Local Power.

March 2013

CleanPowerSF

Regulatory & Policy Report

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This paper should be cited in the literature in the following manner:

CleanPowerSF Regulatory & Policy Report, Local Power, Inc., Marshall, CA. 2013.

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ACKNOWLEDGEMENTS

Local Power, Inc. would like to thank the dozens of activists, consultants, government staff, private citizens, and vendors we interviewed over the course of this project; such ambitious research could not have been accomplished on this timeline without their enthusiasm and support.

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Al Weinrub (Local Clean Energy Alliance); Eric Brooks (Our City); June Brashares (Global Exchange); John Rizzo, Arthur Feinstein, Jess Dervin-Ackerman, David McCoard & Michelle Myers (Sierra Club) Joshua Arce & Eddie Ahn (Brightline Defense).

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Al Weinrub (Local Clean Energy Alliance); Hope Schmeltzer, Nancy Miller & Jason Fried (SFLAFCO); Steven Weissman (University of California, Berkeley); Kim Malcolm (San Diego Energy District); Stephen DeBerry (Bronze Investments); Kat Daniel (Green For All); Lara Ettenson & Noah Long (NRDC).

San Francisco Agencies

Cheryl Taylor, Todd Rydstrom, Michael Campbell, Barbara Hale, Meg Meal, Charles Pearl, Shaibya Dalal, Crispin Hollings, Querubin, Jamie, Ed Harrington, Harlan Kelly, Julliet Ellis, Randall Smith (Public Utilities Commission); Cal Broomhead, Ann Kelly, Bob Hayden, Kathleen Hannon & Danielle Murray (Department of the Environment); Theresa Mueller (Office of the City Attorney); David Green (Department of Building Inspection); Denis Kern (Recreation and Parks Department); Robert Collins (SF Rent Board); Ian Fernando, Steven Currie, Janan Howell, Guillermo Rodriguez & Emylene Aspilla (OEWD); Daryl Yee (SF Office of the Treasurer); Dan Sider, Casey Noel & Jessica Range (Planning); Frank Schultz (BART).

California Agencies

Alok Gupta, Christopher Villarreal Cem Turhal, Andrew Schwartz, Kathryn Auriemma, Donald Brooks, Carlos Velasquez & Mary Jo Borak (CPUC); Lynn Marshall (CEC); Sandy Goldberg and Christopher Calfee (Governor's Office of Planning and Research); Nick Chaset (Special Advisor on DER, Office of the Governor); Christine Solich (Office of the Treasurer).

Outside Experts

Carol Kizziah (Delancey Street Foundation); Keoni Almeida, Jill Peters, Peter Klauer, Peter, James Blatchford, Mitchell Ford (CAISO); Mary Ann Piette, Sila Kiliccote, Mark Zimring, Peter Larsen, Michael Stadler, (Lawrence Berkeley National Laboratory); Mona Tierney-Lloyd (EnerNoc); William Glassley (California Geothermal Energy Collaborative, UC Davis); Margo Kairoff (Capital Strategies LLC); Douglas Young (UTCpower); Shon Fleming (Sun Light and

Power); Enid Joffe (Clean Fuel Solutions); William Martini (Tecogen); Sara Mulhauser & Gib Popyon (Bloom Energy); John Birch, CB Hall, (Pacific Gas & Electric); Tom Beaty (Sustainable Power Solutions); Dwain Botelho, Gordon Judd & Ted Vincent (NRG); Ryan Wartena (GELI); Richard Lowenthal (Coulomb Technologies Inc.); Zachary Brown (SFBOMA); Paul Lau, Nadine Espinosa (SMUD). Maggie Downey (Cape Light Compact); Brian Polagye (University of Washington); Ken Czarnecki (Czarnecki and Yester); Terrell Watt, (Terrell Watt Planning Consultants); Janet Gomes (San Francisco Conservation Corps), and others.

Cover art: the graphic on this cover was created by Michelle Labbé, using an overlay of C2HM Hill's wind resource map of the City (commissioned by the San Francisco Department of the Environment) on top of GIS datasets of urban bird refuge zones and height and bulk districts. Layout by Katherine Eberle.

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Summary

The purpose of this draft Regulatory and Policy Review report is to identify and describe existing regulations that will apply to San Francisco's Community Choice Aggregation (CCA) program, CleanPowerSF, and to address regulatory and policy changes that could enhance or facilitate the deployment and operation of distributed generation, storage, renewable and demand-side resources under the program (referred to as the 'deployment').

CleanPowerSF is bound by ordinance to supply 51% of it's energy needs from renewable and demand-side measures by 2017, while meeting or beating PG&E's rates, with a focus on deploying in-City and nearby resources. The first phase of customer enrollment will begin in 2013, serving approximately 50,000 residential customers. Subsequent phases will enroll all remaining residents and businesses. Enrollment will be on an opt-out basis, in accordance with state law (i.e. customers are automatically enrolled, and given the choice to switch back to the incumbent utility).[1] Financing for the deployment will be primarily supplied through voter-approved unlimited revenue bonds for renewables and efficiency.[2] These two separate authorities – CCA and revenue bonds - will allow San Francisco to fully embrace the potential of renewable distributed generation and energy efficiency to achieve the maximum acceleration of cost-effective energy localization. Corollary impacts of this approach will be to:

- Increase local and regional jobs for the duration of the deployment, and thereafter to operate and maintain installed assets;
- Increase community and customer ownership of energy resources;
- Lower customer bills;
- Enhance local energy security and reliability, by deploying distributed generation and storage on critical public and commercial facilities and by lessening consumption through demand-side retrofits;
- Reduce electricity imported from remote sources;
- Reduce capital flight from the City, as funds that previously paid for remote generation are used instead to deploy local assets that produce revenue streams.[3]
- Reduce the cost of providing electricity balancing and back-up services, by deploying assets that can dynamically balance intermittent renewable sources of power;

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[1] See AB117 and Public Utilities Code SEC. 4. Section 366.2.

[2] See Proposition H ballot statement (2001), Ordinance 86-04 (2004), Ordinance 147-07 and attachment: CCA Program Design, Draft Implementation Plan and H Bond Action Plan.

[3] San Francisco customers spend on average ~$1 billion dollars a year on electricity and natural gas; the draft Financial Model results indicate a deployment of approximately $1.5 billion, paid for through the issuance revenue bonds with maturities between 10 to 20 years.

The draft Financial Model may be referred to for the timeline of the deployment for various technologies. The Request for Proposals (RFPs) for the deployment are being prepared for issuance by the SFPUC in March 2013, and the development approach taken requires no new legislation or substantial modifications of existing regulation. However, regulatory factors impacting the timing and revenue assumptions are discussed in detail, with recommendations for City engagement in key regulatory and legislative issues at the local, state and federal levels.

Introduction

An electrical system is a capital-intensive, technically complex, and economically vital component of infrastructure; because of this, the utility industry has for decades been referred to as a 'natural' monopoly, and been regulated heavily by government. Competition was introduced to varying degrees of success during deregulation, which in California, infamously failed to produce the intended consequences. In this state, the investor-owned utilities (IOUs) continue to be vertically integrated [4] and have been partially deregulated, while retail competition remains largely suspended outside of Community Choice Aggregation (CCA). The incumbent IOU serving San Francisco is Pacific Gas and Electric (PG&E).

Community Choice Aggregation allows a local government to take control of its energy future by breaking free of from monopoly power procurement and related services. It does not require the local government to purchase any utility assets; the incumbent utility continues to deliver the electricity over the grid, but the local government determines the source of the electricity. In this way, CCA is unique in the energy industry, in that it starts with the customer base of a utility, but with a 'blank slate' (i.e. without any debt obligations for infrastructure). This gives it the freedom to redesign its energy supply around efficiency technologies and renewable distributed generation, and is a unique competitive advantage CCA offers California's energy industry today.

Renewable distributed generation and demand-side technologies - and the business models that deploy them - have become increasingly competitive over the last decade. The energy industry will continue to fundamentally change over the near-term, as legacy infrastructure (transmission lines and large power plants) built to serve the centralized energy grid will become less competitive compared to 'virtual power plants' composed of local distributed energy generation, storage, and demand dispatch assets that are coordinated and optimized to serve customer power needs and provide grid stability while lowering overall costs. The differences in reliability, power quality, local community development, and long-term rate stability are expected to be profound.

[4] Vertically integrated refers to a utility that owns or operates generation, transmission, and distribution assets, and that offers retail electric service.

The business model proposed for CleanPowerSF embraces and accelerates this transition. This report describes the regulatory and policy considerations that the SFPUC should take into account to ensure the success of the CleanPowerSF program.

CleanPowerSF's Business Model

San Francisco's CleanPowerSF will be predicated upon investments into behind-the-meter assets.[5] This strategy makes economic sense, provides a compelling value-proposition to customers and clearly differentiates CleanPowerSF from PG&E service, and hedges against the risks of natural gas and wholesale power price volatility as well as cost shifting tactics by PG&E.

Deploying a mix of behind-the-meter[6] assets in addition to traditional utility-scale renewable generation plants and conventional power purchase agreements is a novel approach within the utility industry. While companies in the broader energy industry have designed business models to finance and deploy onsite energy production and efficiency assets, the utility industry has not embraced these innovations for a variety of reasons. The approach detailed here uniquely augments CCA with revenue bonds, according to adopted ordinances and voter approval. The program as defined has not been implemented elsewhere; there are similar business models in use today, but on a much smaller scale. For example, the majority of solar installations in California today are offered under 'Solar Power Purchase Agreements', which offer customer photovoltaics for 'no money down', and ESCOs (energy service companies) offer customers efficiency retrofits at no upfront cost. CleanPowerSF is building upon these business models to offer similar services Citywide. This approach allows CleanPowerSF to fully embrace the potential of renewable distributed generation and energy efficiency to achieve the maximum acceleration of cost-effective energy localization.

CleanPowerSF is well positioned to accelerate this transition, and to capture the competitive advantage that it will confer to San Francisco residents and businesses relative to PG&E's business model. CleanPowerSF has the opportunity to offer a portfolio of built assets and conventional grid power that results in a cleaner, locally-owned and more secure energy supply, a competitive electricity rate for all customers and lowered bills for many customers – even those not interested in renewable energy, who just want the basic service they have always received.

[5] These are assets built on customers' properties and connected 'behind' the customer's meter, as opposed to being located remotely and connected to the transmission or distribution grid.

[6] Behind-the-meter refers to assets deployed on a customer's home or business, in contrast to assets that are directly connected to the utility distribution grid or to transmission lines.

Revenue Growth Potential

On average, San Francisco's citizens and businesses spend ~$300 million a year on natural gas and ~$750 million a year on electricity. Approximately half of that is the cost of the commodity (therms and kilowatt-hours), and half is the cost of the infrastructure required to deliver the commodity to customers (the electricity transmission and distribution grid, and the natural gas pipelines). A CCA automatically receives the revenue from the generation (commodity) portion of its customers' electricity bills. For San Francisco, that is approximately $300 million a year (assuming 100% enrollment for the sake of this example).

To demonstrate the value of siting assets behind-the-meter, consider the two following scenarios:

1) The CCA builds a single large-scale photovoltaic array in the Central Valley, and uses the utility grid to deliver this power to its customers. Its revenue would not increase – because, all else being held constant, the rate its customers pay for generation would stay the same (and if the CCA raises its rates, it risks losing customers and revenue).

2) The CCA built several medium-sized photovoltaic arrays on customers' rooftops. It then charges those customers their full retail rate for the electricity, because the electricity produced by the photovoltaics is avoiding the cost of all charges (generation, transmission, and distribution) on the bill – thereby doubling the revenue received from those customers. (This is a simplified example – the CCA may make lease payments to the customer for the roof, or offer a rate discount, or guarantee of rate stability, or other incentives such as the Community Shares described later in this report, etc.)

Technologies such as solar thermal, combined heat and power, and efficiency retrofits also displace onsite natural gas usage, for which the program may also charge customers in a similar manner.

If CleanPowerSF embraces a business model predicated on behind-the-meter assets, it will, to continue this simplified example, initially start with revenue from the generation portion of customers' electricity bills (~$300 million), and then displace onsite usage of both electricity and natural gas, in order to 'capture' a portion of the revenue that customers pay for the electric grid and for natural gas service (~$750 million combined).

Risk Management

This strategy makes financial sense in and of itself, but is also strategically important for the following reasons:

1) A significant portion of California's generation fleet of power plants is powered by natural gas. The marginal price of electricity tends to closely follow the price of natural gas, as it is these plants that are dispatched on the 'margin' (i.e. to balance supply and demand). Procuring less power from the grid lowers the exposure a CCA has to natural gas fuel and wholesale power price volatility.

2) The CCA is competing against PG&E to retain customers. PG&E's generation fleet contains a sizable number of hydroelectric facilities (it owns 174 dams) that produce power for relatively low cost. Competing against PG&E just on the basis of generation puts the CCA at risk of having higher rates for basic service.

3) PG&E additionally could engage in cost-shifting, by recovering costs that properly belong in generation rates from the electricity distribution portion of customers' bills – or even their natural gas rates. This lowers their *apparent* cost of electricity generation, against which the CCA would traditionally compete. This is a standard monopoly practice utilized to discourage competition, as companies as large as PG&E are inherently difficult to regulate. An example from the telecommunications industry is instructive: after the AT&T telephone monopoly was broken up by the Federal government, the rates charged for long-distance calls declined while rates for local calls increased; the company had long been subsidizing its local networks with funds from its long-distance service, because the long-distance service relied on an extensive, capital-intensive network that faced a far lower threat of competition than did its local networks. AT&T was the longest-lived telecommunications monopoly the world has ever seen and lasted over 70 years. PG&E has had a monopoly in San Francisco for 107 years. By predicating service on behind-the-meter assets, CleanPowerSF will hedge against the risk of cost-shifting by PG&E, as funds shifted between generation and distribution charges will be both captured by the proposed business model.

Customer Value Proposition

San Francisco's CCA will be designed explicitly to share the financial benefits of the deployment directly with the customers that pay for it. The mechanism to do so is referred to as 'Community Shares', and the overall concept is referred to as 'Own Your Power' in this report. The CCA's cost of service, composed primarily of operations, wholesale procurement, and the debt service on deployed assets, will determine whether the average rate offered to customers is above or below PG&E's basic service.[7] Customers will receive 'Community Shares' in return for paying their electricity bills. Accelerated or increased shares will be offered as a 'value-add' to customers in exchange for signing up for a premium rate or for participating directly in the energy localization as host sites or "Anchors." Examples of the latter include sites that host generation equipment, or that agree to undergo energy efficiency retrofits. These shares will allow CleanPowerSF customers that pay off the cost of the deployment to benefit financially from the assets that are built: as the assets are paid off, the shares will confer lowered rates on the share holders. This will reward customer loyalty, as the longer a customer remains with CleanPowerSF, the greater their share in the benefits of the energy localization, and the lower their rates.

[7] The draft Financial Model results indicate that it will be below PG&E's rates; however, these results are strictly preliminary, and will be refined in close coordination with SFPUC staff.

Marketing and Product Differentiation

Predicating service on offering customers a financial stake in a new, cleaner, less costly and more resilient local energy infrastructure that will create thousands of local jobs and result in long-term rate stability will strongly differentiate CleanPowerSF from PG&E. This is all the more important since PG&E has recently sought approval for a voluntary 100% renewable power product. The first phase of CleanPowerSF is intended to offer 100% renewable power at a premium (sourced from remote resources); PG&E's offer will be approximately 1/3 the cost of the City's offer, and may be intended to make customers switch back to PG&E, or question why the City is starting CleanPowerSF in the first place. As such, program marketing should immediately cease to emphasize the 100% renewable product, and instead be focused on the 'Own Your Power' offer.

Program Structure and Agency Roles

Overview of Agency Interactions

CleanPowerSF will primarily involve two major City agencies: the SFPUC and the San Francisco Department of the Environment (SFE). By focusing each agency on roles consistent with their historic mission, in-house expertise and budgeted activities, CleanPowerSF can minimize program cost impacts, and redeploy existing staff resources and expertise to augment the success of the program. SFE will perform its functions under the supervision of the SFPUC, but each agency will independently contract with third parties to implement its tasks.

In addition, collaboration between other city agencies is required for certain aspects of the program:

- The SFPUC and SFE will work with the Office of Economic and Workforce Development (OEWD) to design and implement green jobs training programs for the deployment.
- The SFPUC and SFE will work with the Department of Emergency Management (DEM) to ensure that the deployment directly supports and builds upon the disaster planning efforts to date, such that the siting of distributed generation enhances community resiliency in the event of a disaster (such as an earthquake, major fire, flood, etc.).
- The SFPUC and SFE will work with the Rent Board to modify the list of approved efficiency measures that govern whether costs may be passed from owners to renters, and to modify the Rent Board's allowed amortization periods for this mechanism, in line with CleanPowerSF program design.
- The SFE will submit permit applications for CleanPowerSF in-City projects to the Department of Building Inspection (DBI) for approval.

- For large-scale projects and for revenue bond issuances, the SFPUC will work with the Planning Department to ensure applicable CEQA requirements are met.
- For projects involving rights-of-way (trenching, streets, sidewalks, etc.) the SFPUC and SFE will work with DPW to coordinate CleanPowerSF activities.
- The SFPUC will work directly with the Port Authority for any CleanPowerSF projects targeting buildings and rights-of-way controlled by that agency.
- The SFPUC and SFE may work with the Municipal Transit Agency (MTA) for CleanPowerSF deployments that require the use of infrastructure controlled by that agency (for example, the program may wish to deploy electric vehicle charging stations on locations controlled by the MTA).
- The SFE will work with the Office of Housing regarding the siting of assets or retrofits for affordable housing nonprofits.
- The SFPUC will work with the Capital Planning Committee (CPC), Budget Analyst, and Revenue Bond Oversight Committee (RBOC) for the bond issuance approval process.
- The SFPUC and SFE will work with the City Attorney and Risk Management Office to evaluate whether CleanPowerSF may take on the responsibility of insuring the installation work of the contractors in the program, or whether a 3rd party must do so.
- The SFPUC will work with the Local Agency Formation Commission (LAFCO) as it provides oversight and guidance on the development of the program, and reports to the Board of Supervisors.

Collaboration with several state agencies and with PG&E is required to implement certain aspects of the program:

- The SFPUC will work with the State of California Office of Planning and Research (OPR) to ensure applicable CEQA requirements are anticipated and met.
- The SFPUC and SFE will work with the California State Treasurers Office to explore financing options and enhancements for the deployment and related activities.
- The SFPUC will interface with the CPUC operationally to ensure resource adequacy requirements are met, and both the SFPUC and the SFE will intervene in numerous proceedings to pursue policy goals.
- The SFPUC and SFE will work with the California Energy Commission (CEC) to explore ratepayer funds available to the CCA for the energy localization.
- The SFPUC will submit all interconnection requests to PG&E, and monitor the process to ensure timely processing and approval of requests.
- The SFPUC will interface with the CAISO for the purposes of load forecasting, power scheduling, and settlement purposes.

Contracting Structures

Depending on the volume and scale of a given renewable energy installation or energy efficiency retrofit in the deployment, an RFP or a Job Order structure for engaging private developers will be utilized. The SFPUC has experience with both of these options. Under an RFP, private parties would bid to meet established criteria; the winner of this process would then execute the project defined within the RFP. Under a Job Order structure, firms are pre-qualified via a Request for Qualifications (RFQ) and form a development capacity pool to which specific installation work can be directed or bid.

Role of the SFPUC

The SFPUC will implement power service, issue revenue bonds, control power procurement, and manage the construction of large-scale projects (such as the wind farm, or district heating). It will coordinate all deployment activities, including SFE, and ensure these activities are appropriately factored into program enrollment and procurement operations. To this end, the SFPUC will define technology and interoperability specifications for the SFE and contractors, and integrate all installed load management systems and generators into CleanPowerSF procurement operations.

