the program to leverage larger sources of capital investment for more significant build out of renewable resources.

With adequate pre-launch planning, Community Choice programs can begin to develop local renewable resources immediately after launch with little or no direct financial investment. As the program establishes a steady revenue stream and financial resources, access to capital increases and the program can invest directly in developing a significant percentage of its renewable portfolio locally.

Incentivizing Private Local Renewable Resource Development

Starting with its launch, a Community Choice program can provide incentives for local renewable development by private investors. Because these incentives represent only a fraction of the cost of that development, such programs can be initiated with the first rollout to customers. Incentive programs such as net energy metering (NEM), virtual net energy metering (V-NEM), and feed in tariffs (FiT), encourage renewable power production within the Community Choice program's jurisdiction. These programs entail a commitment to purchase the power at prices that are profitable for developers. Community Choice programs can also incentivize private development by extending or facilitating alternative financing, such as on-bill repayment and property assessed clean energy (PACE) programs.

Government Funds for Targeted Local Renewable Resource Development

Both California and the Federal government have designated funds that are available for financing renewable energy projects—both energy generation and demand reduction—for residents in low income communities. Twenty-five percent of the proceeds from California's Cap & Trade program are designated to benefit disadvantaged communities throughout California.

Financing for Public Local Renewable Resource Development

Using incentives and government incentives in its early years allows a Community Choice program to prioritize net revenues for building a reserve fund—not only as a hedge against economic risks, but also as a commitment to sound financial planning, as required to establish a favorable credit rating. A strong credit rating will give the program access to larger pools of finance capital that can be used for more substantial public energy resource development projects.

Power Purchase Agreements and Equipment Leasing

At launch, Community Choice programs have build-out options that require no public up-front financing, such as power purchase agreements (PPA) and equipment leases. These options provide a way for Community Choice programs to initiate local development directly before having access to significant amounts of capital. Third parties provide the capital for the project and in return are paid either a fixed rate for the power produced or rent for the leased equipment. Alameda County's Regional Renewable Energy Program, launched in 2014 with plans to develop 31 MW of solar energy, provides a good example of the use of PPAs by a public agency.

Bonds

Several types of bonds are now available to a Community Choice program for developing public renewable energy projects. These include Revenue bonds, Lease revenue bonds, and Solar revenue bonds. These bonds

differ in their required levels of voter approval, conditions, and tax advantages, but are all paid off through revenue generated by the development projects they finance, usually through the sale of the electricity produced.

In addition, with an already established credit rating, cities could choose to develop significant renewable resources using government bond financing available to them at any stage of the Community Choice program. They could then sign long-term contracts to sell power to a Community Choice program, creating a revenue stream. For example, Berkeley is considering using revenue bonds to finance the development of local solar projects in order to fulfill its goal of meeting 50% of its electricity needs with solar by 2030. They would contract with the Alameda County Community Choice program to buy the power.

There are also Federal bonds such as Clean Renewable Energy Bonds (CREB) and Qualified Energy Conservation Bonds (QECG) that can reduce the cost of borrowing by a Community Choice program.

Bank Financing and Investment

As a Community Choice program becomes more established, more traditional kinds of bank financing also become available, both for public and private development projects. Community Development Finance Institutions (CDFIs), chartered by the Federal Government, provide low-interest loans to community development projects. In addition, new alternative financing mechanisms, such as crowdfunding, direct public offerings, and options provided by institutions like Cutting Edge Capital, which develops alternatives to traditional financing, are becoming available for community-based development projects.

Summary of Financing Options

The financing options discussed briefly above are described in more detail in the attached tables. As demonstrated, there are many available options open to a Community Choice program for financing the development of local renewable energy resources—both at launch of the program, and then subsequently through public investment as the program establishes a good credit rating.

Community Choice Program Financing Mechanisms for Local Renewable Resource Development

Incentivizing Private Local Renewable Resource Development					
Type	Description	Funding Source	Cost to CCE	Advantages	Disadvantages
Net energy metering (NEM)	Credit on utility bill for excess power exported to grid	CCE	Difference between wholesale and retail price per kWh	Can be used immediately upon launch to incentivize behind-the-meter and community solar	Price per kWh could be higher than retail rate, resulting in marginal increase in power costs for CCE
Virtual net-metering (V-NEM)	Credit on utility bill for participants who buy into community solar program	CCE	Difference between wholesale and retail price per kWh	Can be used immediately upon launch to incentivize community solar Makes NEM available to renters	Currently only available to MASH renters but program will be expanded soon
Feed in Tariff (FiT)	Payment to electricity generator for all power produced in excess of on-site demand and put into the grid	CCE	Difference between retail price and FiT price per kWh set by CCE	Can be used immediately upon launch to incentivize community solar and rooftop installations	Price per kWh could be higher than wholesale rate, resulting in marginal increase in power costs for CCE
On-bill repayment	Third party finances renewable project; customer repays on utility bill over time; available to residential and commercial property owners	Third party	Up-front cost is eventually recouped	Allows low income participation in renewable projects Third party or CCE can finance; can be used immediately upon launch	If CCE is financing, requires sufficient surplus revenues Requires cooperation of IOU in processing on-bill repayments
Property Assessed Clean Energy program (PACE)	Cost of renewable project included in property tax bill over a set term (5-25 years); transferred to new owner if sold; available to residential and commercial property owners	Local/state government's private financing partner	None	Many PACE programs available in CA No cost to CCE Available immediately upon launch	Marketing and customer education needed to spur customer uptake

