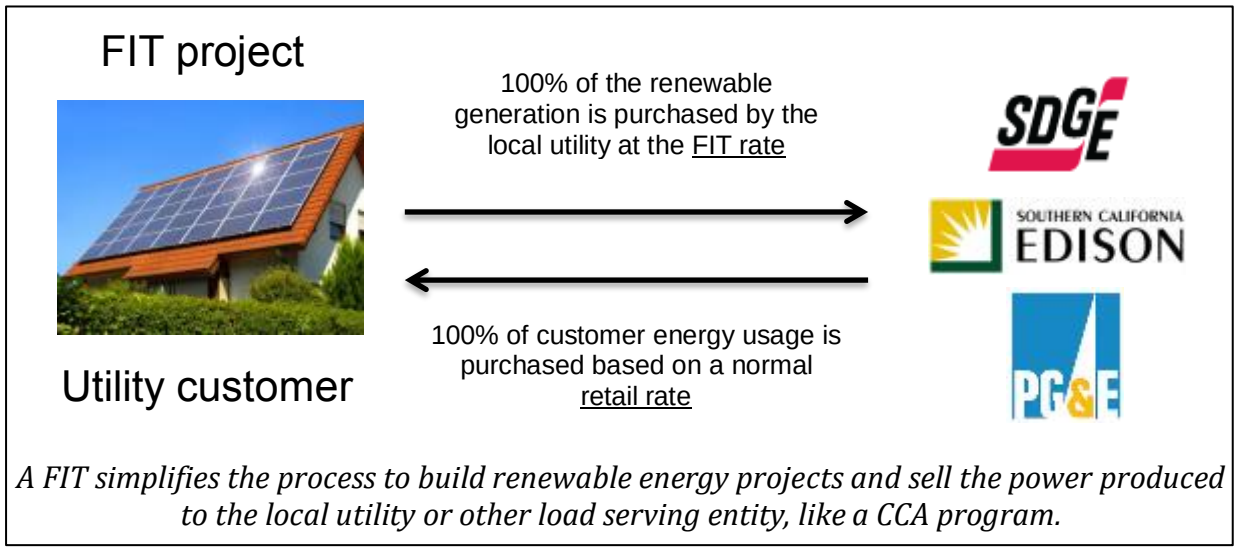
Environmental Justice Feed-in Tariff proposal for the California Public Utilities Commission

Introduction

As part of its bold renewable energy and climate goals, California has a stated interest in expanding access to clean local energy for low-income residents. The purpose of this proposal is to detail how the California Public Utilities Commission (CPUC) can create an environmental justice Feed-in Tariff (FIT) program designed to bring local renewable energy, and the associated economic benefits, to the state's most disadvantaged communities. Such an approach is strongly recommended to meet the current needs to deploy renewables in and around the environmentally disadvantaged community in Oxnard.

An overview of FITs

A FIT is an effective way to drive deployment of local renewable energy. FITs make it easy to build local renewable energy projects, connect them to the grid, and sell power to the local utility at a fixed rate. FITs are effective because they offer a standardized and guaranteed contract with a long-term, predefined, and fixed rate paid for electricity produced by renewable energy facilities and sold to the local utility or other load serving entity like a Community Choice Aggregation (CCA) program, as illustrated in the below image.



A FIT simplifies the process to build renewable energy projects and sell the power produced to the local utility or other load serving entity, like a CCA program.

Many viable local renewable energy development opportunities throughout California have not been pursued because of insufficient load or because buildings are spilt-

metered, non-owner occupied, or multi-tenant. For properties in any of these situations, net metering is not an effective policy. FITs enable deployment of clean local energy on such properties and can be designed to drive deployment in specific geographic areas, like disadvantaged communities, or a section of the grid in need of services, like the Moorpark Subarea and the Preferred Resources Pilot grid area.