The SFPUC will be in fiscal and operational control of all deployment facilities and measures, broadly responsible for the operation of the energy program in both power procurement and power facilities management. Under this arrangement, the SFPUC will provide primary control over the CleanPowerSF program, and will provide funding to the SFE to cover staffing and consultants for its deployment activities, as well as financing for the in-City deployment projects. The SFPUC will control revenue allocations on its CleanPowerSF balance sheet in accordance with agreements with customers.

Role of the SFE

The SFE will develop distributed generation, storage, renewable, and demand-side projects within the City. Local Power has engaged in initial discussions with SFE regarding the design and deployment of these programs, and the agency has demonstrated competence in its past and current administration of energy efficiency and demand response programs, as well as innovative contracting structures for distributed generation, and has designed and deployed residential and commercial PACE financing structures, similar in intention to the program design and funding approach envisioned for CleanPowerSF. The SFE will be the 'face' of CleanPowerSF for customers involved in the in-City deployment.

In-City Deployment Operational Structure

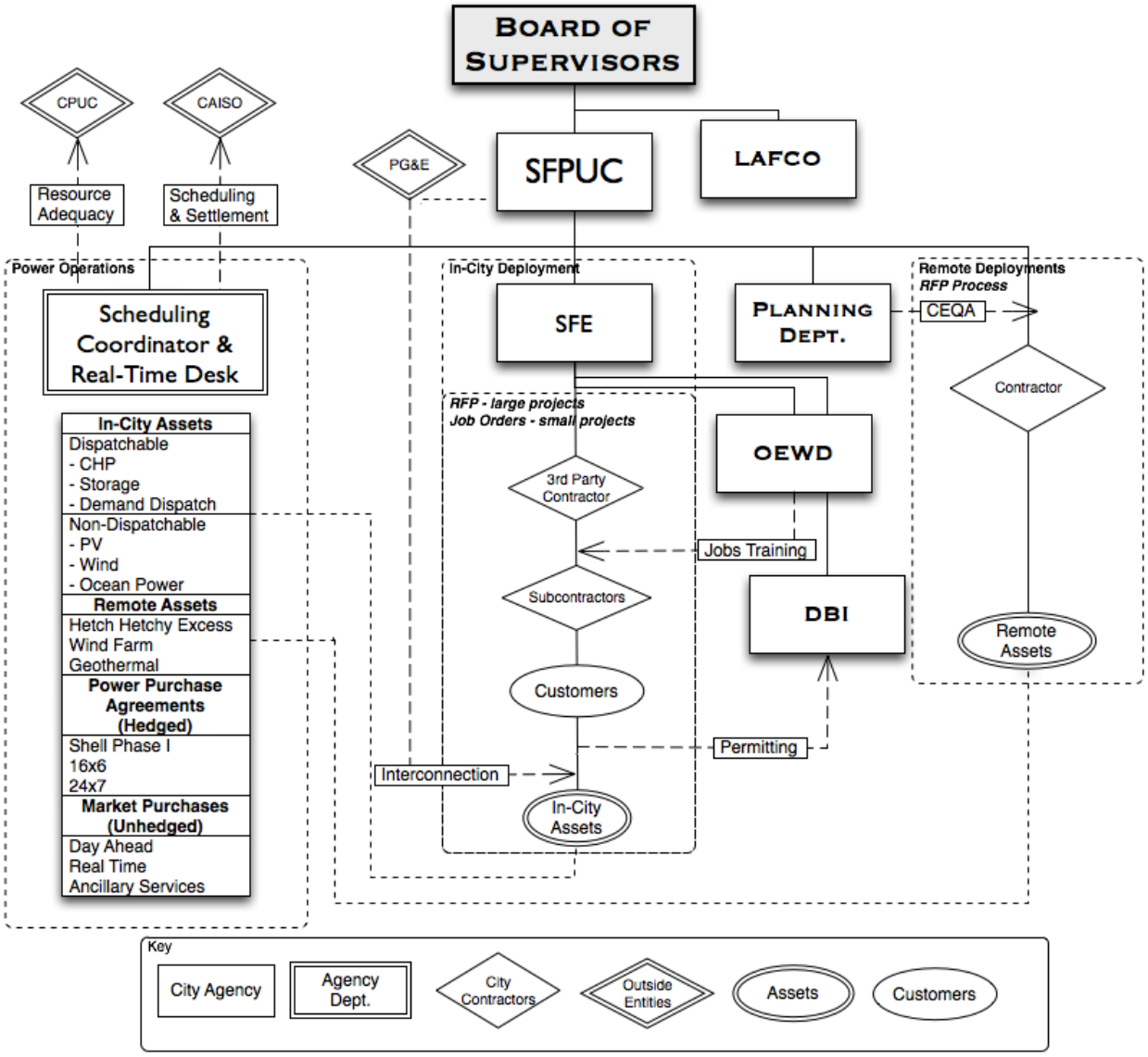
The following structure is based on the SFDOE's current programmatic structure:

1) SFE handles in-house:[8]
    i) Program design;
    ii) All technical support and services;
    iii) Marketing;
    iv) Contractor training;
    v) Evaluation and quality assurance activities (such as pre- and post-retrofit site visits, billing data analyses, etc.).
2) A 3rd party contractor under a competitively bid professional services contract:
    i) Periodically receives funds from the SFE and finances or distributes payments to subcontractors or building owners for energy upgrades;
    ii) Takes on the responsibility of insuring the installation work of the contractors in the program, so that the City is not liable.
        (1) As the City is self-insured, the City Attorney and Risk Management Office have stipulated this arrangement for the current SFE programs; however, this is an added cost to the program and ultimately to customers, and the SFPUC should ask this be re-evaluated for CleanPowerSF based on the fact that the SFE program has conducted in excess of ten thousand retrofits without ever being sued.
3) Subcontractors:
    i) Conduct all installation activities;
    ii) Are vetted to insure that they have the necessary business license, property license and insurance, a record without violations, and good references.

Organization Chart

The interactions of major agencies for the purpose of the CleanPowerSF deployment is shown in the organization chart below:

[8] Outside consultants and contractors may be hired to supplement SFE for certain tasks.



'Community Shares' and 'Own Your Power'

"Community Solar Shares," implemented in SMUD in 2008[9] and more recently in Colorado, Oregon, Washington and other states, facilitates customer investment in renewable energy projects within a neighborhood or community, but not on the customer's place of residence or

[9] SMUD's solar shares program was designed by LPI in 2006 in a program called "Performance Based Incentives for Large Scale Commercial Photovoltaics." Available from: [https://www.smud.org/en/residential/environment/solar-for-your-home/solarshares/]

business.[10] San Francisco will build on these concepts to make community ownership a foundational component of the CleanPowerSF program.

CleanPowerSF will be designed explicitly to share the financial benefits of the deployment in directly with the customers that pay for it. The mechanism to do so is referred to as 'Community Shares', and the overall concept is referred to as 'Own Your Power' in this report.

Issuing revenue bonds will raise the initial capital required for the investments. Paying the capital and interest on those bonds, along with program operations and grid power purchases, comprise the revenue requirements for the program overall. The total of these expenses determine whether the average rate is above or below PG&E's basic service. However, even if the average rate is below what the customer would have been charged under PG&E, the citizens and businesses of San Francisco will still be paying hundreds of millions of dollars every year in energy bills. As the debt on these assets is paid off, the City will continue to operate and maintain each asset, but the financial benefit derived will accrue to customers in proportion to how much they have contributed to paying for the assets. In other words, the customer will receive a share in the financial benefits created by the program with each bill they pay.

Customers who wish to pay more than their 'fair share' may choose to 'opt-up' into a higher rate structure, allowing the program to accelerate debt repayments and giving the customer a correspondingly higher share of any financial benefits produced. Similarly, customers that assist the program in deploying assets, such as those that are 'Community Anchor' sites, receive demand-side retrofits, or participate in demand response programs, will receive a higher portion of the resulting financial benefits.

Customers that opt-out of the program and elect to receive service from PG&E will forfeit any shares accrued, which will then be re-distributed amongst remaining customers.

A critical corollary to this approach is that as the assets are paid off, both CleanPowerSF revenue obligations and revenue decrease in tandem, as the savings directly offset the 'Own-Your-Power' rates of citizens and businesses. However, the program's over-arching goal is to remain a stable and competitive power provider relative to PG&E; to this end, the benefits shared with customers should come second to the financial needs of the program to maintain rate competitiveness. The financial implications of this will be more fully explored in the final Financial Model and detailed in subsequent reports.

[10] Colorado has adopted policies that allow customers to own or subscribe to an off-site renewable energy system, and get credited on their utility bill for the electricity that their portion of the renewable energy system provides to the grid. Similar legislation that would allow Community Solar for all California IOU customers, SB843, was introduced in 2012, but failed to pass. See Colorado Community Solar Gardens Act - HOUSE BILL 10-1342. Available from: [http://solarindustrymag.com/e107_plugins/content/content.php?content.11080]

Rate and Bill Options

CleanPowerSF has rate setting authority independent of the CPUC, and as such, may transact the Community Shares payments directly in customer rates. The proposed structure would result in a variety of rates, but would be equitably calculated by the same methodology, based upon the actual projects deployed by the CCA, when the customer joined CleanPowerSF, whether they decided to pay extra for increased shares, and whether they agreed to participate in the deployment directly by hosting distributed generation or undergoing an energy efficiency retrofit.

The City has several platform options for CleanPowerSF charges to credit an Own-Your-Power account. PG&E's "Bill Ready Billing"[11] option under the PG&E tariffs allows the City to submit its own separate page for PG&E insertion into its bill, to detail charges and provide explanations of charges on the bill.[12] The City should also create a separate 'Own-Your-Power' web account with annual mailed statements.

Program Financing

Funding Sources

Funds to pay for the deployment may be derived from a variety of sources: revenue bonds (and bond anticipation notes), SFPUC Enterprise reserve funds, private capital, Public Purpose Program funds, and state and Federal incentives and grants.

Revenue Bonds

In 2001, San Francisco voters approved the unlimited sale of taxable and tax-exempt revenue bonds by the SFPUC to finance renewable and efficiency technologies.[13] These bonds will supply the majority of CleanPowerSF funding for capital projects. An independent review of integrating Proposition H Bonds with the CCA program has been conducted by the law firm Nixon-Peabody, which concluded they are "extremely synergistic."[14] The portion of this report detailing taxable and tax-exempt bond issuance and project financing specifications has been excerpted in the Appendix.

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[11] Pacific Gas & Electric, Electric Schedule E-CCA, Sheet 6, Filed May 31, 2011, Effective June 1, 2011. Bill-Ready Billing is defined under "CPUC Electric Rule 23" in the Glossary of this report.

[12] This is addressed in detail in the "Billing Requirements for Bill Related Services from PG&E" section of this report.

[13] Per Section 9.107(8) Revenue Bonds (Proposition H, approved by voters November 2001): Authorizes the issuance of revenue bonds to finance or refinance the acquisition, construction, installation, equipping, improvement or rehabilitation of equipment or facilities for renewable energy and energy conservation.

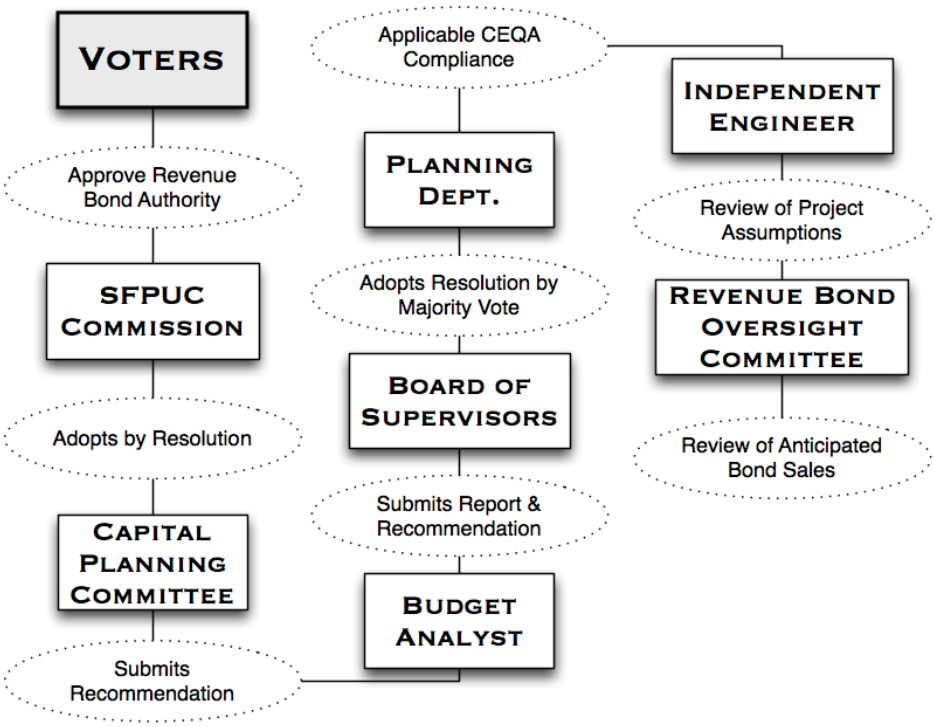
[14] Nixon Peabody LLP, Community Choice Aggregation, prepared for the San Francisco Local Agency Formation Commission, 10 November 2005. Available from: [http://www.local.org/nixonpea.pdf]

The debt financing approval process to issue these bonds has several steps: [15]

1. Voters approve revenue bond authority;[16]
2. The SFPUC Commission adopts the item by resolution;
3. Capital Planning Committee (CPC) reviews and submits recommendation to BOS;[17]
4. The Budget Analyst prepares a report and recommendation for the BOS;
5. BOS adopts resolution by majority vote;
6. Item is certified by:[18]
    a. An independent engineer retained by SFPUC to evaluate project and revenue assumptions;
    b. The Department of Planning to evaluate whether item complies with applicable CEQA requirements;
7. The Revenue Bond Oversight Committee reviews anticipated bond sales (Sec. 5A.30-36, Proposition P, approved by voters, November 2002).

The chart below depicts the process described above:

Debt Financing Approval Process



[15] SFPUC Debt Management Policies and Procedures, Section VI
[16] Per Section 9.107(8).
[17] Per Administrative Code, Section 3.2
[18] Per Administrative code section 8B.124

Bond Anticipation Notes

To supply short-term financing for capital projects in advance of a revenue bond issuance, the SFPUC is authorized to issue Bond Anticipation Notes (BANs) pursuant to the procedures set forth in Article V of Chapter 43 of Part I of the San Francisco Administrative Code enacted by Ordinance No. 203-98 and modified by Ordinance No. 266-06.

Energy Efficiency Funding

CleanPowerSF will apply to administer the energy efficiency portion of Public Purpose Program funds collected from San Francisco customers. As a CCA, it has statutory authority to request these funds from the CPUC. It is further bound to "aggressively pursue" these funds by adopted ordinance.[19] More details on this funding source may be found in the State and Federal Regulatory Factors section of this report under "R.09-11-014 and R.11-10-003 – Public Goods Charge Funds and Energy Efficiency Funds".

IOU Incentives

In the event that the City is unable to secure direct administration the above-mentioned funds, the program may still avail itself of funds distributed by PG&E within the City in the form of rebates or financing. The SFE will integrate this into program design.

Phase I and Reserve Funding

The $2 million set aside from the SFPUC operating funds for Phase I energy efficiency programs should supplement this broader program design and financing mechanism. It should not be spent on an unaligned, standalone effort.

Federal and State Incentives and Grants

The program may apply for rebates under the California Self-Generation Incentive Program (SGIP) and the California Solar Initiative (CSI). In addition, funds administered by the California Energy Commission may be used to offset the cost of the deployment, depending on how these funds are distributed. Projects financed by private capital may claim Federal tax incentives to offset the cost of the deployment. More details on these funding sources may be found in the State and Federal Regulatory Factors section of this report.

Private Capital

To take advantage of Federal tax incentives to lower the cost of certain technologies, the program may sell equity in capital projects to investors with sufficient tax appetite to take advantage of the Federal incentives.

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[19] Ordinance 147-07, Section 1(b), paragraph 10.

SFPUC Enterprise Reserve Funds

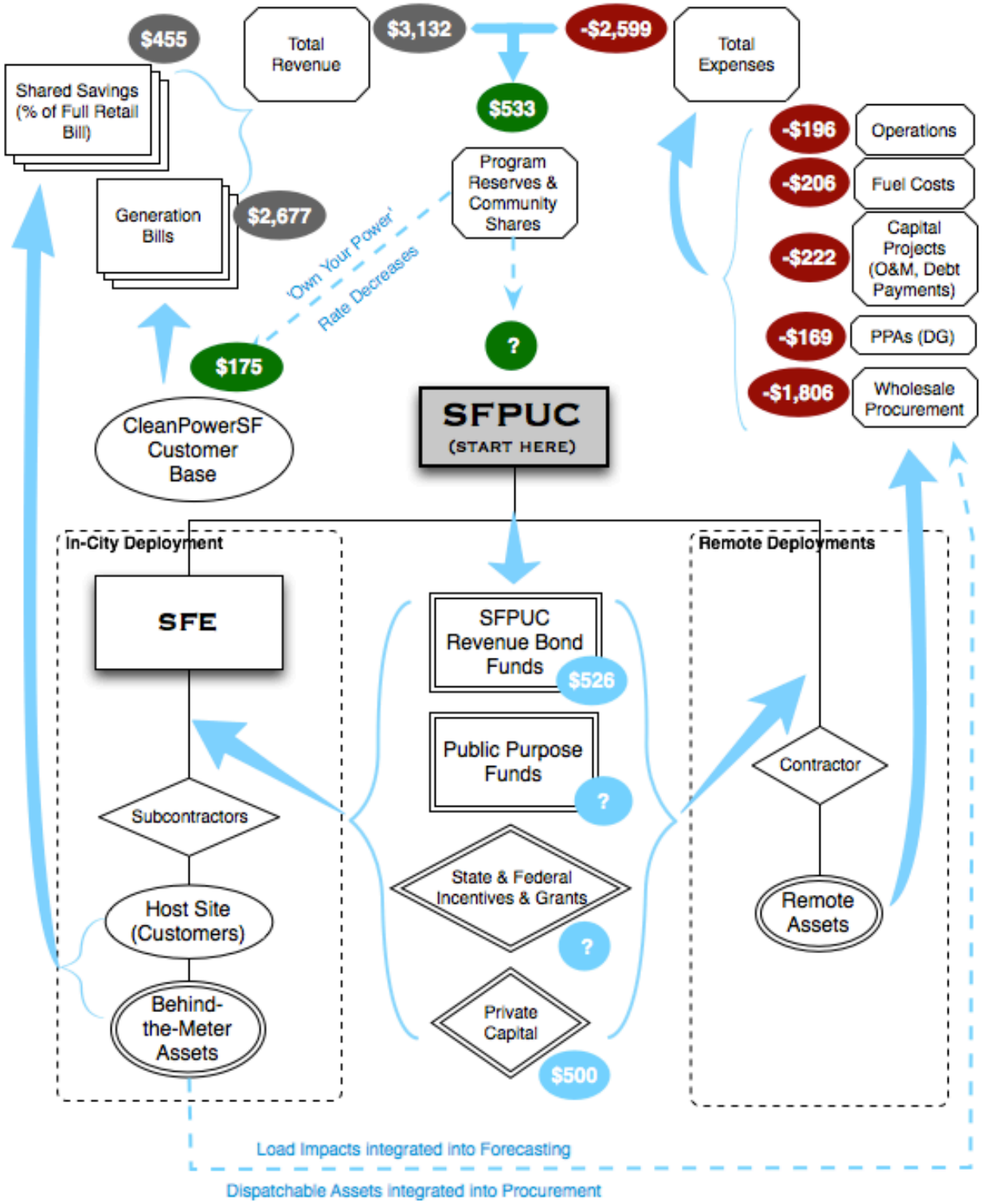
The SFPUC Enterprise operating fund balance has set aside $20 million to be allocated for a variety of uses related to the start-up of CleanPowerSF: collateral for SENA Phase I wholesale power, funding for GoSolarSF, and efficiency funds.