Community Choice Program Financing Mechanisms for Local Renewable Resource Development

Government Funds for Targeted Local Renewable Resource Development					
Type	Description	Funding Source	Cost to CCE	Advantages	Disadvantages
SB 535/Cap & Trade Auction	25% of Cap & Trade auction proceeds to benefit disadvantaged communities, 10% for projects within those communities	State of CA	CCE staff resources	Can reduce electricity bills for low-income residents CCE can apply immediately after launch	Requires CCE staff time to apply
AB 693 Multi-family, affordable solar housing program (MASH) ¹	\$100M/year pool provides \$1.1-1.8/W towards solar installation costs on multi-family units	State of CA	CCE staff resources	Can reduce electricity bills for low-income residents, especially renters CCE can apply immediately after launch	Requires CCE staff time to apply
Single-family affordable solar housing (SASH) ²	Cap & Trade revenue funds provides \$3/W toward solar installation for single-family low income homes	State of CA	CCE staff resources	Can reduce electricity bills for low-income residents CCE can apply immediately after launch	Requires CCE staff time to apply
Low Income Home Energy Assistance program (LIHEP) ³	Weatherization and other energy efficiency projects	Federal government	CCE staff resources	Can reduce electricity bills for low-income residents CCE can apply immediately after launch	Requires CCE staff time to apply
USDA Renewable Energy Assistance Grants	Loan guarantees and grants for renewable energy and energy efficiency projects for small businesses and farms in rural areas; provides loan guarantees of up to 75% of project costs and grants of up to 25% of project costs	Federal government	CCE staff resources	Program is underutilized so money is available	Requires CCE staff time to promote program to eligible residents and businesses Only available for rural communities; loan guarantee and grant caps apply
Fannie Mae Green Financing Loans ⁴	Low-interest loans and preferential pricing for multi-family property energy and water efficiency retrofits	Fannie Mae	CCE staff resources	Can reduce water and electricity bills for renters	Requires CCE staff time to promote program to eligible property owners

Community Choice Program Financing Mechanisms for Local Renewable Resource Development

Financing for Public Local Renewable Resource Development					
Type	Description	Funding Source	Cost to CCE	Advantages	Disadvantages
Power Purchase Agreements (PPAs)	Contract between a power producer and property owner for development of onsite power generation	Third party power developer	CCE pays fixed rate for power and resells power to customers	Could be accessed immediately upon launch No upfront costs for CCE No liability in case of equipment failure or underperformance	No ownership of generation assets Higher lifecycle cost than if CCE could pay for project upfront
Solar Lease	Contract between a solar installer and property owner or CCE	Third party solar installer	CCE makes monthly lease payments to solar installer and sells solar power to customers	Could be accessed immediately upon launch No upfront costs for CCE No liability in case of equipment failure or underperformance	No ownership of generation assets Higher lifecycle cost than if CCE could pay for installation upfront
Lease revenue bonds	CCE issues bonds for project; third party investors buy bonds, lease asset to issuer; lease is annually renewed; title held by issuer as long as payments are made	Third party investors	Repayment + interest as lease payments	No voter approval required; can be used immediately upon launch; commonly used for municipal projects; attractive to investors	If utilized before credit established interest is higher; if used too much, impacts credit rating
Revenue bonds	Bonds issued by CCE and paid off with customer revenue	Third party investors	Repayment + interest	Can finance large projects	Majority voter approval required Credit rating required
Solar bonds (H-bonds)	Special type of revenue bond for renewable energy projects authorized by an ordinance	Third party investors	Repayment + interest	Once ordinance passes, new bond issuance does not require voter approval	Requires credit rating and passage of ordinance
General obligation bonds	Bonds secured by full faith and credit/ ability to tax or levy cost to meet repayment obligation	Third party investors	Repayment + interest	Can fund large capital investment projects	Requires credit rating and 2/3 voter approval
Community Development Finance institutions (CDFI)	Financial institutions like Cutting Edge Capital with community development as primary mission, certified by US Dept. of Treasury	CDFI and investors	Repayment + interest	Source of financing for CCE projects through direct public offerings and loans that can be used upon launch	Unlikely to fund large projects before CCE has established a credit rating.

Community Choice Program Financing Mechanisms for Local Renewable Resource Development

Bank loans	Any Bank or financial institution	Bank	Repayment + interest	Few restrictions	Unlikely to fund large projects before CCE has established a credit rating.
Clean Renewable Energy Bonds (CREB) ⁵	Bonds for renewable energy project that offer IRS tax credit for bond holder	Third party investor, IRS	Repayment + interest	Reduces interest paid by issuer through a tax credit to bond holder	Funds for program are limited; tax credit counted as taxable income
Qualified Energy Conservation Bonds (QECB) ⁶	US Treasury bonds for energy efficiency projects	Third party investor	Repayment + interest	Provides capital at reduced interest rate	Funds for program are limited; bonds are taxable; application is cumbersome

¹ MASH program: <http://www.gosolarcalifornia.ca.gov/affordable/mash.php>

² SASH program: <http://www.gosolarcalifornia.ca.gov/affordable/sash.php>

³ California LIHEP: <https://www.benefits.gov/benefits/benefit-details/1540>

⁴ Fannie Mae Green Initiative Financing: <https://www.fanniemae.com/multifamily/green-initiative-financing>

⁵ CREB: <http://energy.gov/savings/clean-renewable-energy-bonds-crebs>

⁶ QECB: <http://energy.gov/eere/slsc/qualified-energy-conservation-bonds>