FITs are also effective at driving rapid development of clean local energy. Because FIT programs are vastly simpler than traditional procurement, developers of smaller projects can feasibly participate, opening a much wider range of opportunities for load serving entities to procure renewable energy. For example, in 2010, the Sacramento Municipal Utility District (SMUD) created a 100 megawatt (MW_{AC})[1] FIT program with pricing based upon the utility's avoided cost of energy, including adders for avoidance of greenhouse gas emissions and gas price volatility.[2] SMUD's FIT opened in January 2010, was fully subscribed by the end of that month, and resulted in 98.5 MW of new solar PV capacity online within two years.[3]

Environmental justice FIT program design

As a program specifically aimed at promoting renewable energy in environmentally disadvantaged communities, a well-designed environmental justice Feed-in Tariff (EJ-FIT) program would allow the CPUC to expand use of local solar energy in disadvantaged communities across the state. The Clean Coalition recommends that the CPUC initiate a statewide EJ-FIT based on the following program design.

Program size and timing

A statewide program capacity of 300 megawatts (MW) should be established. Each of California's investor-owned utilities (IOUs) should make available a proscribed amount of capacity, based on total load, as has been done through California's Renewable Energy Market Adjusting Tariff (ReMAT) program. We recommended the following IOU capacity allocations, which are consistent with the previously approved percentage allocations under the ReMAT program.

Utility	Allocation (%)	Allocation (MW)
Southern California Edison	46%	138
Pacific Gas & Electric	44%	132

[1] All capacity references in this document are in Alternating Current (AC).
[2] Sacramento Municipal Utility District SMUD Feed-In Tariff Program," Clean Energy States Alliance, available at www.cesa.org/assets/Uploads/Resources-post-8-16/cesa-awardSMUD.pdf
[3] "RIP FITs: As U.S. feed-in tariffs fade, adopting elements could spur solar growth," Utility Dive, July 18, 2016, available at www.utilitydive.com/news/rip-fits-as-us-feed-in-tariffs-fade-adopting-elements-could-spur-solar-gr/422727/.

San Diego Gas & Electric	10%	30
Total	**100%**	**300 MW**

The 300 MW of FIT program capacity should be rolled out over 3 years in quarterly allocations of 25 MW split between the IOUs, as shown below.

Allocation date	SCE capacity allocation	PG&E capacity allocation	SDG&E capacity allocation	Total allocated program capacity
Spring 2019	11.5 MW	11 MW	2.5 MW	25 MW
Summer 2019	11.5 MW	11 MW	2.5 MW	50 MW
Fall 2019	11.5 MW	11 MW	2.5 MW	75 MW
Winter 2019	11.5 MW	11 MW	2.5 MW	100 MW
Spring 2020	11.5 MW	11 MW	2.5 MW	125 MW
Summer 2020	11.5 MW	11 MW	2.5 MW	150 MW
Fall 2020	11.5 MW	11 MW	2.5 MW	175 MW
Winter 2020	11.5 MW	11 MW	2.5 MW	200 MW
Spring 2021	11.5 MW	11 MW	2.5 MW	225 MW
Summer 2021	11.5 MW	11 MW	2.5 MW	250 MW
Fall 2021	11.5 MW	11 MW	2.5 MW	275 MW
Winter 2021	11.5 MW	11 MW	2.5 MW	300 MW
Total	**138 MW**	**132 MW**	**30 MW**	**300 MW**

If any capacity remains unclaimed in an IOUs quarterly allocation within 30 days of its next upcoming allocation, then all excess capacity should be rolled into the next allocation. For example, if SCE's 11.5 MW allocation in Spring 2019 receives only 8 MW worth of viable applications, then SCE's Summer 2019 capacity allocation should total 15 MW — the originally planned 11.5 MW plus the 3.5 MW of unclaimed capacity from Spring 2019. This will ensure that the program remains on track to deliver the desired capacity in line with the program timeline.

Project eligibility

For a project to participate in this environmental justice FIT, the Clean Coalition recommends it meet the following criteria.

1) New resource. The generating resource should be new, meaning that is has not produced or delivered electric energy prior to the date in which the respective load serving entity receives its application to participate in this FIT program.