The deployment may require significant city staff expertise. The SFPUC should consider also using the fund to pay for staff costs associated with the in-City deployment, in lieu of immediately collecting those expenses through rates, and instead later recoup the expense by diverting a portion of CleanPowerSF's fund balance. Doing so will allow the agency to keep rates at a more competitive level as compared to PG&E while the deployment ramps up. For example, the $2 million set-aside for energy efficiency from the operating fund may be better spent on the staff costs for setting up the CleanPowerSF financing and repayment mechanisms rather than on rebates, as the former will leverage the funds spent to deliver orders of magnitude more financing for efficiency. Paying for staff costs in this way may be justified on the basis of the large surplus projected as a result of the deployment: by the tenth year of the program, if assets are deployed at or near the rate projected by the draft Financial Model, the program surplus grows to $533 million. Please refer to the graphic below for CleanPowerSF cashflow through 2022.

CleanPowerSF Cash Flow

Revenue in excess of expenses may be put towards program reserves, accelerating the deployment, or 'Own Your Power' rate discounts (through Community Shares). To demonstrate the flow of funds through the program, a cash flow chart based on the draft Financial Model is shown below, and depicts cumulative funding, revenue, and expenses through 2022 (in millions of dollars):

CleanPowerSF Cash Flow (millions of $) through 2022



Financing for Manufacturing

The CleanPowerSF deployment will significantly expand market access for renewable and demand-side technologies. The city should actively seek to encourage the growth of local and regional manufacturing to supply these technologies for the program. To this end, the following financing mechanism may be used to support manufacturing.

Industrial Development Financing Advisory Commission

California Industrial Development Financing Advisory Commission (CIDFAC) approves the issuance of Industrial Development Bonds (IDBs) and Empowerment Zone (EZ) Bonds as a partner with local government. The local government entity can be a city, county, economic development authority, redevelopment agency, or a joint power authority. IDBs and EZ Bonds are issued by the local entity, but must be approved by CIDFAC, which issues the Certificate-of-Sale. The program is intended to benefit economically distressed areas and to provide an alternate method of financing capital needs of small manufacturing companies to increase employment or otherwise contribute to economic development. Small-Issue Industrial Development Bonds (IDBs) are tax-exempt private activity bonds that are issued through state and local governmental agencies to assist manufacturing facilities in financing capital expenditures. Today, most IDBs support expansions of existing manufacturing. IDBs offer interest rate savings to small and midsize manufacturers in contrast to conventional loans. When used by manufacturers, IDBs serve to retain and create new jobs within their communities.

Labor

Introduction

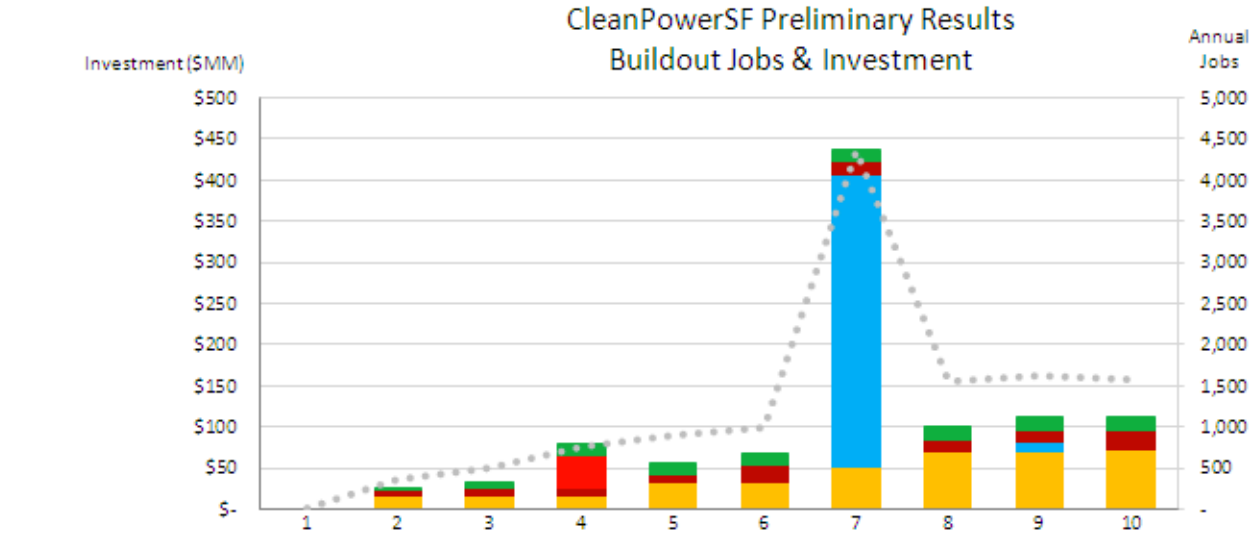
The City's CleanPowerSF policy goals are very focused on creating a maximum number of new local green jobs through the deployment of renewables and efficiency measures. Initial estimates indicate that approximately 12,500 job-years (direct and indirect) will be created through the ten year deployment period. More jobs will be created from the induced impacts of the deployment. These estimates will be refined in the final Financial Model.

SFPUC has adopted goals for local labor hiring, including strategies to expand social justice goals adopted by ordinance that reflect the interest of stakeholders in CleanPowerSF. Specifically, the goals are:[20]

[20] SFPUC Community Benefits Policy., SFPUC Commission Resolution No.11-0008, dated January 11, 2011; and SFPUC Environmental Justice Policy, SFPUC Commission Resolution No.09-0170, dated October 13, 2009.

- Recognize community need for employment through continuation and expansion of workforce development strategies, including green job opportunities in community historically disproportionately burdened by pollution.
- Continue to identify and partner with organizations in order to prioritize, establish and fund appropriate activities to improve environmental justice performance in communities already affected by disproportionate environmental impacts of SFPUC activities.
- Environmental programs and policies which preserve and expand clean, renewable water and energy resources, decrease pollution, reduce environmental impacts, and reward proposals for innovative and creative new environmental programs;
- Workforce development, including coordination of internal and external workforce programs and strategic recruitment, training, placement, and succession planning for current and future SFPUC staff to ensure a skilled and diverse workforce;
- Economic development resulting from collaborative partnerships which promote contracting with local companies, hiring local workers, and providing efficient, renewable energy at reduced costs.
- The SFPUC believes that everyone has the right to a job and reaffirms its commitment as an equal opportunity provider.

Below is a graph from the draft Financial Model depicting the investment and job impact by technology over the 10 years of the deployment:



	1	2	3	4	5	6	7	8	9	10
Geothermal	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-
Energy Efficiency	$-	$0.71	$9.05	$13.32	$14.15	$14.46	$15.31	$15.57	$15.85	$16.11
District Heat and Power	$-	$-	$-	$41.34	$-	$-	$-	$-	$-	$-
Combined Heat and Power	$-	$8.36	$8.51	$8.65	$8.81	$19.88	$14.08	$14.32	$14.58	$24.41
Wind	$-	$-	$-	$-	$-	$-	$356.42	$-	$9.84	$-
Solar Photovoltaics	$-	$15.71	$15.99	$16.27	$33.13	$33.71	$51.41	$69.73	$70.96	$72.13
Annual Job Years	-	357	509	765	900	986	4,367	1,550	1,633	1,587

Managing Labor Costs

As a publicly implemented program, CleanPowerSF is subject to the City's existing laws for city contractors,[21] which include provisions for wages, labor organizing rights, and other requirements. Projects funded by CleanPowerSF would be subject to the City's Prevailing Wage ordinance. CleanPowerSF is also focused on creating local economic development benefits to local energy service and development companies. CleanPowerSF should establish an interface with smaller companies to evaluate and hire or reject laborers in the pre-trained labor pool. One concern resulting from the many City requirements of CleanPowerSF contractors is that without proper oversight and management, this may increase the cost of the deployment.

Achieving a balance between creating new local jobs, creating opportunities for local companies, and ensuring labor rights are all competing labor goals of the CleanPowerSF green jobs program. In order to succeed in creating jobs, the CleanPowerSF deployment costs must remain efficient. Because CCA is a choice for customers and not a monopoly service, high CleanPowerSF costs would result in higher customer opt-out rate. This would scale back the program and reduce the number of jobs created overall. It is in the interest of both the City and local workers to create a rational framework for local green jobs that keeps deployment costs down. Maintaining a basic level of labor quality and accountability is required in order for the City to avoid imposing costs on CleanPowerSF contractors that could be otherwise avoided, unnecessarily driving up the cost of the deployment installations. Achieving an appropriate treatment of untrained, pre-apprenticeship and professional trained labor should be a key focus for CleanPowerSF, and warrants particular attention and budgeting in the near term by the SFPUC.

Green Jobs Training Program

One limiting factor in meeting the time constraints of the deployment schedule may be the availability of trained laborers for the evaluation, installation, rehabilitation, and maintenance of renewable facilities and efficiency retrofits. To establish a pool of local qualified labor, the City should create a pre-apprenticeship, on-the-job training and journeyman certification program for CleanPowerSF workers. By organizing, allocating, and preparing laborers for on-the-job training with deployment contractors, who will choose workers among this pool of labor, CleanPowerSF can manage the resulting labor costs. Achieving this rational path for local labor is an essential part of CleanPowerSF. On-the-job training will provide opportunity for workers to acquire specialized skills; journeyman certification will provide a pathway to eligibility for full union membership and rights.

The City's Green Jobs training programs should provide initial screening of workers and specialization within necessary skills. CleanPowerSF contractors required to use this labor

[21] San Francisco Administrative Code, Chapter 6 – Public Works Contracting Policies and Procedures.

should be allowed to hire locally on their own, or else use pre-trained laborers from pools. CleanPowerSF should focus resources on these local labor pre-apprenticeship programs to provide turnkey training service to bring laborers up to a basic skill level, including technical and communication skills, and provide those labor training organizations with appropriate authority to certify laborers for the CleanPowerSF green jobs pool.

In order to allow for smaller local companies to bid projects and build facilities for CleanPowerSF, it is important to adapt labor requirements to the industries and skill set requirements for each component, and to avoid over-burdensome requirements on smaller, more specialized companies accustomed to a strictly private sector labor environment.

The San Francisco Office of Economics and Workforce Development (OEWD) works with Community-Based Organizations (CBOs) that are experienced in conducting outreach to under-served populations to enroll laborers in City College training programs. These programs are created in collaboration with union members and private-sector companies. Other labor training and management nonprofits or government agencies such as the California Conservation Corps[22] or Delancey Street[23] sometimes assist in these efforts. The SFPUC and SFE should work directly with OEWD to prepare and implement a Green Jobs training program tailored to the projected CleanPowerSF deployment timeline. As these programs are created with expert insight from private-sector companies as to what skillsets and levels of labor are needed for projected projects, this will result in a more precise estimate of CleanPowerSF job creation as well as the labor costs, both of which may be used to refine the Financial Model.

Office of Economic and Workforce Development (OEWD)

While the ordinance provides significant reporting and performance requirements to ensure compliance with the Local Hiring Ordinance, a key consideration is OEWD's ability to coordinate and develop a training pool of workers to participate in the CleanPowerSF deployment. OEWD has ample experience in this regard.

OEWD has, similar to its CityBuild program, developed curricula at City College focused on particularly sectors of the City's economy. They have a TrainGreenSF program already, but it has suffered in the case of renewable energy and energy efficiency due to the lack of

[22] The California Conservation Corps, or the CCC, is a department of the government of California, falling under the state cabinet-level California Resources Agency. The CCC is a work development program specifically for men and women between the ages of 18 to 25, offering work in environmental conservation, fire protection, land maintenance, and emergency response to natural disasters. Members of the CCC are referred to as "corpsmembers" or "corpies." Corpsmembers are paid minimum wage for their work.

[23] The Delancey Street Foundation, often simply referred to as Delancey Street, is a non-profit organization based in San Francisco that provides residential rehabilitation services and vocational training for substance abusers and convicted criminals. It reintegrates its residents into mainstream society by operating various businesses - such as restaurants, catering and moving companies - all of which are wholly managed and run by the residents themselves. The foundation's methods have been widely praised and have been emulated internationally.

opportunities for trainee placement in those fields. The SFPUC, SFE and OEWD can design and training programs structures that will satisfy the labor demands of the deployment.

Specifically the Local Hiring ordinance authorizes OEWD to enforce the policy and require awarding departments to work cooperatively with OEWD.

- OEWD shall be authorized to engage its community based organizations in the City's workforce development system to assist with the recruitment and retention of targeted workers. Through the existing Workforce Investment Board, OEWD shall provide a forum for community members, CBO's, and representatives of all stakeholders affected by or interested in the policy.

San Francisco Labor Policy and Regulations

Background

San Francisco has lost thousands of jobs in manufacturing, construction, utilities and trade in just the last six years, representing a long-term decline in middle and working class jobs in San Francisco and an overarching trend nationally.[24] The Local Hiring ordinance was a product not just of concern for unemployment and disadvantaged populations within the City, but community dissatisfaction with the previous system of Project Labor Agreements. The activists and officials who promoted Local Hiring pointed out the ineffectiveness of Project Labor Agreements, their lack of enforcement and the ease with which they were gamed or circumvented.[25]

The Local Hiring ordinance was enacted March 25th 2011. Its essential directive is that all city funded construction contracts valued over $400,000 will have to assign 20% of project hours to San Francisco residents and at least 10% for "disadvantaged" workers.[26] This scales up by over seven years by increments of 5% for project hours assigned to local workers and by 2.5% for disadvantaged workers so that in 2017, 50% of all project hours will be mandatory local hires

[24] Employment statistics from San Francisco Public Utilities Commission Comprehensive Annual Financial Report FY 2010-11 page 208 – original source: California Employment Development Department (EDD), Labor Market Information Division.

[25] LPI interview with Joshua Arce, 4.12.2012 Mr. Arce is a lawyer with Brightline Defense who has been involved in labor equity questions in San Francisco for many years.

[26] The value of State and federal grants are exempted from the $400,000 threshold. When City and State or Federal money is mixed a project, only the City portion must comply. The ordinance is scheduled for review in year three of its seven-year timeline. Local hiring ordinance applies to contracts utilizing federal or state funds. However, the administration will segregate federal/state funds or provide contract provisions if the policy would violate federal or state law.

and 25% disadvantaged workers. A local worker is defined by the ordinance as someone who has been a San Francisco resident for at least seven days prior to the commencement of work.[27]

Because of the scope of this ordinance, it will require significant coordination, previously referred to in this section, between the SFPUC, SFE and the OEWD with nonprofit labor training organizations in the City to prepare a labor pool capable of meeting its requirements.[28]

Impacts for CleanPowerSF deployment

For the SFPUC, the $400,000 threshold will apply to many but not all contracts, particularly not Job Order contracts for small energy efficiency retrofits and some small renewable energy projects.[29] As City-funded projects within 70 miles from the City and County of San Francisco will be governed by the new Local Hiring Ordinance, larger renewable developments may be required to comply.[30] However, the local hiring ordinance requirements apply in proportion to actual San Francisco costs and not to private funding sources. Wholly privately-financed projects would also not be bound to comply with the ordinance.

Additionally, the ordinance requires City agencies to do the following:

- Authorize financial and non-financial incentives for contractors and subcontractors who exceed local hiring requirements, including financial incentives that comply with applicable law and do not exceed one percent of the estimated cost of the contract and non-financial incentives by OEWD regulation.
- Establish various consequences of noncompliance with the policy, including the authority of assessment of penalties against contractors that do not meet the local hiring requirements.
- Set the penalty amount equal to the journeyman or apprentice prevailing wage rate for the primary trade used by the contractor for each hour the contractor fell short of the local hiring requirement.

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[27] There has already been suggestion that this residency standard encourages fraud, and may recommend a longer term of residency as a requirement.

[28] Ordinance 311-10; amendment of the Administrative Code Chapter 6, Public Works Contracting Policy and Procedures, Subsection 6.22(G). The assertions of the following discussion about The Mandatory Local Hiring Ordinance are drawn in part from the OEWD Factsheet on the ordinance: Available from: [http://oewd.org/media/docs/WorkforceDevelopment/GoSolarSF/Local%20Hire/Local%20Hiring%20Ordinance%20Fact%20Sheet.pdf]

[29] SFPUC's Job Order system is described in the "Job Order vs. Request for Proposals" section below.

[30] " Work hours performed by out-of-state workers will not be included in the calculation of the number of project work hours to which the local hiring policy applies. However the local hire requirement will include San Francisco residents, workers local to the area, and workers residing within the region." This assertion in the OEWD digest of the new ordinance is ambiguous for CleanPowerSF. We believe it was meant to create flexibility for WSIP projects and that similar rules would apply to, for example, a City financed wind farm in the Greater Bay Area.

- Establish pipeline and retention compliance mechanisms which contractors and subcontractors may use to receive a conditional waiver from local hiring requirements on a project specific basis, including specialized trades, a process of receiving credit for local hiring on non-covered projects, a process for sponsoring apprentices, and a process for direct entry agreements with apprenticeship programs.

For contractors, the ordinance sets out separate compliance rules. While exceptions exist for contractors who cannot reasonably meet these requirements, developing a worker training program will be essential to achieving these goals and also preventing bottlenecks of non-compliance to discourage the gaming of these regulations.

Specifically contractors must operate within the following parameters:

- A core employee or existing worker is defined as an apprentice or journey level employee who appears on the contractor's certified payroll 60 of the previous 100 calendar days prior to date of award of city contract.
- A contractor is required to submit a Local Hiring Plan for covered projects in excess of $1 million.
- Subcontractors of all tiers must agree to comply with the Local Hiring requirements.
- Contractors are required to keep records of the requirements related to the Local Hiring ordinance. OEWD shall establish reporting procedures for the contractor.
- Contractors are required to use the CityBuild referral program if their preferred method of hiring does not enable them to meet the local hiring requirements of the policy.
- Contractor's ability to assess qualifications of prospective workers or to make final hiring and retention decisions is not limited by the policy.

San Francisco General Plan - Promoting Renewable Energy Sources

"Renewable energy is a term applied to energy sources which do not rely on finite reserves of fossil or nuclear fuels. These sources are directly or indirectly due to the sun, with the exception of tidal energy, and include such forms as solar, wind, biomass, and hydro. Renewable energy sources are non-depletable; hence, their use reduces dependence on conventional fossil fuels, particularly from foreign sources. They are relatively benign to the natural environment. In addition, renewable energy sources tend to be labor intensive, encouraging the growth of local enterprises and jobs. For these reasons, their use should be actively encouraged.

"All City agencies should give greater consideration to the potential use of renewable energy systems. Land use and regulatory codes should integrate renewable energy concerns. Solar access issues should be identified and local approaches developed to facilitate the use of various systems for space and water heating needs. Local government codes have, directly or indirectly, encouraged greater energy use and discouraged investments in renewable energy technologies. Changes in land use policies and regulatory codes can significantly increase local reliance on renewable energy resources. These programs include expediting permit applications, consumer protection, information services, and special programs for low-income residents and small commercial businesses. Local government should be committed to undertaking this re-examination in order that it might better reflect a position of leadership in support of renewable energy sources." San Francisco General Plan, Objective 16

- A contractor who wishes to contest the assessment of penalties may request a hearing.