2) Location. The project must be located in the applicable IOUs service territory and also in a geographic area designated as a disadvantaged community pursuant to Senate Bill 535. A map of these eligible communities, produced by CalEPA, is available online.[4] CalEPA's EnviroScreen 3.0 tool is intended to help guide investment in "disadvantaged communities," as defined by the community's pollution burden and socioeconomic vulnerability.

3) Technology. Only solar photovoltaic (PV) projects are eligible to participate in the program, in alignment with Senate Bill 350's goal of expanding low-income access to solar.

4) Project size. The maximum project size eligible to participate is 3 MW.

Pricing

The Clean Coalition recommends that the CPUC establish initial program pricing based on market data uncovered through the ReMAT program, which also has a 3 MW project size limit.

Below are the most recent market prices for the various IOUs ReMAT programs.

Utility	Recent ReMAT pricing (¢/kWh)
Southern California Edison[5]	4.123
Pacific Gas & Electric[6]	6.123
San Diego Gas & Electric	n/a

[4] "SB 535 Disadvantaged Communities," California EPA, available at http://oehha.maps.arcgis.com/apps/View/index.html?appid=c3e4e4e1d115468390cf61d9db83efc4.

[5] "ReMAT pricing for Period 23," Southern California Edison, available at https://sceremat.accionpower.com/ReMAT/doccheck.asp?doc_link=ReMAT/docs/FIT/2013/documents/i.%20Capacity%20and%20Price%20Calculations/ReMAT%20Capacity%20Calculations%20Program%20Period%2023.pdf, last visited August 29, 2017.

[6] "ReMAT Feed-in Tariff," Pacific Gas & Electric, available at https://pge.accionpower.com/ReMAT/home.asp, last visited August 29, 2017.

Note that SDG&E pricing is not applicable because the utility has not brought any capacity online through its ReMAT program since 2014. Therefore, its solar PV pricing data is no longer relevant due to continued and significant cost reductions.

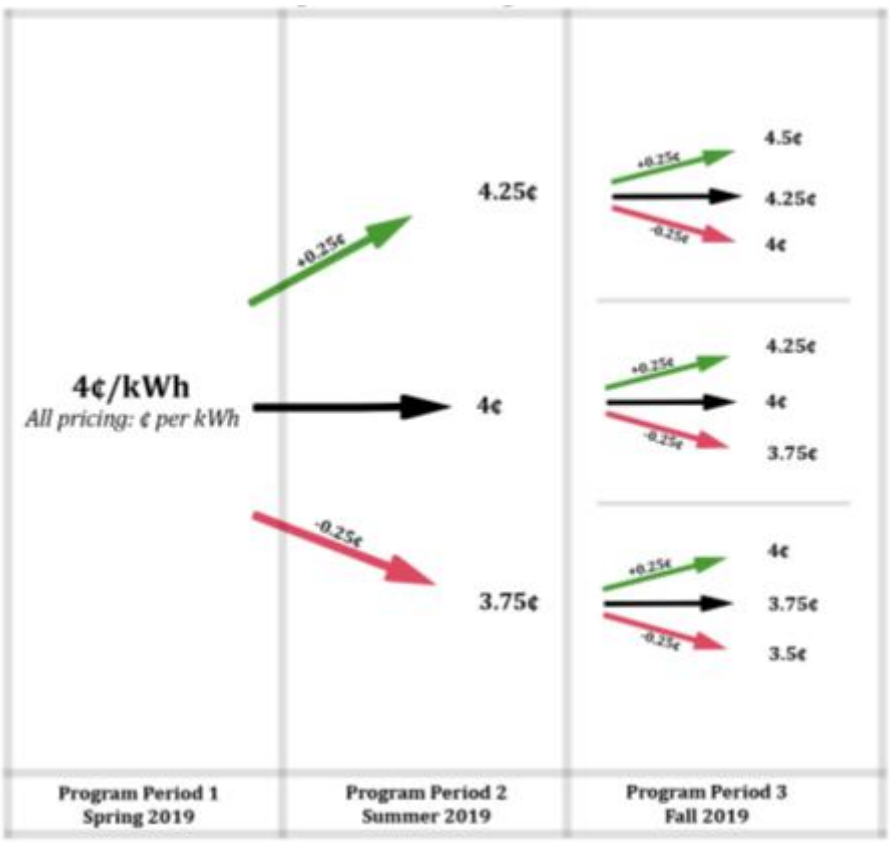
Based on this pricing data, the Clean Coalition recommends the CPUC initiate its environmental justice FIT program with fixed, 20-year power purchase agreement (PPA) pricing, initially set at:

- SCE: 4¢/kWh
- PG&E: 6¢/kWh
- SDG&E: 6¢/kWh

Each utility should then utilize market-responsive pricing (MRP) to adjust the offered price for all subsequent tranches. MRP is an effective and easy-to-implement mechanism that allows the price offered to automatically adjust as the market responds to the program. The essential feature of MRP is to adjust the FIT price offered based on the market uptake. With high interest in a FIT, the offered price adjusts downward for future PPAs. With low interest in a FIT, the offered price adjusts upward for future PPAs. MRP has emerged as a best practice for accurate price discovery, through ongoing polling of the market, over the duration of an energy procurement program.[7]

For example, SCE should institute a MRP design for its environmental justice FIT, which will have a starting price of 4¢/kWh, as illustrated in the below graphic.

[7] "Market Responsive Pricing: Policy Mechanism Brief," Clean Coalition, May 2013, available at www.clean-coalition.org/site/wp-content/uploads/2013/07/Market-Responsive-Pricing-Brief-14_ssw-7-May-2013.pdf, last visited April 18, 2016.



Based off this initial FIT PPA rate, pricing adjustments should be made quarterly when new FIT program capacity is allocated. Adjustments of ±0.25¢ are large enough to ensure program pricing is market responsive, while not so large that wild swings in pricing will create an unstable and ineffective program. The following guidelines detail our recommended MRP mechanism for every IOUs environmental justice FIT program:

Downward price adjustment

- If valid applications exceeding 100% of IOUs desired quarterly capacity have been reserved as of 30 days prior to the next scheduled quarterly procurement, then there is a downward price adjustment of 0.25¢ per kWh.
    - For example, if SCE receives more than 11.5 MW of applications for a given quarterly allocation, then the price offered for the next allocation should decrease 0.25¢.

No price adjustment

- If valid applications totaling between 60% and 100% of desired quarterly capacity have been reserved as of 30 days prior to the next scheduled quarterly procurement, no price adjustment is made.
    - For example, if SCE receives between 6.9 MW and 11.5 MW of applications for a given quarterly allocation, then the price offered for the next allocation should remain the same.

Upward price adjustment

- If valid applications totaling less than 60% of desired quarterly capacity have been reserved as of 30 days prior to the next scheduled quarterly procurement, then there is an upward price adjustment of 0.25¢.
    - For example, if SCE receives less than 6.9 MW of applications for a given quarterly allocation, then the price offered for the next allocation should increase 0.25¢.

Note that quarterly pricing adjustments allow adequate time for potential providers to respond. Additionally, our recommended pricing adjustments are proportionate to the level of market response, while providing increments sufficient to change market response in the next allocation.

Even within a single utility territory, the cost of developing solar PV projects will vary significant depending on the project location and project size. This is because of two main reasons. First, land is more expensive in dense urban environments than in rural environments. Second, smaller project sizes result in high installations costs per kW of capacity. To account for these variations in pricing, the Clean Coalition recommends that this environmental justice FIT offer three pricing adders: a built environment adder, a small project adder, and a community benefit adder.

1. *Built environment adder*

Developing solar energy projects within the built environment helps preserve pristine spaces and minimizes the environmental impacts of these projects. To drive the siting of FIT projects to within the built environment — which includes rooftops, parking lots, brownfields, and landfills — each IOU's environmental justice FIT program should offer a 50% built environment adder to projects sited in these locations. The 50% built environment adder will be based on the current 20-year FIT pricing for an IOUs program. For example, if SCE's FIT is offering 4¢/kWh, then a 1 MW FIT project sited on a large rooftop would receive 6¢/kWh for the full 20-year contract. If SCE's FIT were offering 3.5¢/kWh (due to its MRP feature), then a 1 MW FIT project sited on a large commercial rooftop would receive 5.25¢/kWh for the full 20-year contract. Both of these examples are illustrated below.