Program Phases

CleanPowerSF service will begin with a start-up "Phase" of service mainly limited to a subset of residential customers in 2013. Shell Energy North America (Shell) is currently anticipated to provide wholesale power and schedule coordination services for the first phase of residential customers. Subsequent phases will enroll all residents and businesses, in accordance with city ordinances,[31] and may be served by a combination of the deployment and by Shell or multiple wholesale power providers, at the SFPUC's discretion. Phase I is currently anticipated to subject customers to a significant price premium, although mitigating actions are recommended below. Subsequent phases are not currently anticipated to require a price premium, per the draft Financial Model results of the deployment (though this may change as the results are refined in coordination with SFPUC staff).

Current Phase I Design

The current SFPUC strategy for CleanPowerSF Phase 1 is to offer at least 100,000 and up to 230,000 residential customers (out of 340,000 eligible residential customers) opt-out notifications for an initial 100% renewable power product that would increase their rates relative to PG&E basic service. Customer generation rates would rise approximately 23%, resulting in a bill premium of approximately 13%.

SFPUC staff commissioned a statistical analysis using polling data to estimate likely customer retention at the precinct level. This targeting, to the extent the analysis is accurate, will allow the SFPUC to lower initial customer opt-out by targeting the precincts with the highest concentration of customers who will be willing to pay the Phase I premium.

A partial analysis of this data is shown below:

Precincts Enrolled	Residential Accounts	Retained Customers	Opt-Outs	Opt-Out Rate	Opt-Outs: % of Residential Customer Base
195	93,338	50,346	42,992	46%	12%
298	144,862	75,000	69,862	48%	20%
446	208,046	100,075	107,971	52%	31%

[31] See Ordinances 147-07 Section 1(a) and 1(b)6, Ordinance 86-04, and Ordinance 348-12.

As can be seen in the table, the opt-out rate increases with the number of customers enrolled, as more precincts with less favorable polling results are included. The minimum enrollment required for Shell to initiate Phase I service is estimated at 50,000 – 75,000; at this level of enrollment, 46%-52% of customers are projected to opt-out, representing 12%-31% of the overall number of residential accounts in the City.

Under current CPUC regulations, these customers would have to affirmatively *opt-in* in order to participate in the Phase II offering of 51% renewable and demand-side supplied power by 2017, which is anticipated to offer prices competitive with PG&E's basic service. Under an opt-in approach, experience indicates that 90%-95% of customers would not likely opt-in to the program.

The use of an opt-out structure is essential for the ability of CleanPowerSF to comply with state law and capture citywide participation. The attraction and preservation of a high percentage of potential CleanPowerSF CCA customers is of foundational importance for the success of both the wholesale power and renewable elements of the program.

Phase I Recommendations

The SFPUC should explore diverting excess Hetch Hetchy power currently being sold to local governments through the Western System Power Pool to CleanPowerSF for Phase I, and lowering the overall RPS-qualifying content in favor of "GHG free" and "renewable" products (as Hetch Hetchy hydropower does not count towards the state RPS, but is nonetheless both GHG free and renewable), or at least purchasing Type 3 RECs instead of Type 2 RECs for the portion of renewable energy above RPS compliance minimums supplied by SENA. Also, the enrollment should be lowered to the minimum required by Shell Energy to initiate Phase I service (approximately 40,000 to 61,000 customers). Preliminary Financial Model results indicate this may allow Phase I service to commence with no rate premium.

The SFPUC should also seek to identify customers interested in 'Own Your Power' as well as interest among potential host site customers. This work would benefit from building upon the customer databases being created for the broader CleanPowerSF deployment. The goal of this approach would be to identify as many customers as possible willing to pay a premium for renewable power supplied by Shell before gaining Community Shares in the deployment, target host site customers for the deployment, and to begin the deployment in 2013. The benefit of such an approach would likely be to reduce the opt-out rate of Phase I customers below the level currently estimated.

Recommendations for Wholesale Power for Subsequent Phases

As the remaining ~90 percent of customer load is phased in over subsequent years, the CleanPowerSF program will be free to contract with other suppliers to supply this load. The SFPUC should issue an RFP for Phase II wholesale procurement in the near-term, to ensure it

receives competitive price quotes for wholesale power. The impacts on customer load from the deployment should be closely integrated into wholesale procurement activities as early as 2014.

The current contract with SENA may not be used for subsequent phases without precluding the local deployment, for two reasons:

1. The ability to finance the build-out using revenue bonds issued by the SFPUC must not violate the agency's Debt Service Capacity Ratio (DSCR); net revenues must equal at least 125% of annual debt service payments (capital and interest payments).[32] The contract with Shell contains a 'lockbox' provision, which gives Shell first rights to the program revenues. As such, program revenues do not count towards the calculation of net revenues for the SFPUC. This provision must not be incorporated into future wholesale procurement contracts, and Shell must not be contracted for additional power supply or services under the original contract; otherwise, the ability to issue revenue bonds to finance the build-out will be substantially constrained or eliminated.
2. The CleanPowerSF deployment will require the intelligent monitoring and control of distributed generation and demand-side assets, coordinated in real-time and integrated with scheduling activities to lower the overall cost of service. These operations will be vital to the performance of the program overall. While the contract with SENA allows for the integration of resources specified by the City, SFPUC staff should be aware that the Scheduling Coordinator software that SENA has elected to use (supplied by Czarnecki-Yester) does not have the functional capability to integrate distributed energy resources into procurement operations.

Procurement Operations

Introduction

CleanPowerSF will initiate service under a full requirements contract with Shell Energy North America, under which all energy, capacity, and renewable energy requirements will be provided. This contract will supply approximately 9% of the program's requirements (as expressed as a percentage of full enrollment), for a period of five years. During the first year of the program, CleanPowerSF will expand its existing in-house capacity for power procurement to manage the procurement and operations, so that the remaining 81% of the program's requirements may be contracted for and managed 'in-house' or by chosen suppliers.

[32] [32] SFPUC Debt Management Policies and Procedures, Section VII

Current Phase I Procurement Design

SFPUC staff indicated that policymakers prefer the CleanPowerSF program, at least in the initial phase, to fully hedge its wholesale power costs for the duration of the contract (a five year period). This runs counter to standard utility risk management practices, and may be the result of policymakers not fully understanding the industry context and consequences of their preference. Broadly, there are two ways to manage risk: to do so through expert judgment and mitigating actions, or to pay another entity to take on the risk (using their expert judgment). By requiring Shell to fully hedge its procurement for CleanPowerSF Phase I customers for five years, the program design is causing a cost premium above what would be incurred using standard utility procurement practices that structure a balance of short, medium, long-term and unhedged positions in order to lower costs while appropriately accounting for the risk of price and load volatility.

In addition, various assets brought online by the deployment may be integrated into procurement operations in order to manage price volatility. For example, certain combined heat and power engines may boost output by 25% for a few hundred hours a year (when prices are highest, or to lower monthly capacity payments); demand response and storage function in a similar manner for these purposes. The procurement for Phase I, while only a small portion of the CleanPowerSF load at full enrollment, would ideally be structured to take the deployment into account and would not be fully hedged.

Recommendations for Procurement

CleanPowerSF procurement operations should be fully controlled by the SFPUC subcontractors or in-house as soon as possible. The SFPUC's Moccasin Powerhouse[33] currently hosts SFPUC's schedule coordination system and staff for Hetch Hetchy generation and accounts. They are responsible for scheduling electrical power generation (and water delivery) throughout the Hetch Hetchy system. The SFPUC should expand the scheduling coordinator activities at the Moccasin Powerhouse to take on the responsibility for CleanPowerSF procurement and operational activities. Staff advised that this may require a policy change to reunite power and water operations within the SFPUC, and this should be explored. Staff are currently available around the clock for the water operations at this location. A real-time energy desk should also be created, with a possible backup desk located within the City. Interoperability must be ensured between procurement operations and the assets deployed through the program that are required to be monitored and dispatched. Monitoring wind and cloud cover to forecast the variability of intermittent renewable resources will lessen forecast error and related procurement imbalances. Advanced forecasting technologies and practices should be assessed in coordination with SFPUC procurement staff and schedule coordinator.

[33] In Tuolumne County, approximately 135 miles east of San Francisco.

In the near-term, schedule coordinator services under Shell[34] should be responsible for fully integrating deployment resources, or the Confirmation agreement changed to delegate these responsibilities to the SFPUC or its chosen subcontractor. SFPUC staff should be aware that the Scheduling Coordinator software that SENA has elected to use (supplied by Czarnecki-Yester) does not have the functional capability to integrate DERs into procurement operations. The SFPUC should examine what portion of procurement should be procured through shorter term contracts or unhedged, in order to minimize the risk of power displacement penalties as deployment assets are integrated into procurement forecasting and operations.

Sales of Hetch Hetchy Power and Capacity to CleanPowerSF

Congress authorized the construction of the Hetch Hetchy dam and hydroelectric facilities through the Raker Act in 1913. The history of the Raker Act shows that Congress' intent was that the people of San Francisco should receive the benefits of Hetch Hetchy. It cannot benefit private corporations such as PG&E or a competitive wholesale supplier such as Shell Energy North America. The power was explicitly forbidden from being sold to a corporation for resale to retail customers by Section 6 of the Raker Act, on penalty of forfeiture of Hetch Hetchy:

> Sec. 6. That the grantee is prohibited from ever selling or letting to any corporation or individual, except a municipality or a municipal water district or irrigation district, the right to sell or sublet the water or the electric energy sold or given to it or him by the said grantee:
>
> Provided, That the rights hereby granted shall not be sold, assigned, or transferred to any private person, corporation, or association, and in case of any attempt to so sell, assign, transfer, or convey, this grant shall revert to the Government of the United States.

Hetch Hetchy power has historically not been made directly available to San Francisco citizens and businesses. 'Excess' electricity from Hetch Hetchy that is not consumed by City agencies and "unmetered accounts" (private sector San Francisco ratepayers) or to the two Central Valley irrigation districts serving the Modesto and Turlock agricultural and municipal loads, has been sold to the aforementioned irrigation districts (so they may resell the power), as well as to other local governments through the Western System Power Pool (WSPP).

[34] Czarnecki and Yester is an independent California certified Schedule Coordination settlement and data manager , and has a special arrangement working as a subset of Shell for this program. Under the Shell agreement this firm is referred to as a subcontractor to Shell Energy North America but yet the Shell contract provides that the firm is not being treated as a subcontractor under the Shell agreement, ostensibly meaning Shell is liable for schedule coordination, not its subcontractor.

This excess power accounts for ~25% of Hetch Hetchy's generation on an average year, and up to 40% in a wet year. Of this excess power, roughly 30% is sold to the irrigation districts, and 70% sold through the WSPP. The SFPUC should implement mechanisms to sell the portion of excess power that is currently being sold through the WSPP to CleanPowerSF instead, beginning with Phase I in 2013.

Modesto and Turlock Irrigation District Contracts – Excess Energy

The contracts with the Modesto and Turlock Irrigation Districts currently expire in mid-2015. The current contracts give the irrigation districts rights to a portion of the electricity generated by Hetch Hetchy in excess of their municipal and agricultural pumping load. The post-2015 contracts should not give the irrigation districts rights to this power, as any excess power will be fully used by the citizens and businesses of San Francisco through the CleanPowerSF program. This is in compliance with the Raker Act. The relevant section is 9(L), excerpted below (emphasis added):

> (l) That the said grantee shall, upon request, sell or supply to said irrigation districts, and also to the municipalities within either or both said irrigation districts, for the use of any land owner or owners therein for pumping subsurface water for drainage or irrigation, or for the actual municipal public purposes of said municipalities (which purposes shall not include sale to private persons or corporations) any excess of electrical energy which may be generated, and which may be so beneficially used by said irrigation districts or municipalities, when any such excess of electric energy may not be required for pumping the water supply for said grantee and for the actual municipal public purposes of the said grantee (which purposes shall not include sale to private persons or corporations) at such price as will actually reimburse the said grantee for developing and maintaining and transmitting the surplus electrical energy thus sold; and no power plant shall be interposed on the line of the conduit except by the said grantee, or the lessee, as hereinafter provided, and for the purposes and within the limitations in the conditions set forth therein:
>
> *Provided,* That said **grantee shall satisfy the needs of the landowners in said irrigation districts for pumping subsurface water for drainage or irrigation, and the needs of the municipalities within such irrigation districts for actual municipal public purposes, after which it may dispose of any excess electrical energy for commercial purposes.**

It appears that the SFPUC may not practically divert the portion of excess Hetchy generation currently given to the irrigation districts to CleanPowerSF before the renegotiation of the contracts in 2015. According to the City Attorney's office, the contracts stipulate a 2.5 year advance notice period for termination.

Split Delivery Mechanism

If a private entity is responsible for supplying CleanPowerSF with power, and if Hetch Hetchy power is delivered to CCA customers, care must be taken to ensure that the City remains in

compliance with Section 6 of the Raker Act. This section, excerpted in full above, mandates that Hetchy power may not be sold to any corporation to be resold to retail customers. For Phase I of CleanPowerSF, Shell is currently responsible for schedule coordination activities for power procurement to supply CleanPowerSF customers. The SFPUC may supply CleanPowerSF customers with Hetchy power using a 'split delivery' mechanism originally proposed by LPI in the 2009 CCA Program Report and Draft Implementation Plan.[35]

The Draft CCA Implementation Plan identified a means of ordering delivery of Hetch Hetchy power to San Francisco ratepayers to LAFCO and SFPUC staff, and put forward a proposal for a transaction mechanism which would make it legal for participating residential and business CleanPowerSF customers to pay for and receive the benefits of Hetch Hetchy power under Section 6 of the Raker Act, even when a private entity was responsible for providing power.[36] Under the mechanism, the end-use customer would have two power supply sources: Hetch Hetchy, and the supplier's portfolio, structured to be transparent to the end-use customer and revenue-neutral between the City and Supplier.

Capacity Balancing and Water First Interpretation

Hetch Hetchy may also be used for capacity balancing within the constraints of the 'water first' policy that governs dam releases.[37] The CCA will be held financially accountable by the CAISO for imbalances between energy procured for the CCA's customer base and the actual load of that customer base, within every hour. Staff has indicated that the 'water first' policy is governed by daily flow requirements. The timing of those flows, and the associated hydroelectric generation, may be ramped up or down within each hour over the course of a day without violating the water first policy. This should be integrated in CleanPowerSF procurement, and used to offset imbalances between forecasted and actual load on an hourly basis. It may also be used when wholesale prices are high, in order to lower the overall cost of service. This option should be fully explored with SFPUC staff and integrated into the final Financial Model.

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[35] San Francisco Local Agency Formation Commission, 2009. See page 93.

[36] CCA Program Report, p. 16.

[37] From AB 1823, 73504(b) " In order to supply adequately, dependably, and safely the requirements of all users of water, the city shall continue its practice of operating the reservoirs in the Counties of Tuolumne and Stanislaus in a manner that ensures that the generation of hydroelectric power will not cause any reasonably anticipated adverse impact on water service. The city shall assign higher priority to delivery of water to the bay area than to the generation of electric power, unless the Secretary of the Interior, in writing, notifies the city that doing so would violate the Raker Act (63 Ch. 841 P.L. 41). The city shall make available to the public, on request, its plans of operations (rule curves) for these reservoirs.

Monitoring and Control Systems

A key deployment technology development category is the ability to monitor distributed generation, renewable, storage and certain demand-side measures. Doing so will allow the calculation of customer paybacks and Own-Your-Power credits, optimize building performance, and integrate deployment resources with ongoing procurement operations.

San Francisco General Plan - Develop information resources to assist in the use of renewable energy.

"Providing reliable information is an important activity in the marketing of renewable energy. Such information can motivate individuals to install energy conservation measures and renewable energy technologies. However, a key part of a successful information service program involves developing materials best suited to individual needs." S.F. General Plan, Policy 16.3

Smart Grid Technologies and Practices

The 'Smart Grid' may refer to technologies and operational practices throughout the entire energy value-chain, across generation, transmission, distribution, and down to individual customer sites. The integration of these technologies and practices depends upon the ability to monitor, communicate, store, analyze, and broadcast data throughout the Smart Grid - it is an evolution in communication infrastructure as much as traditional grid components and operations. These investments should be based on widely adopted, open standards to avoid the risk of becoming obsolete as technologies and practices rapidly evolve.

Utility investments have generally been concentrated in distribution automation technologies and Smart Meters. PG&E was projected to have completed Smart Meter installations in San Francisco by Q2 2012. CleanPowerSF will focus on investing in technologies and enabling services on customer premises. For the purposes of CleanPowerSF, the 'Smart Grid' is a bundle of technologies installed on individual customer premises, enabled so as to provide the CleanPowerSF Scheduling Coordinator enhanced insight into load patterns and the ability to shift consumption, storage, and generation patterns the day ahead or in real-time for cost optimization at several levels (both onsite, taking into account the customer's rate schedule, and for procurement activities). This will provide a 'win-win' for the customer and for the program overall.

The communications 'backbone' may either be through the PG&E-controlled Smart Grid network, once customer 'gateway' radios on Smart Meters are enabled and any related security protocols are implemented, or via Internet and SCADA (supervisory control and data acquisition) systems. Many 'Smart Building' firms operate in competitive retail electricity markets and deploy energy analytics and Open Automated Demand Response (OpenADR) resources through commercial IP communications instead of relying on the local utility communication system. Similarly, many solar systems are monitored via the Internet, and CHP assets controlled by SCADA systems.

Open Automated Demand Response (OpenADR)

The demand-side resource deployment in a Smart Grid enabled environment will be an important component of CleanPowerSF's portfolio. Lawrence Berkeley National Laboratory's (LBNL) Demand Response Research Center has pioneered the automation of demand response for commercial and industrial facilities in a program called Open Automated Demand Response (OpenADR). It is operational in approximately 300 facilities in California, and has been adopted by over 60 commercial vendors. The second iteration of OpenADR was released in August 2012, and encompass the residential sector as well. It is currently being incorporated into national Smart Grid standards.[38]

OpenADR has primarily been used for demand response, but is being explored for demand-dispatch.[39] Demand dispatch is the practice of turning appliances or electric vehicle charging on or off to mitigate grid instability (for example, from renewable energy intermittency) and instead of relying on combustion turbines burning natural gas. Demand dispatch is an expanded form of demand response, which typically only targets demand reductions during peak summer periods, and involves the full automation of appliance or electric vehicle managed charging.

In addition to managing seasonal peaks at the portfolio level, and daily and monthly peaks at the site level, loads controlled by OpenADR have a fast enough response time to assist CAISO in areas with a higher penetration of variable resources by smoothing ramps associated with swings in renewable output. OpenADR resources have demonstrated sufficiently rapid response time to deliver non-spinning ancillary services that the CAISO procures to balance the electrical grid. The ability of OpenADR to provide regulation up and down services is currently being explored.

Aggregated OpenADR portfolios have similar grid-balancing characteristics to those of grid-scale battery systems, and at a fraction of the cost and environmental impact. In addition, it is a highly distributed resource and may be used to relieve temporary system constraints across the grid topology, or to smooth out pockets of load or generation. This will become increasingly important and correspondingly valuable as the penetration of electric vehicles and distributed generation increases. The CAISO may eventually dispatch OpenADR resources in a manner analogous to previous contracts for Reliability- Must-Run (RMR) generation, as a location-specific grid balancing resource.

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[38] National Institute for Standards and Technology (NIST) Smart Grid Interoperability Panel (SGIP) Priority Action Plan (PAP) 09. NIST will then pass OpenADR 2.0 to FERC for consideration for a national Smart Grid DR communication standard (as mandated by EISA 2007). Available from: [http://collaborate.nist.gov/twiki-sggrid/bin/view/SmartGrid/PAP09DRDER]

[39] See Lawrence Berkeley National Laboratory's Demand Response Research Center publications, available from[http://drrc.lbl.gov/publications/integrating-renewable-resources-california-and-role-automated-demand-response], and the Integrating Renewable Resources (IRR) pilot.

The CAISO is currently designing a Flexible Ramping product for implementation in Fall 2013.[40] This market is designed to allow resources such as demand dispatch and storage to provide capacity balancing for the integration of intermittent renewable resources.

The integration of these protocols and equipment specifications with San Francisco's CCA deployment and ongoing DSM programs represent a valuable opportunity to deploy the maximum amount of cost- effective demand-response and demand-dispatch resources within the city. This will require the use of an OpenADR server deployed by the SFPUC.

Boundary Metering

CleanPowerSF may wish to install boundary metering devices at mutually agreed upon locations "within or adjacent to CleanPowerSF's service area."[41] Under CPUC regulations, CleanPowerSF may request installation of boundary meters from PG&E, and pay PG&E to send the data to CleanPowerSF for its operational use. The ability of CleanPowerSF to install boundary meters at strategic locations may substantially enhance the SFPUC's ability to monitor and improve microgrid operability relative to capacity balancing, and depending on cooperation by PG&E and regulatory actions at the CPUC, to minimize distribution and transformer upgrade requirements, and to interface with substations in a manner that maximizes efficient use of the local grid.

Schedule

CleanPowerSF and PG&E must agree to a mutually acceptable Boundary Metering installation schedule. The installation schedule will take into consideration and provide priority to required PG&E metering work which may include work related to mandated regulatory changes, customer installations and testing, emergency service orders and routine testing and maintenance.[42]

Discretion

PG&E will consider and evaluate requests for Boundary Metering on a case-by-case basis, provided that implementation can be accomplished without compromising the safety, reliability or operational flexibility of PG&E's electrical facilities. If CleanPowerSF submits a request for

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[40] For more information on the CAISO's Flexible Ramping product, available from: [http://www.caiso.com/informed/Pages/StakeholderProcesses/FlexibleRampingProduct.aspx]

[41] In accordance with PU Code Section 366.2, "at the request and expense of any CCA, PG&E shall install, maintain and calibrate metering devices at mutually agreeable locations within or adjacent to the CCA's service area. PG&E shall read the metering devices and provide the data collected to the CCA at the CCA's expense. All costs incurred by PG&E as a result of providing this specialized Boundary Metering service shall be the sole responsibility of the requesting CCA. "

[42] Pacific Gas & Electric, Electric Rule Number 23, Sheet 35 - Boundary Metering Special Requests, Community Choice Aggregation Service, Advice Letter No: 3984-E, Filed December 29, 2011, Effective May 11, 2012.

Boundary Metering to PG&E, it will be responsible for funding an analysis of the electric system impacts and a study to determine the estimated costs associated with Boundary Metering. CleanPowerSF will be provided with an estimate of costs for which it shall be responsible to pay.

Request Protocol

If CleanPowerSF requests Boundary Metering installation, it will be responsible for executing a Specialized Service agreement or contract with PG&E established pursuant to Rule 2, establishing the terms and conditions for installation and maintenance of the special facilities.

Administrative and Maintenance Costs

CleanPowerSF will be responsible for all actual costs associated with PG&E Boundary Metering services, including but not limited to PG&E's development of the estimate of costs, the implementation of Boundary Metering, and all ongoing operating and maintenance costs.

Deployment Cost

All costs associated with the deployment of Boundary Metering for CleanPowerSF will be paid in advance by CleanPowerSF before PG&E's work will commence. As applicable, Boundary Metering costs will be included as a part of the Utility's credit requirements set forth in Section V of PG&E's CCA Services Tariff.

Smart Meter Data Access

Senate Bill 790 (2011, Leno)[43] expanded access to utility end-use meter data by CCAs for purposes of implementing the deployment. CleanPowerSF may now collect not only historical electricity end-use data, but also advanced metering data that is particularly valuable for load curve analysis and the targeting of DSM retrofits, as well as enhanced monitoring and information that can simplify contractual ESAs.

Whereas AB 117 (2002, Migden) had already required access to end-use historical electrical meter data, meaning data logged in the past, SB 790 has expanded[44] the requirement to a category of data specified in Section 8380 of the Public Utilities Code to include, specifically, data associated with a customer's electrical usage that is made available as part of an advanced metering infrastructure, and includes the name, the account number, or residence of the customer.

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[43] The relevant language from SB 790 is contained within Appendix A of this report.

[44] Public Utilities Code 366.2(c)(9). See CPUC letter numbered 431574, signed by the CPUC Energy Division Director and dated February 2, 2012, orders Pacific Gas & Electric Corporation, San Diego Gas & Electric Corporation, and Edison International to file modified Electric Schedule E-CCA-INFO enabling governmental agencies and CCAs – as defined in P.U. Code Section 331.1(a-c)—to receive the "electrical consumption data as defined in Section 8380."

Ongoing proceedings at the CPUC may potentially alter the access to data in future available to CleanPowerSF. The City Attorney and SFPUC should act to maintain a broad CPUC interpretation of the scope of data CleanPowerSF and other CCAs may obtain.

Metering Services – PG&E Tariff

Rule 23 outlines three primary functions of PG&E's meter services: (1) Meter Ownership, (2) Meter Services (Installation, maintenance, and testing) and (3) Meter Data Management Agent (MDMA) Services. PG&E shall perform all Metering Services for CCA customers. Rule 23 identifies PG&E as the "Meter Service" provider, which is responsible to ensure that all of its meters and associated metering services are in conformance with its metering standards and Commission-approved rules governing such services.

Meter Conformity

Customers who had previously purchased or leased an interval meter acceptable to PG&E as a condition of receiving DA service, may own "or lease interval meters used for billing purposes for CCA Service, but shall continue to be responsible for the obligations of a meter owner under Rule 22 Section G."

If the customer has a non-conforming meter, or elects to have the meter replaced, PG&E reserves the right to extend its normal installation period due to meter and installation personnel availability. Under these circumstances, PG&E will apprise the customer and CCA of the specific reasons for the delay and the anticipated schedule for installation.

MDMA Services

PG&E will perform all Meter Data Management Agent (MDMA) services required for CCA Service in accordance with its Commission approved tariffs. MDMA obligations include but are not limited to reading, validation, and editing of meter data for CCA customers, as well as transfer of the data to the MDMA server, to which both PG&E and CleanPowerSF will have access.

San Francisco General Plan: Integrating Clean Energy Systems

"Integrated energy systems are a promising method for increasing the efficiency with which energy is used in commercial and mixed use projects. This concept encompasses a variety of systems. District heating and cooling systems deliver hot water or steam to buildings from a central location. San Francisco has three district heating systems serving the Civic Center and downtown areas, two of which are owned by PG&E. These systems are presently underused, despite considerable activity in new commercial office construction downtown. A feasibility study on providing steam service to new projects within or adjacent to the present steam distribution area should be undertaken. The present system could be operated more efficiently at lower unit cost with additional customers.

Other integrated energy technologies, such as co-generation and waste heat systems, use one fuel source to provide two or more end needs, thereby reducing overall energy requirements. Such systems might present a feasible and economically attractive energy supply option for new commercial office, mixed use and industrial projects. Initial studies should be undertaken to assess the potential application of these technologies on new development projects." San Francisco General Plan, Policy 14.5

Charges for Metering Services.

PG&E may charge the customer or the CCA for the provision of metering services only to the extent such charges are authorized by the CPUC. If the installation of metering services is at the customer's expense, the customer's authorization is required.[45]

Large Renewable Energy Projects

The City has many options for developing larger renewable generation facilities on City control property and within the Bay Area. These large projects represent in some cases a long-term source of renewable baseload power for CleanPowerSF. Recent commercial development of tidal and particularly wave power in Maine and Oregon aide the City's continuing effort to develop a wave power generation plant off of the western coast of San Francisco or tidal power facilities within the bay. Several lines of expansion of geothermal power at the Geysers are available. There is significant development of Bay Area wind farms in Solano County, the Delta and Altamont Pass, but also within the City on Treasure Island and along the border at Candlestick Point and Brisbane Baylands. Relevant land use policies must be addressed for these assets.

Geothermal at the Geysers:

The Geysers are the Bay Area's primary geothermal resource, with at present some eighteen plants with a output of 900 MW of power. Up to 300 MW of additional geothermal resource in the Geysers has been identified by a recent study, representing potentially the cheapest renewable energy in California.[46] This would be achieved by changing the cooling systems of the existing Geyser plants to drastically reduce evaporative loss of water, thereby increasing the productivity of existing geothermal plants and extending their lifecycle. Because the eighteen geothermal plants, owned primarily by Calpine and the Northern California Power Agency (NCPA), at the Geysers share a reservoir, the alternate cooling methods would have to be implemented by all of the facilities to realize this potential.[47]

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[45] PG&E's CCA Services tariff indicates that PG&E will provide CleanPowerSF (or its their designated agent) reasonable and timely access to meter data as required to allow the proper performance of billing, settlement, scheduling, forecasting and other functions. See Pacific Gas & Electric, Electric Rule Number 23, Section N. – Metering Services – Community Choice Aggregation Service, Advice Letter No: 3984-E, Filed December 29, 2011, Effective May 11, 2012.

[46] Bay Area Smart Energy Report, Bill Powers, et al, March 2012

[47] ibid. Section 1.2.3

The repower would protect and enhance the nature resource itself; however, the number of parties involved in this project is significant.[48] As NCPA, Calpine and the other plant owners would have to act in concert, consideration has to be made for the entities dependent on revenue from the Geysers Pipeline Project and find a use for water that would no longer be needed to maintain the Geysers reservoir, in particular the Lake County Sanitation District (LACOSAN).[49] It is possible that Sonoma County Water Agency or another adjacent entity would be able to find a use for the water, keeping all parties from adverse economic impacts of the repower.

Ocean Power

Given its position and the potential energy to be harnessed from the power of the Pacific Ocean and San Francisco Bay, wave and tidal generation technologies represent long-term sources of power for CleanPowerSF. Recent deployment of wave generation in Oregon and tidal generation in Maine, under a long-term PPA, continue to advance the viability of developing this resource.[50] While a pilot for wave power is still in development by the City, tidal power's potential has to be considered in the light of recent advancements in that field, with the first delivery of power from the Maine installation having been received in 2012.

Wave Power

The City of Francisco is actively investigating wave power. While the City has encountered permitting and jurisdictional complexity, study toward a pilot has continued, including a further report by URS in 2012. This research has refined the City's focus from the greatest theoretical resource for wave power to the ideal siting conditions with regard to ease of development.

URS was retained to evaluate wave potential in the sovereign area or "exclusion zone" where the City

[48] ibid. Section 15 focuses on this plan for new cooling on the Geysers in detail. It recommends further study by the CEC.

[49] A detailed treatment of the pipeline project available from: [http://geoheat.oit.edu/bulletin/bull18-1/art5.pdf]

[50] Project Aims to Harness the Power of Waves, New York Times, 3 September 2012. Available from: [http://www.nytimes.com/2012/09/04/us/project-aims-to-harness-wave-energy-off-the-oregon-coast.html?ref=earth&_r=0]
Maine Officials Give Green Light to First US Long-Term Tidal PPAs, RECHARGE, 27 April 2012. Available from: [http://www.rechargenews.com/energy/wave_tidal_hydro/article312204.ece]

and County has special authority to develop wave power facilities. Ultimately staff selected the buffer zone, known as the southwest ocean outfall, extending from the SFPUC Oceanside Wastewater Treatment Plant. This area is a state jurisdiction over which the SFPUC already has an existing easement, through which some portion of future transmission of electricity could be deployed to connect with a wave resource. SFPUC staff reports that environmental studies are being completed at this time, [51] as well a technology and cost survey; however, because wave technologies are still in the early stages of development, the wave energy work by SFPUC will be limited to monitoring the technology for any potential future use. The SFPUC has approximately $300,000 set aside for wave power, but it is not appropriated.

Oceanside Wave Energy Project Background

The San Francisco Oceanside Wave Energy Project was intended to begin as a 3MW pilot in 2012 with ultimate potential up to 10-30 MWs. As described by SFE staff, the jurisdictional conflict between the Department of the Interior's Mineral Management Service (MMS) and FERC over permitting wave energy projects in the Outer-Continental Shelf (OCS) pushed development plans into the Exclusion Zone, closer to San Francisco and a less powerful wave resource, which is within State jurisdiction. This simplified the permitting process by avoiding MMS (now BOEMRE) leasing requirements in the OCS. The URS study recounts the initial rejection of the City of San Francisco's permit request because of the DOI/FERC conflict. The move to the Exclusion Zone elevates this problem, although projects near the OCS are in a regulatory gray area.[52] [53]

Proposed Marine Sanctuary Expansion

A concern for land use and wave development is the proposed addition of the Golden Gate and the San Francisco coast to the Monterey Bay Marine Sanctuary, shown below. The City should assert its right to develop wave energy on its coast.

The proposed expansion of the Monterey Bay Marine Sanctuary has been advanced by the Gulf of the Farallones National Marine Sanctuary (GFNMS), which manages the northern section of the Monterey Sanctuary, and by NOAA. NOAA is currently reviewing the effects of expanding the Monterey Bay National Marine Sanctuary to include the San Francisco-Pacifica Exclusion Area. The next step in the review process is the pending release of the draft environmental impact statement (EIS), which will identify alternatives, and go out for public review and comment. If the Exclusion Area is incorporated into the NMS, this will likely result in greater restrictions on development of ocean renewable energy projects and/or facilities, as the Joint

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[51] LPI interview with SFPUC staff, Randall Smith 4.9.12.

[52] Danielle Murray, Christopher Carr, Jennifer Jeffers, and Alejandra Núñez-Luna, *Riding the Wave: Confronting Jurisdictional and Regulatory Barriers to Ocean Energy Development*, 5 Golden Gate U. Envtl. L.J. (2011).

[53] Department of the Interior, 4310-MR-W; Bureau of Ocean Energy Management, Regulation and Enforcement [BOEM-2011-0039]; Available from: [http://www.boemre.gov/offshore/renewableenergy/PDFs/2011_22608_PI.pdf]

Resolution (Feb. 2009) of the Monterey Bay and Gulf of the Farallones NMS Advisory Councils stipulates that such activities are potentially incompatible with sanctuary regulations.[54]

While the SFPUC has made requests to the GFNMS to clarify whether certain waste-water practices would still be permitted if the Sanctuary was to envelop the San Francisco coast, the SFPUC should clarify its right to develop wave and tidal resources in its sovereign area.[5556] Further, the SFPUC and CCSF should assert their right to develop renewable energy in the waters surrounding the City regardless if these waters are ultimately placed in a marine sanctuary. The ultimate purpose of environmental conservation is consistent between the Marine Sanctuary and CleanPowerSF renewable energy goals.

Bay Area Wind Farm

The City has several options for siting 150 MW of wind turbines in the Bay Area, including a greenfield development or expansion of an existing wind area such as the Delta, repowering of an existing wind farm such as Altamont Pass, or brownfield redevelopment of an existing industrial or pollution-contaminated site such as Candlestick Park, Brisbane Baylands and Treasure Island. For this report, LPI will examine only the question of land use policy regarding wind development.

Candlestick Park

The generation potential for the Candlestick Park complex, and/or neighboring Brisbane Baylands, could provide an opportunity for wind turbine installation due to shifting land use use on these sites. If and when the 49ers leave Candlestick Park, the current city plan will demolish the stadium and replace it with a development of approximately 6,000 new homes, or for retail commercial development "as a location of a regional retail center featuring large format stores."[57] Hunter's Point redevelopment implementer Lennar has indicated in the press that it intends to initiate discussions with the City "to accelerate plans to demolish the stadium." [58] The end of activity at Candlestick Park represents a significant loss of revenue for the Department of Parks and Recreation. Staff reported that the $1.5-2.8 million in net revenue

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[54] Clarification by SFPUC staff, January 2013.

[55] Available from: [http://www.mercurynews.com/pacifica/ci_21575535/national-marine-sanctuaries-seeks-fill-san-francisco-pacifica]

[56] The reference number for the scoping document is "NOAA-NOS-2012-0153." The deadline for comments in Oct. 10, 2012. The sited authority to claim jurisdiction is Authority: 16 U.S.C. 1431 et seq.; 16 U.S.C. 470.

[57] San Francisco General Plan, Candlestick Point Sub Area Plan Policy 1.3, Planning Commission resolution 18098l, June 3, 2010.

[58] "If and when the 49ers abandon Candlestick, we will initiate discussions with the City to accelerate plans to demolish the stadium," said Kofi Bonner, Lennar Urban's president." It's lights out for Candlestick with 49ers' departure," by Dan Schreiber, *San Francisco Examiner*, April 4, 2012.

they receive because of the 49ers presence at the stadium may be lost in 2014.[59] Revenues could be replaced from lease payments by a wind farm operator at the site, depending on the deployment RFP responses. Should the SFPUC wish to pursue wind turbine development at Candlestick, the planned 49er departure provides an opportune time to pursue discussions and consideration on this matter of City policy at the Department of Recreation and Parks and Board of Supervisors.

Proposition G (June, 2008) provides a process to authorize the conveyance by the City to a developer such as Lennar to be contingent on a trade of other land of comparable value. Development of a wind farm at the site need not be undertaken as a transfer of ownership in this manner with a private third-party, but could involve a new lease on the same property based on ability to pay comparable net payments through a lease arrangement between CleanPowerSF and the Department of Parks and Recreation.

Treasure Island

The San Francisco Board of Supervisors has approved a new neighborhood to be developed on Treasure Island over the next 20 to 30 years by Wilson Meany Sullivan, Lennar Urban, and Kenwood Investments. The City is preparing to take over ownership of the island from the U.S. Navy for a purchase price of $105 million to make way for 8,000 homes, a hotel and an upgraded marina. The deal requires the Navy to clean up any contamination, and this work must be approved by state regulatory health agencies. On September 4, 2012, new reports of potential radiation on the island prompted the Board of Supervisors to call for a hearing on these reports prior to approval of one-year lease agreements between the Authority and island tenants.[60] As a result, Treasure Island may face restrictions on residential use.[61] Redevelopment for wind generation to serve San Francisco may be a viable alternative.

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[59] "The 49ers' departure also will spell the loss of millions of dollars in revenue for The City's Recreation and Park Department. The agency has netted an average of $1.5 million per year since 2003, including maintenance costs, and it pulled down $2.83 million from the team's comeback 2011 season, which included two playoff games at Candlestick."

[60] A draft report, dated Aug. 6, Navy indicates that the island was used as a repair and salvage operation for a Pacific fleet exposed to atomic blasts during the Cold War. The report came in response to state regulators, who pressed for details after cleanup workers found radioactive waste in unexpected locations. Known potential sources of radiation on the island included a ship that was doused by radiation for training purposes.

[61] Contractors hired by the Navy to rid the island of its toxic past relied on an inaccurate 2006 assessment, according to a series of memos, notices of violations and e-mails from the State Department of Public Health. State public health official Peter Sapunor said Navy contractors had dug up and hauled off 16,000 cubic yards of contaminated dirt, some with radiation levels 400 times the Environmental Protection Agency's human exposure limits for topsoil. Mr. Sapunor said he believed extensive radioactive material remained in the soil surrounding those excavations. See "Radiation worries on Treasure Island,"by Matt Smith/*Bay Citizen*, August 16, 2012.

Natural Gas Aggregation and Biogas Product Offering

Financing and deploying measures that offset natural gas usage (such as energy efficiency appliances and building retrofits, solar thermal, and combined heat and power applications) are part of the CleanPowerSF deployment. However, the program may in addition consider implementing a natural gas aggregation service on an opt-in basis, and to offer pipeline-injected biogas to customers as a value-add through this service.

Some of the political risk associated with CCA does not appear to be an issue relative to natural gas service aggregation, with a perfunctory PG&E process under tariffs, and significant municipal procurement of natural gas for public agencies long underway in the Bay Area. PG&E publicly supports gas aggregation within its territory.[62]

PG&E's Core Gas Aggregation Service is an optional program that allows its customers to purchase gas directly from third-party gas suppliers, known as Core Transport Agents (CTAs). The utility continues to transport the gas across its distribution system to the customer's meter.[63]

As with electric deregulation, most suppliers have focused on serving large commercial, industrial and government customers, considering small customers too little to justify high marketing and customer acquisition costs. The market has worked well for large customers.