Example pricing for a 1 MW rooftop solar project at various FIT pricing levels

SCE's current FIT pricing	Built environment adder (50%)	Final pricing for the FIT project
4¢/kWh	2¢/kWh	6¢/kWh
3.5¢/kWh	1.75¢/kWh	5.25¢/kWh

2. *Small project adder*

To encourage a greater number and diversity of projects to come online through the environmental justice FIT, the Clean Coalition recommends that each IOU's FIT include a small project adder.

Any FIT project sized under 350 kW_{AC} should receive a 25% adder on the baseline FIT pricing. Any FIT project sized under 100 kW_{AC} should receive a 50% adder on the baseline FIT pricing. The table below illustrates the Clean Coalition's recommended small project adder.

Small project adder

FIT project size	Small project adder (% of baseline FIT pricing)
Less than or equal to 100 kW_{AC}	50%
Greater than 100 kW_{AC} and less than or equal to 350 kW_{AC}	25%
Greater than 350 kW_{AC}	0%

For example, a 350 kW_{AC} FIT project sited on a large commercial rooftop should receive the 50% built environment adder and a 25% small project adder, as illustrated below.

Example pricing for a 350 kW rooftop solar project

FIT pricing	Built environment adder (50%)	Small project adder for projects between 100 kW and 350 kW (25%)	Final pricing for the FIT project
4¢/kWh	2¢/kWh	1¢/kWh	7¢/kWh

A 100 kW_{AC} FIT project sited on a large commercial rooftop should receive the 50% built environment adder and a 50% small project adder. This is illustrated below for baseline FIT pricing of 4¢/kWh.

Example pricing for a 100 kW rooftop solar project

FIT pricing	Built environment adder (50%)	Small project adder for projects up to 100 kW (50%)	Final pricing for the FIT project
4¢/kWh	2¢/kWh	2¢/kWh	8¢/kWh

3. *Community benefit adder*

To encourage the siting of local renewable energy projects on community structures, the Clean Coalition recommends a community benefit adder. A community benefit adder of 100% of the baseline FIT pricing should apply to any FIT project sited on a tax-exempt built environment, including municipal buildings and garages, as well as non-profit facilities, such as public housing, recreation centers, and schools.

For example, a 100 kW project sited on the rooftop of a public school should receive the 50% built environment adder, a 50% small project adder, and a 100% community benefit adder. This is illustrated below for baseline FIT pricing of 4¢/kWh.

Example pricing for a 100 kW rooftop solar project at a school

FIT pricing	Built environment adder (50%)	Small project adder for projects up to 100 kW (50%)	Community benefit adder (100%)	Final pricing for the FIT project
4¢/kWh	2¢/kWh	2¢/kWh	4¢/kWh	12¢/kWh

The Clean Coalition believes these pricing adders would stimulate development of projects through the environmental justice FIT program that meet the built environment, small project, and community benefit criteria. However, the CPUC should regularly assess the effectiveness of these adders and adjust the adder percentage as necessary, either up or down, depending on market response.

The economic benefits of local renewable energy development

The development of clean local energy strengthens communities through direct investment and job creation. In 2014, the Clean Coalition conducted an analysis to understand the positive economic impacts related to the development of local renewable energy projects. The analysis found that, in addition to significant energy and environmental benefits, bringing 50 MW of local solar online in the Bayview Hunters Point community — a disadvantaged neighborhood in in San Francisco — would secure the following benefits over a 20-year timespan:

- $200 million in total added regional economic output
- $70 million in local wages from construction and installation, representing 1,270 near-term construction job-years