If CleanPowerSF chooses to offer natural gas commodity service to its customers, it could present an attractive 'value-add' for customers by offering an opt-in biogas product.

Aggregation of Small Core Customers

California has had a customer choice program for all residential and small commercial customers (referred to as core customers) since 1995 through its core aggregation transportation program (CAT). The program allows core customers to purchase gas from marketers who have met minimum aggregation levels of 120,000 therms per year. According to the most recent Energy Information Administration data, 31,967 residential customers in California are purchasing gas from marketers, representing about 0.3 percent of deliveries to residential consumers statewide in 2005.

CleanPowerSF could enhance performance by eliminating marketing costs and changing the choice criterion. Although legislation[64] was passed in 1999 that required LDCs to provide

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[62] "PG&Es Core Gas Aggregation Service is an optional service that allows you to purchase gas directly from competitive energy suppliers. Should you choose a competitive gas supplier, PG&E will remain your gas distribution company. Because PG&E does not realize a profit on sales of the gas commodity, PG&E is essentially neutral on your choice of supplier."From a standard PG&E letter presented by the River Delta Unified School District Board of Trustees meeting October 11, 2011. Available from:
[http://www.riverdelta.org/home/riverdeltausd/.blogs/post17908/14%20-%20Res%20653%20SPURR.pdf]

[63] PG&E, "Core Gas Transportation" web page, Available from:
[http://www.pge.com/mybusiness/customerservice/energychoice/coregasaggregation/]

bundled service and be the only providers of billing and metering services, it exempted existing core aggregation programs and included the provision that consumers can choose to purchase gas from another supplier. The main reason for the low interest from marketers in serving the residential market include high marketing costs and the difficulty in offering competitive rates to core customers – problems that could be solved with a CCA-based marketing program.

Small customers are more challenging to serve under the current rules, but this may be surmounted through a full use of the CCA marketing, product design, and customer interface. The State of California allows residential and small business customers to purchase natural gas from marketers through a "core aggregation transportation program" offered by the local distribution companies (LDCs). This program has not been very successful, but could potentially be made successful through a CCA-based marketing effort to electrical customers to opt-into a biogas product.

Aggregation of Large Non-Core Customers

Noncore customers are large commercial customers with annual monthly average usage equal to or in excess 20,800 therms that have not elected core service. Whereas core customers are served according to a "cold-year, peak-day" criterion based on human needs, large non-core customers choose to use the gas distribution system on an as-available basis for industrial and commercial purposes in return for significantly lower rates. In return, if the utility pipeline system is being fully utilized by core customers or some other event arises which may jeopardize service to core customers, noncore customers agree to discontinue their use of natural gas.

This rate schedule applies to the transportation of natural gas to noncore end-use customers on PG&E's backbone, local transmission and/or distribution systems. To qualify for service under this schedule, a customer must be classified as a noncore end-use customer.[65] To initially qualify for noncore status, a nonresidential Customer must have maintained an average monthly use, through a single meter, in excess of 20,800 therms during the previous twelve (12) months, excluding those months during which usage was 200 therms or less. Certain noncore customers served under this schedule may be restricted from converting to a core rate schedule.[66]

Noncore gas customers have automatic meter reading (AMR) installed that allows PG&E to record their usage on an hourly basis. Noncore gas customers agree to charges being imposed on them if they do not comply with a gas curtailment request. Due to the lower reliability of

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[64] California Assembly Bill 1421, October, 1999.

[65] See Rule 1 of PG&E's tariff.

[66] See Rule 12 for details on core and noncore reclassification. Customers on Schedule G-NT must procure gas supply from a supplier other than PG&E. See also PG&E Advice Letter No: 3257-G-A, Effective January 1, 2012.

service provided to noncore customers the average gas transportation rate charged to noncore customers is lower than the average transportation rate charged to core customers.

Case Study of Gas Aggregation

The School Project for Utility Rate Reduction (SPURR), is an example of a Bay Area gas aggregator that enrolls schools and community colleges to pool gas purchases. SPURR is a Joint Powers Authority with gas aggregation as one of its functions. Based in Concord, CA and starting under the Alameda County Office of Education, it has expanded its scope, offering its services to schools as far south as Santa Barbara County. SPURR provides both core and non-core service to its customers.[67] SPURR describes the advantages it provides as[68]:

- Continuous competition by wholesale suppliers to get the best available prices.
- Private marketers must mark-up the price of gas as high as they can. By contrast, as a JPA, SPURR cannot charge more than our actual supply and operational costs to our program participants.
- Fixed Rates for a portion of our participant's annual usage, to protect participant budgets if market prices rise, as they did in 2005 and 2008. Most participants can select their own level of price protection, or can accept our default levels of Fixed Rates.
- Variable Rates for the remainder of a participant's natural gas usage. The Variable Rate allows participants to take advantage of periods in which spot market prices decline, as in 2009.
- Service to all types of natural gas accounts, including core, non-core, co-generation, and natural gas vehicle accounts.
- No change in participant's access to all CPUC energy conservation programs.

SPURR provides discounts on gas rates to its members, in part because it can take advantage of changes of the spot market price of gas more flexibly than PG&E whose gas rates are fixed quarterly. The security of its membership is excellent, and SPURR issues revenue bonds.[69] While all members of the aggregation can leave aggregation service, SPURR can recover costs incurred on their behalf if they depart. SPURR employs an opt-out option once a year with 120 days notice, which would create risk for a program focused on local renewables investment rather than merely gas procurement. Participants may opt to leave the SPURR gas aggregation

[67] Available from: [http://peraltaccd.granicus.com/MetaViewer.php?view_id=2&clip_id=367&meta_id=38308]
[68] This list is a summary of the full text, available from: [http://www.spurr.org/]
[69] No SPURR member participating district has ever defaulted on its gas bill; nor has any payee not been paid."These and other statements about SPURR are found in the "Preliminary Official Statement" concerning revenue bonds prepared in 2011 by their underwriter. Available from: [http://munibase.elabra.com/SPURR11FOS/doc/fos.pdf]

program on any July 1 if they provide sufficient notice to SPURR. In effect, although they enter into multi-year contracts with SPURR for gas aggregation and related services, participants may nevertheless exit the program on 120 days notice prior to the start of the next fiscal year. CleanPowerSF should investigate offering a similar program for its customer base.

State and Federal Regulatory Factors

Introduction

San Francisco's CleanPowerSF could not be better aligned with the goals of California, and is arguably the most important energy project in the state, both in scale and schedule. As California implements both longstanding and new energy policy directives, there is no better example than the use of Community Choice Aggregation to accelerate the development of renewable generation, and through the CleanPowerSF deployment, accelerate distributed generation, storage, electric vehicles, demand-side technologies, and customer-facing Smart Grid technologies and services. The Governor's staff are paying close attention to CCA in San Francisco and other Bay Area municipalities as a method of implementing energy policy and climate goals, particularly in a fiscal era of declining federal funds and General Funds. The first phase of CleanPowerSF, serving only 10% of the City's load, is expected to achieve ten times the greenhouse gas reductions of all combined measures taken by the City in the past decade.[70] Because CCA is the only available policy in California to deliver this kind of change so quickly, it holds great promise towards the fulfillment of Governor Brown's energy policy goal of twelve thousand megawatts of renewable distributed generation by 2020.

California has strong policy support from the legislature in setting goals for a renewable portfolio standard, and until recently appeared determined to bring about a competitive market in California. Yet, state agencies appeared obstructionist to both competition and the decentralized renewable generation and energy efficiency model at the very moment that the Governor specifically and explicitly focused on energy localization. This lack of effective coordination stems from numerous factors, but a few inter-related trends warrant detailing at the outset: the conflicting ideologies of 'command-and-control' of large utilities versus market design and competition among smaller entities, the after effects of California's 2000-2001 energy

[70] Prior to the full minutes becoming available: "This program before you has the only chance of reaching those goals. There's nothing else," Harrington said. He also said "it's an incredibly efficient way to spend money," noting that the city has spent $90 million on solar and other renewable energy projects that power fewer than 7,000 homes, whereas this $19.5 million will power 90,000 households, possibly without ever tapping into that $13 million reserve fund set aside to cover any losses by Shell, which will buy renewable energy, a role the city hopes to eliminate as it develops its own projects." From the San Francisco Bay Guardian, available from: [http://www.sfbg.com/politics/2012/09/18/historic-veto-proof-vote-launches-cleanpowersf]

crisis, the related institutional drift at the CAISO and CPUC, and the resulting disagreement over how to best to plan and implement California's energy policy mandates. In principle, the major state agencies of California should, in the context of California's stated goals, work to ensure the success of CCA. Because of the aforementioned trends however, this effort is being hindered.

Energy Economics and Policy

As stated in the Introduction, the electrical system is a capital-intensive, technically complex, and economically vital component of infrastructure; because of this, the utility industry has for decades been referred to as a 'natural' monopoly, and been regulated heavily by government. This is sometimes referred to as 'command and control', and the CPUC provides this service in California by regulating the IOUs. Competition was introduced to varying degrees of success during deregulation; this ideology believes that a more economically efficient way to govern the energy sector depends on designing and overseeing market mechanisms, within which smaller firms compete to satisfy the goals of the market. The CAISO designs, implements, and oversees energy markets in California. Deregulation, the shifting from command-and-control to market mechanisms, infamously failed to produce the intended consequences in California, and instead led to extreme market manipulation and the destabilization of the electrical grid. The resulting energy crisis effectively halted the deregulation movement across the country, and produced an ad-hoc hybrid system of regulation in California.

The Suspension of Deregulation

The California energy crisis resulted in the bankrupting and state-sanctioned ratepayer bailout of PG&E, the unnecessary approval of 38 new power plants under fast-tracked permit processes (allowed by the Governor's state of emergency declaration), and the approval of overpriced long-term power contracts that burden California ratepayers to this day. The transfer of wealth from California ratepayers to power producers amounted to over $40 billion. Retail competition was suspended, making the IOUs *de facto* monopolies again with a captive customer base. Deregulation, which had spread to many states, ceased to be politically tenable given public opinion of the energy crisis in California.

Institutional Impact of the Energy Crisis

Policy failures during deregulation preceded, and in many ways defined, California's current regulatory environment. During the energy crisis, many felt that the FERC did not respond to California's request to intervene to regulate market manipulation in a timely manner. As a consequence, the CPUC has since been extremely reluctant to cede any control over California's energy planning to the CAISO, which is regulated by the FERC. At the same time, the CAISO is responsible for balancing most of California's electricity grid using market mechanisms. Had deregulation worked in California, the CAISO would have a direct role in energy planning and

resemble more comprehensive entities such as PJM and NE-ISO.[71] These entities oversee forward capacity markets in which merchant generators and demand-side management providers compete to satisfy projected future load needs: in exchange for a guarantee that they will be able to provide power or negawatts at a certain point in the future, they receive capacity payments, which are set by the market clearing price. California does not have a forward capacity market – the CPUC rejected the proposal. Instead, the CAISO is relegated to running short term markets (day ahead and real time energy markets, and ancillary service markets that ensure grid stability) while the CPUC regulates the IOUs long-term procurement and demand-side management programs and, by virtue of the IOUs size and their *de facto* monopoly status, is responsible for deciding much of California's energy future.

Energy Planning in California

Every two years, the CPUC holds a Long Term Procurement Plan (LTPP) proceeding, in which it examines the need for new generation and reviews the IOUs 10-year procurement plans. It additionally ensures that near-term reliability (i.e. that enough capacity is available to meet demand) is met through Resource Adequacy (RA) proceedings, in which IOUs, CCAs, and energy service providers demonstrate adequate capacity on a monthly basis for the coming year. As there is no capacity market at the CAISO, RA needs are met through the IOUs own generation capacity and with bilateral contracts with generators. The CAISO provides the engineering studies that advise the CPUC on what levels of capacity are needed to meet reliability standards, and where that capacity must be built. The CEC provides load-forecasting estimates, updates building and appliance efficiency codes, manages renewable incentive and R&D programs, and is responsible for permitting thermal power plants over 50 MW.

Evolving Policy Considerations

In recent years, there have been several policies that significantly affect and may require changes to this planning process. The first is the 33% by 2020 RPS. This will require the electricity grid to integrate significant amounts of variable renewable resources. To do so, it is necessary to ensure sufficient resources that can quickly respond to ramping events (the rapid rise and fall of generation or demand). At the same time, given the California State Water Resources Control Board's (SWRCB's) rules for the use of ocean water for cooling, many of the existing fossil-fired coastal generating units will be forced to either retire over the next ten years or be retrofitted with costly upgrades that eliminate the use of the existing Once-Through Cooling (OTC) technology. Because most of the existing OTC units are flexible resources, their retirement could result in a deficiency of flexible generation needed to integrate increasing amounts of intermittent renewable generation.

[71] These entities balance the electricity grids of the mid-Atlantic seaboard and New England, respectively .

Jurisdictional Conflicts

The CAISO has voiced concerns that the CPUC's planning process is insufficient to ensure grid reliability in the near-term, given these policy considerations. The CAISO Board recently approved a backstop procurement mechanism, giving the agency the authority to approve capacity at risk of retirement that is deemed necessary to provide flexible capacity within a five-year horizon. This was done over strong objection from all stakeholders, including the CPUC. It is an interim measure taken to ensure grid stability until a suitable planning framework can be agreed upon.

Concerns over CAISO Planning Assumptions

Some stakeholders have questioned the assumptions behind CAISO's engineering studies which examine the need for flexible capacity resources under the 33% RPS and OTC retirement policies. There are significant questions as to whether, when and how much new flexible generating capacity is needed to support the anticipated increase in intermittent renewable resources. Even assuming the retirement of the existing fossil-fired OTC units, there remains within the CAISO Balancing Authority area significant amounts of gas turbine capacity, storage-based hydroelectric generating capacity, pumped/storage/generation facilities and existing fossil-fired generation that does not use ocean water for cooling. Some of these resources may not have been appropriated treated in the CAISO studies.[72] In addition, the ability of other Balancing Authorities within the WECC to supply the CAISO with flexibility services is potentially enormous. The Bonneville Power Authority (BPA), LADWP and BC Hydro by themselves have thousands of megawatts of storage hydroelectric resources including pumped/storage/generation facilities. Dynamic scheduling of these resources to the CAISO Balancing Authority would allow the CAISO to use these resources to accommodate the intermittency of wind and solar resources connected within the CAISO Balancing Authority area.

Finally, the ability of dispatchable load to satisfy a portion of the CAISO's flexibility requirements is only partially accommodated under the CAISO's existing market rules. Dispatchable load is permitted to supply non-spinning reserves in the CAISO's ancillary service markets and supplemental energy in the CAISO's imbalance energy market, but not spinning reserves or regulation services in the CAISO's ancillary service markets. Some loads, such as large pumping loads, would seem ideally suited for supplying regulation services where the pumping load could be varied on a second-to-second basis through Automatic Generation Control (AGC) signals. Similarly, it is difficult to understand how a dispatchable load could fail to supply spinning reserves where the requirement is that load must be dropped within a ten-minute period.

[72] For more details on these objections, see Sierra Club California's Stakeholder Comments to the Flexible Capacity Procurement Revised Draft Final Proposal, 28 August 2012.

The 'Missing Market' Debate

Some stakeholders are again calling for the establishment of a forward capacity market. The Brattle Group recently published a study for Calpine detailing the lack of transparency and inherent economic inefficiency of the CPUC planning process, and advancing a forward capacity market as a solution. However, concerns remain that California's resource needs are unique, by virtue of its high penetration of renewables, and that no 'off the shelf' forward capacity market design would be appropriate; in response, it has been suggested that the CPUC define the capacity products needed, and the CAISO design markets to deliver them.

Anti-Competitive Procurement Practices

In contrast to embracing a more transparent and competitive process, the IOUs are instead advocating for simply extending the CPUC's mandated RA obligations from the current year-ahead out for three to five years. PG&E has also filed a motion requesting that the CPUC move its consideration of forward procurement from the LTPP proceeding to the RA proceeding, in order to hasten the approval of contracts. This approach would have the practical effect of suppressing competition by exposing future CCA customers to increased exit fees, and because significant concerns have been raised that without a transparent forward market, energy service providers would find it difficult to adjust their positions (as they cannot predict their load years in advance).

In addition, the IOUs are using the CAISO's studies to provide support for their proposals at the CPUC to either enter into Purchase Power Agreements (PPAs) for new fossil-fired generation, or to build and own new fossil-fired generation. PG&E is further attempting to bypass the LTPP process on misleading legal grounds.[73]

PG&E is attempting to enter into a PPA to build the 624 MW Oakley power plant, after which it would be owned by the utility, outside of the LTPP proceeding. The argument to approve this contract outside of the LTPP is predicated overall on the supposition that the regulatory process is not fast enough to meet grid reliability targets in this case – but PG&E has failed to demonstrate a need for the plant except by relying on the CAISO's Renewables Integration study "high load" scenario. This scenario is not one of the CPUC-approved scenarios, and as such PG&E has failed to demonstrate any justifiable need for the plant. PG&E further advances other arguments that misconstrue CPUC precedent.[74]

Similarly, PG&E is seeking approval and may have already gained approval for several other fossil-fueled power plants in the Bay Area: at Russell City (600 MW), Marsh Landing (900 MW), and Mariposa (200 MW). These contracts could increase the exit fees paid by CleanPowerSF

[73] More details on this may be found in the Western Power Trading Forum's Opening Testimony (23 July 2012), available from: [https://www.pge.com/regulation/OakleyGeneratingStation/Hearing-Exhibits/WPTF/2012/OakleyGeneratingStation_Exh_WPTF_20120723_Exh010_246856.pdf]
[74] Ibid.

customers; the City should engage in these proceedings to protect its customer base from having to pay for these anti-competitive procurement activities.

Community Choice Aggregation

Community Choice Aggregation is a hybrid of both the 'command and control' and market deregulation ideologies. A CCA is a competitive entity, and under the business model proposed for CleanPowerSF, offers market access to smaller firms to deliver distributed generation, storage, renewable, demand-side and customer-facing Smart Grid technologies and practices. At the same time, a CCA has access to customer meter data and is small enough so that an approach to procurement planning and deployment based in part on 'command and control' is more effective than a purely market based approach. As such, it is a poor fit for either regulatory regime: policies that have been designed around either tend not to properly accommodate CCA. Because of this, it is imperative that the City engage at the CAISO and continue to engage at the CPUC on numerous issues, to educate state regulators and to ensure that the evolving regulatory paradigm does not disadvantage CleanPowerSF or other CCAs in the state by design.

While the regulatory environment in California is complicated and at times contradictory, executive and legislative leadership are present and focused on CleanPowerSF, and regulatory agencies are generally supportive. SFPUC should take advantage of this support and work collaboratively with these agencies to make the deployment the ideal model for the state's new energy paradigm.

This will require a hybrid approach to regulatory questions because no party presently engaged at the CPUC has the precise goals and direction that the SFPUC has been instructed to achieve with the CleanPowerSF deployment. To date, the Marin Energy Authority's position on regulation has not been focused on energy localization, and has taken a largely defensive approach that seeks to avoid adverse regulation and minimize potential costs. These are necessary first steps, but the City must further defend and promote innovation, particularly around energy localization. Private third-party focused ESPs share some characteristics with CleanPowerSF, such as regimes that will adequately compensate them for their demand-response assets or not unduly penalize them for IOU procurement decisions. However, CleanPowerSF is not focused on a narrow band of high-value customers as is an ESP, but is subject to universal service requirements, must offer service to all residential customers, and has a City-wide focus on infrastructure development by deploying distributed generation, renewables and demand-side measures, and intends to integrate these resources into procurement planning and operations to benefit the whole community. The engagement of the SFPUC, SFE and CCSF at the CPUC and CAISO should focus on creation of regulatory flexibility in allowing CleanPowerSF to innovate in its pursuit of energy localization and reform of dysfunctional and anti-competitive IOU-advanced rules for CCAs.

The following sections advise on proceedings that the SFPUC should engage in to support a positive regulatory environment for CleanPowerSF.

Direct Access and CCA

As noted, CCA and ESPs share some common goals of increasing competition in energy procurement dominated by the IOUs. However, ESPs will likely target large high-value customers and potentially 'cherry pick' these customers from a CCAs customer base. To the extent that this would adversely affect a CCAs portfolio economics, CCAs are in competition with ESPs. This should be taken into consideration as the SFPUC is advancing CCA interests at the CPUC.

Federal Actions

Enforcing Antitrust Law

The City should petition both the Federal Department of Justice Antitrust Division directly as well as the California Office of the Attorney General to investigate wrongdoing by PG&E in violation of state and federal antitrust laws. PG&E is not an actual monopoly, protected from competition by government sanction, but has been a *de facto* monopoly after retail competition was suspended in the wake of the California Energy Crisis. There is evidence that the utility has engaged in deliberate and systemic anti-competitive activities in possible violation of these laws.

Federal Funding

The American Reinvestment and Recovery Act (ARRA) directly funded energy programs around the country. This level of federal support is not expected in the near future. However, federal tax incentives for deployment technologies may still assist the CleanPowerSF program to the extent that private capital helps to finance the deployment. These incentives are listed in the Appendix.[75]

California Ballot Initiative Process

PG&E previously attempted to undermine CCAs by running a statewide ballot initiative to change the California Constitution in June of 2010. The corporation paid over $45 million for the campaign, and was narrowly defeated by largely grassroots opposition campaigns that raised a combined total of $130,000. Initially called the "Taxpayers Right to Vote Act", but renamed the "Supermajority Vote Required to Create a Community Choice Aggregator", had Proposition 16 passed it would have required a 2/3 vote of the electorate prior to any public agency:

[75] A summary of each incentive available from: [http://www.dsireusa.org] .

1. Using public funds to study CCA;
2. Establishing a CCA;
3. Expanding electric service to any new customer or territory.

It is unlikely that PG&E will resort to the use of the ballot in the near future to undermine CCAs. If they do, the SFPUC should actively engage in the opposition campaign, and study the tactics used in the 2010 election to defeat PG&E. Messaging found to be most effective centered on the fact that PG&E was a monopoly seeking to expand its unchecked power over captive customers. This message resonates across disparate voting groups and political ideologies, both Democrat and Republican. Messaging that centers on questions of rate increases or fairness has far less appeal or strength and should be avoided or de-emphasized.

California Air Resources Board (CARB)

The CleanPowerSF program will cause major greenhouse gas reductions for San Francisco. Phase I alone service alone, which will include less than 10% of citywide eligible load, will cause ten times the combined reductions all City programs have achieved over the past ten years.[76] These reductions in carbon emissions will result in capturable revenue from avoided carbon emission charges under the CARB.

GHG Auction revenue

The CARB is conducting an auction of Green House Gas Allowances in November 2012. Covered entities (electrical generators, large industrial customers, etc.) will bid to purchase these allowances in order to meet their responsibilities under the regime. The CARB has given allowances to PG&E as a distribution utility, so that it may sell them in the auction and direct the proceeds back to ratepayers in the form of rate relief, or placed in a pool whose ultimate use will be determined by the legislature.[77] A recent analysis has indicated the energy efficiency investment from generated revenue would be the most beneficial use of the money in terms of energy security and job creation.[78]

The IOU proposal for the use of these funds renders the impact of increased generation costs neutral to ratepayers by directly passing through the auction revenues to customers as a credit on their distribution rate; however, the CARB is not certain whether this will be done through distribution, generation or a separate negative charge. The regulations explicitly state that,

[76] Presentation by SFPUC General Manager to the Board of Supervisors Budget and Finance Committee, September 17, 2012.
[77] Interview with ARB staff member Claudia Orlando, 9.10.2012
[78] Available from: [http://next10.org/sites/next10.huang.radicaldesigns.org/files/12-NXT-008_Cap-Trade_r2.pdf]

"Investor owned utilities shall ensure equal treatment of their own customers and customers of electricity service providers and community choice aggregators. "[79]

The distinction between the status of IOUs and CCAs in their status and function within the carbon market will be revisited in 2013. The SFPUC should engage in this process to ensure that CleanPowerSF is not unfairly disadvantaged, and to advocate for CleanPowerSF to be directly awarded carbon allowances for its customers instead of PG&E. This is appropriate, as CleanPowerSF is responsible for procuring power for its customers, and not PG&E.

California Energy Commission (CEC)

RPS Eligible Local Biogas for Combined Heat and Power (CHP)

CHP powered by pipeline-injected biogas will not comply with the state RPS under a CEC decision as of this year, unless the biogas is produced onsite or has a dedicated pipeline from the source to the generator. This practice has been the topic of a moratorium discussion within the CEC.[80] Citing the implications of SB 2 (1X), the CEC suspended the RPS designation as it applied to pipeline-injected biogas.[81] The language for pipeline-injected biogas remains in the most recent definitions for RPS eligibility, but the suspension is noted as in force and yet to be resolved.[82] As it relates to AB 32 implementation, the City should propose a new standard to the CEC whereby only biogas derived by waste, landfill and agricultural fuel stocks within a fifty-mile radius around the end-user would be RPS eligible.

By creating a new local standard for biogas and CHP, the CEC could encourage both waste recycling reuse and green energy production. Additionally, CHP is not eligible for Net Energy Metering if it does not consume biogas, and is eligible for higher incentives under the SGIP if it does. This would therefore increase the economic viability of CHP in certain configurations.

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[79] § 95892 (d) (4) Available from:
[http://www.arb.ca.gov/cc/capandtrade/combined_amendments_implementation_linkage.pdf]

[80] Available from: [http://biomassmagazine.com/articles/6214/cec-proposes-to-cut-biomethane-projects-from-rps]

[81] Notice to Consider Suspension of the RPS Eligibility
Guidelines Related to Biomethane, Available from: [http://www.energy.ca.gov/portfolio/notices/2012-03-28_biomethane_notice/2012-03-28_Biomethane_Suspension_Notice.pdf]

[82] RENEWABLES PORTFOLIO STANDARD ELIGIBILITY Sixth Edition Commission Guidebook *"Note: As noted in the "Outstanding Issues" section of this guidebook, the Energy Commission suspended RPS eligibility related to biomethane and put certain conditions of suspension and eligibility limitations in place, as described in Resolution No. 12 - 0328 - 3. The suspension, which took effect on March 28, 2012, was adopted to provide the Energy Commission additional time to evaluate issues surrounding the continued eligibility of biomethane as a result of changes in law under SB X1 - 2. Language in this guidebook directly pertaining to biomethane is highlighted in gray to indicate that those provisions are subject to the conditions and limitations set forth in the resolution as adopted or subsequently amended. The suspension will remain in effect until the Energy Commission takes subsequent action to lift the suspension."* Available from:
[http://www.energy.ca.gov/2012publications/CEC-300-2012-006/CEC-300-2012-006-CMF.pdf]

The SFPUC should consider a policy decision to add locally sourced pipeline-injected biogas powered CHP as renewable under its own LPS definition.

Public Purpose Fund Administration

The CEC is responsible for administering a portion of funds collected by ratepayers under CPUC authorized Public Purpose Program charges. These funds are used to advance renewables through research and development awards as well as direct incentives. A summary of the incentive programs is listed in the Appendix. The SFPUC should engage with the CEC and educate policy-makers on the CleanPowerSF business model, and solicit the agency's support in creating funding opportunities tailored to CCAs focused on energy localizations.

California Independent System Operator (CAISO)

Metered Subsystem

If the load shapes used for forecasting and settlement may not be changed to be geographically specific to CleanPowerSF's customer base in a timely fashion, the SFPUC should explore the option of becoming a Metered Subsystem (MSS). An MSS is a FERC defined entity that is like a miniature control area; the CCA would need to keep its net exchange within a narrow band with CAISO, and be penalized for exceeding this exchange. It would also exempt the CCA from several CAISO grid management charges. Several entities in California are certified as an MSS, such as the Northern California Power Agency (NCPA).

System Planning

As detailed in proceeding sections, the CAISO conducts studies for capacity planning that inform power procurement proceedings at the CPUC. The SFPUC should engage and educate CAISO staff to ensure that the CleanPowerSF deployment is appropriately considered in CAISO system planning modeling and reports. The CAISO has recently created a reporting template for the IOUs to review, to begin reporting on the location, capacity and type of distributed generation, so that these assets may be considered in CAISO's studies.

Flexible Ramping Product

The CAISO is currently designing a Flexible Ramping product for implementation in Fall 2013.[83] This market is designed to allow resources such as demand dispatch and storage to provide capacity balancing for the integration of intermittent renewable resources. The SFPUC should monitor this product design to ensure that CleanPowerSF deployment assets conform to the operational requirements of the market.

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[83] More information on the CAISO's Flexible Ramping product available from: [http://www.caiso.com/informed/Pages/StakeholderProcesses/FlexibleRampingProduct.aspx]

California Public Utilities Commission Proceedings and Resolutions

A number of CPUC proceedings impact CleanPowerSF. PG&E uses regulation at the CPUC in part to advance its own business interests at the expense of competitors and ultimately innovation. The long-term success of CleanPowerSF in some part depends upon its ability to represent and defend its legal status and regulatory definition in the interest of its customers. It is the opinion of the SFPUC that CPUC Commissioners in general do not want to create rules that create barriers for CCAs (such as high bond amounts). However, the dominant trend in CPUC proceedings is for CCAs to be constantly on the defense, guarding against arguments advanced by the IOUs which would disadvantage CCAs, and then requesting the necessary data and analyses to bring these to light. This trend needs to be broadly reversed, by educating regulators as to these issues from the perspective of a CCA. As such, recent Commission actions have harmed the environment for all competition with IOUs.

R.12-03-014 Long Term Procurement Plan

SFPUC staff has looked at cost shifting via the cost allocation mechanism (CAM), a nonbypassable charge whereby all ratepayers subsidize investments by IOUs specifically for bundled customers. A coalition of CCA and DA interests filed comments on this point, asking for the CPUC to clearly define the use of the CAM and to ensure that CCAs not bear the burden of generation investments of this sort. They also put forward the proposal that LSEs, like CCAs, should be able to "opt-out" of the CAM.[84] While the CAM and "opt-out" will be addressed, it is not presently clear what success the opposition to this charge will have.[85]

More broadly, CAISO is recommending 3000MW-4600MW of new flexible generation thermal plants (e.g. combined cycle natural gas plants) to accommodate the increase in renewable energy, as utilities implement the 33% RPS by 2020, as well as the potential loss of production from coastal Once-Through-Cooling (OTC) plants.[86] This is mostly covered in PG&E's Long-Term Procurement Plan (LTPP) and will be decided in Q4 2012. As stated above in the discussion of 'Anti-Competitive Procurement Practices,' in the Bay Area, PG&E is seeking approval and may have already gained approval for several other fossil-fueled power plants in the Bay Area: at Russell City (600 MW), Marsh Landing (900 MW), and Mariposa (200 MW),

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[84] "If the IOUs are permitted to impose the costs to meet their bundled customers' need on DA and CCA customers as CAM procurement, they will have successfully and impermissibly shifted costs." R.12-03-014, OPENING BRIEF OF THE ALLIANCE FOR RETAIL ENERGY MARKETS, DIRECT ACCESS CUSTOMER COALITION AND MARIN ENERGY AUTHORITY September 12,2012 pg. 8.

[85] R.12-03-014, SCOPING MEMO AND RULING OF ASSIGNED COMMISSIONER AND ADMINISTRATIVE LAW JUDGE

[86] The range 3000-4600MW is from Mona Tierney-Lloyd (interviewed 6 June 2012) and Jaleh Farooz (who contributed to this report as an author). The essential thrust of CAISOs argument being that the loss of OTC generators and more intermittent generation require more flexible generation i.e. gas plants, whereas for CleanPowerSF intermittent DG at the load will cause load reform and peak shaving, i.e. stability, not increased volatility associated with randomly placed RE/DG. RE/DG that solely exports to the grid has neither microgrid nor storage value.

and Oakley (624 MW). The Oakley application, and possibly others, is being considered outside of the LTPP, as detailed below. These contracts could increase the exit fees paid by CleanPowerSF customers; the City should engage in these proceedings to protect its customer base from having to pay for these anti-competitive procurement activities.

The significant issue for CleanPowerSF is the prevention of PG&E over-procurement, and the accurate reflection of CCA departing loads from CleanPowerSF full enrollment. SFPUC staff has stated that they are following the rulemaking, but are not actively participating in it. They did file comments on general grounds and CCA grounds. What is going on for RPS procurement is important regarding how to weigh resources relative to T&D costs. Staff is looking out for situations and should actively intervene wherever PG&E states they will need to procure energy on behalf of CCAs. The SFPUC should intervene to ensure that the CleanPowerSF enrollment and deployment is appropriately considered in lessening PG&E's LTPP.

Procurement Outside of LTPP

PG&E is attempting to enter into a PPA to build the 624 MW Oakley power plant, after which it would be owned by the utility, outside of the LTPP proceeding.[87] The argument to approve this contract outside of the LTPP is predicated overall on the supposition that the regulatory process is not fast enough to meet grid reliability targets in this case – but PG&E has failed to demonstrate a need for the plant except by relying on the CAISO's Renewables Integration study "high load" scenario. This scenario is not one of the CPUC-approved scenarios, and as such PG&E has failed to demonstrate any justifiable need for the plant. PG&E further advances other arguments that misconstrue CPUC precedent.[88]

R.11-10-023 Resource Adequacy

The IOUs are advocating for extending the CPUC's mandated RA obligations from the current year-ahead out for three to five years. PG&E has also filed a motion requesting that the CPUC move its consideration of forward procurement from the LTPP proceeding to the RA proceeding, in order to hasten the approval of contracts. This approach would have the practical effect of suppressing competition by exposing future CCA customers to increased exit fees, and because significant concerns have been raised that without a transparent forward market, energy service providers would find it difficult to adjust their positions (as they cannot predict their load years in advance). The SFPUC should intervene to ensure that CleanPowerSF enrollment and deployment is appropriately considered in these proceedings, so that PG&E is not allowed to over-procure RA obligations and later impose costs of CleanPowerSF.

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[87] More details on this may be found in the Western Power Trading Forum's Opening Testimony (23 July 2012), available from: [https://www.pge.com/regulation/OakleyGeneratingStation/Hearing-Exhibits/WPTF/2012/OakleyGeneratingStation_Exh_WPTF_20120723_Exh010_246856.pdf]

[88] Ibid.

SB790 and Procurement-Related Issues Not Yet Addressed

The SFPUC should petition the CPUC take up issues in SB790 that were excluded form the CCA Code of Conduct Rulemaking. Specifically, these issues are cost allocation, cross-subsidization and non-bypassable charges. These issues were excluded from the rulemaking in the Scoping Memo:

> Issues related to costs and rates, and particularly those related to the cost allocation mechanism adopted previously by the Commission, are more appropriately addressed in other Commission proceedings that directly address costs and rates. For these reasons, issues related to costs and cost allocation are outside the scope of this proceeding.[89]

These issues require will necessitate reforming the mechanisms by which CCA customers pay for IOU procurement decisions, and is long overdue. The original mechanisms were created because of deregulation and restructuring in 1998, and were intended to recover costs borne by the IOUs because of assets stranded when customers switched to a non-IOU supplier. The Legislature intended these costs to be recovered or largely foregone by December 31, 2001.[90] With the failure of deregulation and the suspension of retail competition, this mechanism has morphed and been extended far beyond its original intent, and has become a barrier to competition and a disincentive to cost-effective IOU procurement. The SFPUC should petition the CPUC to reform these issues in line with SB 790, and maintain engagement throughout the proceeding to ensure CleanPowerSF is not unfairly disadvantaged.

A.10-03-014 PG&E General Rate Case (GRC) (Phase 2) [91]

There are a number of issues relating to cost-shifting that are covered within PG&E's General Rate Case. The Conservation Incentive Adjustment (CIA) and rate flattening have an impact on CCAs. The SFPUC was involved in this proceeding, which is now closed. In future rate cases, the City should continue to urge that generation rates are structured appropriately and that non-bypassable charges are disallowed, to provide a level playing field regarding PG&E.

Since the failure of Proposition 16 in 2010, PG&E appears to have shifted its strategy to reduce departing load by CCAs. The approved CIA/generation rate adjustment shifted generation costs from high tiers to low tiers. PG&E did this to improve its competitive position against CCAs serving large residential users. Furthermore, the decision imposed nonbypassable tiered rates on CCA customers while recognizing that "potential rate disparities...could exist...from replacing tiered generation rates by flat generation rates with the CIA, using nonbypassable

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[89] CCA Rulemaking Scoping Memo

[90] See AB 1890, Section 367.

[91] From ALJ Pulsifer's proposed decision: "We adopt a number of measures proposed by PG&E including creation of a Tier 3 for low-income households, reduction of baseline quantities, and adoption of a nonbypassable Conservation Incentive Adjustment (CIA). We also adopt PG&E's uncontested rate design proposals. We decline to eliminate Tier 4, but reduce the upper-tier differential." http://docs.cpuc.ca.gov/PublishedDocs/EFILE/PD/133085.PDF

tiered rates," and that it could "potentially impact how a CCA may design its own rates to compete for retail customers."[92]

Elsewhere in this report, the SFPUC is advised to pursue draft state legislation to undo GRC provisions and also prohibit the CPUC from allowing "economic development" rates by IOUs as proposed by PG&E in Fresno and Emeryville, as cost shifting between customer classes and anti-competitive activity.

Resolution E-4471, Calpine Sutter and CHP/QF93

Several other proceedings have or may result in CleanPowerSF and other CCAs paying for IOU procurement decisions. In March the CPUC ordered IOUs to negotiate with Calpine to keep its Sutter gas-fired power plant in operation, and instituted a nonbypassable charge that CCAs would have to pay to cover the cost incurred by the IOUs.[94] SFPUC staff has commented on the CAISO waiver RA pass-through, regarding the Calpine Sutter case. This allocation of capacity costs is tied to other issues related to when IOUs may procure capacity on behalf of other entities doing procurement like CCAs and ESPs. SFPUC staff indicated they fought this precedent related to the QF/CHP settlement, but were not successful. Staff opinion is that the CPUC believes that IOUs should have predominant control over RA costs, claiming it is a matter of the reliability of the system and "making sure the lights stay on," despite the fact that the CPUC requires CCAs to be fully responsible for Resource Adequacy in their wholesale power procurement.[95] This issue moved from CAISO to the CPUC, which ordered IOUs to pay Calpine Sutter capacity payments.[96]

SFPUC needs to prioritize this issue, as it is potentially threatening to CleanPowerSF realizing the benefits caused by energy localization. Moving forward, it will be important to inform the Commission's policy on cost-shifting, RA requirements of Load Serving Entities, and market design failure based on blind net metering tariffs, transmission expansion costs, and non-compliance with the Governor's DG policy.