- $29.7 million in local wages from operations and maintenance, representing an additional 520 job-years (26 full-time equivalent or FTE jobs, $1,485,000 in annual wages)
- $5.8 million in construction-related state sales tax revenue
- $10 million in site leasing income to property owners in Bayview-Hunters Point (an amount equal to $500,000 annually)

The complete Hunters Point Community Microgrid Project benefits analysis is available online.[8]

FITs for effective, urgent procurement

While this environmental justice FIT proposal is designed to drive the development of local renewable energy projects in disadvantaged communities, a FIT could also be designed to spur development of a set amount of local renewable energy capacity more quickly and within a specific region of any individual utility's territory. For example, a FIT could be tailored to bring 210 MW of clean local energy online located in Southern California Edison's Moorpark Subarea, which includes the cities of Oxnard, Santa Barbara, and Goleta, within two years as an alternative for the proposed Puente Gas Plant.

Solar+storage with dispatchability adder

Meeting the full reliability requirements for the Moorpark Area will require some 210MW of solar and approximately 560MWh of storage according to our analysis as presented to the Energy Commission.[9] This would require inclusion of storage within the FIT. One approach is to include a dispatchability adder in a FIT design beyond the three pricing adders (built environment, a small project, and community benefit) included in this environmental justice FIT proposal. To encourage the development of energy storage, the Clean Coalition recommends a dispatchability adder, which is a fixed ¢/kWh bonus on top of the FIT rate. This would incentivize developers to add storage to their solar proposals to provide the required flexibility.

[8] "The Hunters Point Project: A Model for Clean Local Energy an Energy, Economic, and Environmental Benefits Analysis for High Penetrations of Renewable Energy in San Francisco's Bayview-Hunters Point Area," Clean Coalition, April 2014, available at http://www.clean-coalition.org/site/wp-content/uploads/2012/10/HPP-Benefits-Analysis-Summary-22_zf-9-April-2014.pdf.

[9] Testimony of Doug Karpa, September 14, 2017, Exhibit 7035, TN# 220961, available at http://docketpublic.energy.ca.gov/PublicDocuments/15-AFC-01/TN220961_20170830T152345_Ex_7035_Puente_Scenarios_Cost_Models_Supplemental_Testimony_of.xlsx

Pairing local renewables with local energy storage can provide many benefits to the grid and associated value to an area. These benefits and values include:

- Making renewable energy dispatchable to match grid requirements and potentially reaping energy arbitrage and capacity value.
- Reducing peak congestion on the transmission and distribution grids and potentially reaping associated congestion relief value.
- Matching the energy supply and demand for a given Load Serving Entity (LSE), including forecasted versus real-time experience, and potentially reaping value from avoiding scheduling penalties, etc.

When an energy storage system is deployed in conjunction with an ITC-qualifying resource, the ITC can be applied to the cost of the entire system. This means that the benefits of energy storage can be secured at a lower cost than otherwise possible.

For an energy storage project to be eligible for the dispatchability adder, it must meet certain operational requirements, which could include:

- Minimum power capacity and duration ratings
- The ability to fully cycle the battery daily
- The energy storage facility must follow the dispatch schedule, with as little as one hour advance scheduling and/or the storage system could be configured to allow direct dispatch control per future specifications.

Dispatchable renewables facility owners would be compensated via a dispatchability adder for their full kWh deliverability rating daily, or if the total energy delivered on a given day is less than the kWh deliverability rating due to unfavorable weather or a poorly performing facility, then the deliverability adder will be applied on the total energy delivered. Any shortfalls from the contracted levels under the dispatchability adder must be justifiable weather-driven or planned maintenance reasons. Unjustified shortfalls would result in penalties, and three or more unjustified shortfalls within a rolling twelve-month period could result in termination of the dispatchabilty adder for the offending facility.

Clean Coalition contact

The Clean Coalition looks forward to further discussing this proposal with staff at the CPUC. Doug Karpa will serve as the primary point of contact for the Clean Coalition and his contact information is below.

Doug Karpa
Policy Director
Clean Coalition
(m) 415-860-6681

doug@clean-coalition.org