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92 See pages 65 and 66 of D. 11-05-047, available from:
[http://docs.cpuc.ca.gov/PublishedDocs/WORD_PDF/FINAL_DECISION/136349.PDF]

93 "PROPOSED OUTCOME: This Resolution orders Pacific Gas & Electric, Southern California Edison, and San Diego Gas & Electric utilities to negotiate to enter into a contract with Calpine's Sutter Energy Center and adopts a nonbypassable charge to pay for the cost of the contract."
http://docs.cpuc.ca.gov/WORD_PDF/FINAL_RESOLUTION/162985.PDF
Also CHP/QF in D.10-12-035 in A.08-11-001, R.06-02-013, R.04-04-003, R.04-04-025 and R.99-11-022

94 Provisions of the resolution quoted 4034-E from PG&E Advice Letter. Pg. 2.
http://www.pge.com/nots/rates/tariffs/tm2/pdf/ELEC_4034-E.pdf

95 D.05-10-042 found that CCAs will be subject to annual resource adequacy requirements and will be subject to penalties for failure to meet those requirements.

96 Commission Ferron dissented with the decision, http://www.cpuc.ca.gov/NR/rdonlyres/8423D8FB-61FE-42ED-8BA4-50EF4159BD52/0/Ferron_Dissent_onSutter_E4471.pdf

A.12-03-001 PG&E Economic Development Rate

Economic Development Rates (EDR) are a recent phenomenon of discriminatory rates offered by IOUs in economically distressed areas. EDRs distort market prices and provide a formerly illegal avenue for IOUs like PG&E to use predatory pricing to harm or block CCA formation.

The CPUC has approved Economic Development Rates pursuant to Public Utilities Code section 740.4 (h) under CPUC Decision 05-09-018. By offering subsidized rates, it is claimed that businesses will benefit and employment will increase. This not only disadvantages CCAs and harms competition generically, but enable PG&E to seek reimbursement from ratepayers in other regions for this activity, so that cost-shifting between regions is implicitly involved.

The most recent application by PG&E for the continuance of an EDR has been opposed by a broad group of governments and business interests. The ability of PG&E to offer preferential rates to commercial customers represents a threat to the viability of CCAs. The SFPUC oppose EDRs at the CPUC on these grounds.[97]

A.12-04-020 PG&E Green Option

PG&E has recently proposed to offer a "100 percent green" power option to its customers. Unlike MEA or CleanPowerSF, which involve securing physical renewable generation and new locally built resources, PG&E's new alternative is a Renewable Energy Credit (REC) product that legally 'greens' a customer's purchases without making any actual physical changes to the PG&E portfolio resource mix.

A REC is a virtual "attribute" expressed as a credit per unit of electrical generation from a renewable source, a creation of law for trading purposes. This attribute is separate from the power itself and can be sold separately as a virtual green product. The customers who pay for PG&E RECs would not be buying renewable power from the source of the REC, rather they would be buying the attribute to make a contribution to renewable generators, that physically supply other loads.

Setting aside the relative merits of such a proposal and CleanPowerSF's Phase I product, on the level of marketing to customers it represents a potential source of confusion and false comparison. This product underscores the importance of offering Own-Your-Power to create a clearly distinguishable value proposition for CleanPowerSF.

[97] In Decision (D.) 05-09-018, the Commission first authorized PG&E to have an Economic Development Rate (EDR). http://docs.cpuc.ca.gov/efile/RULC/172266.pdf . LPI agrees with the City and County of San Francisco's protest of EDR at the CPUC, because "the programs PG&E proposes are unduly discriminatory, anti-competitive and are not cost-effective over the proposed five-year program period."

R.09-11-014 and R.11-10-003 – Public Goods Charge Funds and Energy Efficiency Funds

CleanPowerSF should apply for and administer a portion of the energy efficiency funds from the CPUC, collected from ratepayers through non-bypassable surcharges. This is an inherently political process, and could result in the program receiving less than $5 million or over $30 million a year. Under CPUC code 381.1(e) and (f), a CCA elect to administer efficiency funds collected from its customers; under CPUC 381.1(a), a CCA may apply to administer programs and funds beyond its customer base.

These funds are collected through as part of the "Public Purpose Program" surcharge. The surcharge also collects funds for California research and development programs for renewables as well as low-income CARE rate relief. The total amount of PPP funds San Francisco ratepayers contributed in 2011 is shown below:

Revenue Year	County Name	City Name	PPP CARE	PPP Residual	PPP PEERAM (Previously PEEBA)	Total PPP
2011	SAN FRANCISCO	SAN FRANCISCO	$38,146,858.50	$16,057,557.96	$13,082,453.79	$67,286,870.25
			$38,146,858.50	$16,057,557.96	$13,082,453.79	$67,286,870.25

The funding that a CCA may elect to administer is based on a simplified, per-capita allocation created by CPUC D.03-07-034 (2003). As this 'per capita' calculation ignores the electrical load of businesses, it somewhat disadvantages cities over rural areas. In San Francisco, businesses account for ~75% of total electricity usage. Also, the ratio applied is the CCA's population to that California's population as a whole, even though the funding to which this ratio is applied is just the funding collected by the IOUs; if the ratio were calculated based on the population of just the IOU territories, the share of funds that accrue to a CCA would increase.

The definition of funds eligible for a CCA to administer is the subject of some contention. The total statewide budget for efficiency programs in the 2010-2012 program cycle was ~$3 billion (approximately a billion dollars a year). Based on the current per-capita allocation, CleanPowerSF should be eligible to administer ~$21.6 million in funding a year. (If the per capita allocation was based on the population of the IOU territories compared to the City, this number would be closer to $30 million a year.) However, the funds have been classified in such a way as to limit the City's share to $5.5 million in 2011. CCSF should actively contest this at the CPUC and pursue the larger, fair apportionment.

The current Local Government Partnership administered by the SFDOE (San Francisco Energy Watch) received approximately $4.5 million per year for the 2010-2012 program cycle, though that has been increased to maintain the program acceleration that has occurred this year.

The IOUs consistently seek to limit the window in which a CCA may apply to administer these funds to the period in time when the three-year program cycles are being designed. This is arbitrary, and severely disadvantages CCAs that do not happen to start-up at that moment in time. The CCSF is actively contesting this issue at the CPUC.

The efficiency funds that a CCA is eligible to administer may become further constrained because of a provision in AB790 (Leno, 2011). Text in the final bill (which was not in the original

version) states that a CCA may elect to administer efficiency funds collected from its customers "except those funds collected for broader statewide and regional programs authorized by the commission." The original language stipulated that the CCA would "coordinate" with broader statewide and regional programs. The CPUC is currently defining 'regional' programs as those offered in one IOUs territory but not in others. The practical result of this language could be to further divert efficiency funding that should rightly be administered by CCAs to programs heavily influenced or directly administered by IOUs. As the bill was originally introduced to protect CCA's from anti-competitive behavior by IOUs and it would be unfortunate if the CPUC were allowed to interpret this section in such a way as to further decrease a CCA's authority to administer efficiency funds *collected from its customers.* The CCSF should actively contest this issue at the CPUC.

R.09-11-014 and On-Bill Repayment

The SFPUC should monitor and intervene directly at the CPUC to support the implementation of an On-Bill Repayment mechanism and management program flexible enough to accommodate CCA innovations to tailor program offerings to local needs, and in the near term, continue to support MEA's progress on implementing OBF, as they recently received approval for an on bill repayment pilot program this year. Particular attention should be given structuring OBR as a tariff to allow the obligation for repayment to be attached to the meter, even in the event of customer opt-out.

While CleanPowerSF's right to create customer-specific rate schedules that 'roll in' the repayment for behind-the-meter assets (and to utilize the Bill Ready PG&E Consolidated Billing to disaggregate and explain these charges), the creation of an On-Bill Repayment tariff at the CPUC is desirable in order to expand repayment mechanisms available to the program. For a discussion of repayment mechanisms, contracts, and collateral requirements that details how this may expand the availability of cost-effective products to residents and businesses, please refer to section "Repayment Mechanisms & Contract and Collateral Implications" in the Risk Report.

The May 2012 CPUC Decision in Rulemaking 09-110-14 [98] ordered the continuation of IOU on – bill financing (OBF) and the expansion of energy efficiency financing mechanisms; Harcourt, Brown and Carey, under contract with SDG&E and SCE, has developed pilot proposals for various financing products, including OBR and various credit enhancements, under consideration by the CPUC to be piloted in 2013 and scaled up in 2014.[99] However, given the CPUC regulatory process and demonstrated reticence of IOUs to fully expand this mechanism, wide-spread implementation may take several years. The financing proposals will be approved

[98] Available from: [http://www.calmac.org/events/EE_and_MEO_2103-14_decision_166830.pdf]

[99] Refer to the California Energy Efficiency Finance Project for more details, available from: [http://www.caleefinance.com]

in rulings in R.09-110-14, as they were submitted too late to be considered in the October 2012 decision.

The proposals may be downloaded from the website of the California Energy Efficiency Finance Project.[100] The proposals call for the creation of the California Energy Efficiency Financing Hub (the Hub) to act as a 'one stop shop' for efficiency financing, in the near term to pilot OBR and credit enhancements in 2013, with an expanded implementation to follow in 2014, and eventually the expansion of the system to manage contractors and to integrate the analysis of utility and building data for targeted deployments and customer interfaces. Also, the CPUC has been explicit that while utility ratepayer funds for OBF must only support efficiency measures, private sector funds for OBR should also allow the financing of distributed generation. The management and oversight of the Hub is proposed to be under the control of an IOU for the pilot phase; for full implementation, the appropriate entity to manage the Hub is under discussion, and may include:[101]

- State or Quasi-State Agencies such as entities managed under the State Treasurer's office;
- Utilities;
- New or Existing Not-for-Profit Organizations;
- For-Profit Entities.

The statewide process is well-aligned to CleanPowerSF's proposed business model, and depending on the timeline for full implementation, may allow CleanPowerSF to achieve its deployment goals while driving down startup and transactional costs associated with site selection and financing. The SFPUC should approach MEA and Sonoma Clean Energy to support intervention at the CPUC to ensure that the statewide activities result in a programmatic structure flexible enough to allow innovations that CCAs may want to develop within the statewide program to tailor it to local conditions. Examples of these innovations may include:

- The integration of a site selection process and contractor management system to be implemented more rapidly than the statewide version;
- Expanded repayment mechanisms available to a local government (i.e. water bill repayment and Rent Board efficiency expense pass-through allowances, etc.);
- Expanded collateral enhancements available to a CCA (i.e. using program surpluses to expand financing to hard to reach sectors);
- Tracking procedures to allow the integration of behind-the-meter assets into CCA procurement planning.

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[100] Available from: [http://www.caleefinance.com/category/all/]

[101] "California EE Financing Hub Pilot Proposal", California EE Finance Project Team, October 1, 2012, page 6.

The SFPUC should also intervene to ensure that the eventual management of the Hub does not fall to an IOU, and that the CCA and not the IOU be the point of contact for any customer of the CCA's seeking services through the Hub, as a precaution against anti-competitive activities towards CCAs.

CCA INFO TARIFF and Resolution E-4420

The CPUC issued Resolution E-4420 based upon negotiations between MEA and PG&E, in which CleanPowerSF and other CCA stakeholders were not involved. The resolution presents two main problems for Community Choice Aggregations. It reverses CPUC precedent in limiting the CCA INFO TARIFF data request to only the prior 12 months of load data and billing information, and also limits access to non-CCA INFO TARIFF bill item history to "active" CCAs. There is no reason that these changes should have been made. The resolution offers no basis, save the negotiations between MEA and PG&E, for these changes.

The legislature intended that unlimited data would be provided to CCAs for the purpose of making a local democratic decision about whether to implement CCAs. This is required by Public Utilities Code Section 366.2I(9), supported by the CPUC's Findings of Fact and Conclusions of Law and Orders in Rulemaking R.03-10-003 Phase I Decision D.04-12-046, and most recently supported by Senate Bill 790. The data disclosure requirement was initially for municipalities that investigate, pursue, or implement CCAs, not just CCAs under service, nor limited to customers that have already been enrolled by the CCA.

This resolution creates a new authority of the Commission to set aside data as "confidential" outside the purview of CCAs for data coming from within their jurisdiction, blocks local governments investigating CCA from having key data points necessary for evaluating the economic feasibility or competitiveness of a prospective CCA program, and limits CCA program design by excluding this data. Denying access to multi-year data harms CCAs by making it impossible to study their load dynamics and the resulting market prices for power. The CPUC's own CCA Phase I decision[102] previously rejected arguments by PG&E that data should not be made available until customers are enrolled, based on recognition that data is specifically needed for the purpose of deciding whether to implement, to define customer phase-in strategy, or to design local renewable distributed generation and demand-side management, the basic principle of Integrated Resource Planning that requires not only energy data but all cost data impacting the monthly electric bills of consumers.

The SFPUC should petition the CPUC to restore CCA access to all data, both during formation and after initiating service. There is a need to assert the right of CCAs to have access to all requested data for meters in a municipality which is investigating, pursuing or implementing CCA, and to reverse the CPUC's apparent abridgement of this right for CCAs. The CPUC has

[102] California Public Utilities Commission Rulemaking R.03-10-003, D.04-12-046, 2004.

limited access to certain forms of data until the CCA has already signed a contract, sent out opt-out notices and signed up a customer, whose data only then would be provided. This is contrary to AB 117 and to the CPUC's own precedent, and has no legal basis other than bilateral negotiations between PG&E and MEA from which CleanPowerSF and other stakeholders were excluded.

Further CCA INFO TARIFF Changes

The current CCA INFO TARIFF is incomplete, constrained, and anti-competitive in its focus. PG&E has consistently sought to limit the data covered by the tariff to data that would be required by entities focused on wholesale procurement only, and not energy localization goals, and has further constrained the tariff to the residential class as much as possible. The data does not, for example, include all relevant peak consumption usage data for large commercial and industrial customers, nor does it provide consumption by the appropriate time periods for medium and large commercial customers on time of use (TOU) schedules (and this may not be otherwise calculated from the data). Indeed, the data is sufficient to fully calculate customer bills only for the residential rate schedules and not for any of the nonresidential schedules. LPI has had to needlessly invest substantial time negotiating with PG&E for the release of this data for CleanPowerSF. The data further does not contain any information pertaining to distributed generation, energy efficiency, or demand response – all categories of interest to local governments pursing energy localization goals.

Under AB 117, the IOUs should be required to furnish at cost to local governments any and all data requested in the pursuit of establishing a CCA. The local government that requests the data is, by law, the sole party responsible for deciding what data is relevant, and the IOU that must furnish the data should not contest or otherwise object to this determination. This is required by Public Utilities Code Section 366.2I(9), supported by the CPUC's Findings of Fact and Conclusions of Law and Orders in Rulemaking R.03-10-003 Phase I Decision D.04-12-046, and most recently supported by Senate Bill 790.

In spite of the law, Pacific Gas and Electric (PG&E) has refused to furnish certain data, and has successfully intervened at the CPUC to delay the release of certain data and to constrain the CCA INFO TARIFF for anti-competitive reasons.

The SFPUC should strongly contest the direction that the CPUC's interpretation of AB 117 and their own precedent has taken. The CCA INFO TARIFF should be significantly expanded, to include all data conceivably of use to a local government in forming a CCA that is focused on energy localization. This would include:

1) All electricity usage data at the most granular interval recorded by PG&E
2) All monthly unbundled rate components and charges for each customer
3) Natural gas consumption and billing data for all customers, similar in extent and specification to what is being requested on the electricity side (i.e. customer data,

consumption data at the most granular interval available, monthly bills with unbundled charges, and all data necessary to calculate those charges).

4) Clarification and datasets used to associate gas meters with electric meters at the building level and customer level.

5) All energy efficiency program data for all customers (by account number, service ID number, street address, etc), listing account contacts and all recorded activity and information (including but not limited to onsite or online audits, benchmarking, retrocommissioning, and energy use analyses and efficiency recommendations, and paperwork filed by customers or contractors, and financing information such as on bill financing amounts and repayment status), as well as any associated datasets such as building information (tenant/owner occupied, square footage and year built), and rebate code and measure tables.

6) Demand response program participation and all relevant metrics recorded for these programs.

7) The type of interconnect agreement and all relevant metrics associated with customers that have already interconnected distributed generation to PG&E's distribution grid.

8) Distribution grid data that could impact the siting of distributed generation or demand-side assets, in a GIS format. PG&E has made certain distribution grid information publicly available through an Internet-based interactive map interface to assist renewable distributed generation developers in estimating queued interconnections and local capacity constraints.[103] The actual GIS shapefiles and any associated datasets should be made available under the tariff. Furthermore, related data that is not publicly available should be fully explored and if necessary, added to the tariff.

PG&E has sought to constrain access in particular to billing data, natural gas consumption and billing data, and distribution grid data. Their defense is that CCAs typically do not request this data and that it is not covered by the CCA INFO TARIFF. All of the aforementioned data is highly relevant to any CCA which is studying energy localization. Customer bills are the financial 'baseline' against which behind-the-meter assets are compared. Distribution grid data may impact the timeline and expense associated with siting distributed generation – as the grid may or may not require upgrades, depending on the location. Natural gas consumption and billing data is relevant to both combined heat and power and to energy efficiency retrofits. These assets generate or save both electricity and natural gas – therefore, the targeting of these assets would be better informed by access to natural gas consumption and billing data.

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[245]: Available from: [http://www.pge.com/b2b/energysupply/wholesaleelectricsuppliersolicitation/PVRFO/pvmap/]. Accessed 28 June 2012.

The SFPUC should petition the CPUC for these changes. Doing so will require educating regulators about the energy localization approach that SFPUC is taking, in contrast to a wholesale-only procurement approach, and that this in line with local and broader state energy and climate policy goals. If the CPUC is unwilling to modify the CCA INFO TARIFF in response to these requests and lines of argument, the SFPUC should pursue state legislation that requires the CPUC to do so instead.

Relevant Laws and Regulation:

These sections briefly detail the laws and regulations governing a local government's right to determine what data is necessary in the pursuit of a CCA, and the requirement of the IOU to furnish this data at cost.

Public Utilities Code Section 366.2(c)(9):

The language relevant to a CCA's access to utility data taken from Public Utilities Code Section 366.2(c)(9) is excerpted below:

All electrical corporations shall cooperate fully with any community choice aggregators that investigate, pursue, or implement community choice aggregation programs. Cooperation shall include providing the entities with appropriate billing and electrical load data, including, but not limited to, data detailing electricity needs and patterns of usage, as determined by the commission, and in accordance with procedures established by the commission. …

Rulemaking R.03-10-003 Phase I Decision D.04-12-046

In the Phase I decision of the CCA proceeding in 2005, the Commission decided the definition of what constitutes 'appropriate billing data' under the statute. The statute specified that 'appropriate' includes data to establish patterns of usage: this is the basic standard of data that we need to design and install energy efficiency, solar photovoltaic, conservation, storage, and load management systems that have measurable load reductions at the interval meter and substation level.

Section 381.1 establishes that Community Choice Aggregators may apply to administer energy efficiency programs, in recognition that Community Choice need not only purchase bulk grid power contracts. The overall goal is for a city council, county board of supervisors or joint powers authority to be able to compare an ESP's bid to PG&E's existing service - including multiple service components - and decide whether to pass the ordinance switching participants to the new Electric Service Provider.

Finally, the Commission stated its "intent to enforce the law with respect to its requirement that the utilities 'cooperate' with CCAs in the provision of all relevant information, a *term which we interpret broadly … The utilities may not determine what information is "relevant" to CCA operations as long as the utility is reimbursed for the reasonable costs of providing the information.* While we welcome the utilities' tariff proposals for the secure and cost-effective sharing of information,

we will not tolerate utility actions or delays that may affect the provision of information to CCAs or CCA services to customers" (p.53).

The Commission's Findings of Fact, Conclusions of Law and Orders reflected its key reliance on Local Power's argument that AB117 itself requires a full disclosure, interpreted broadly, with a CCA nondisclosure agreement to protect confidentiality of customers:

- **Finding of Fact # 38:** "CCAs would 'investigate or pursue' CCA programs prior to offering service and a CCA would need relevant customer and load data in order to conduct a meaningful investigation of CCA programs" (p.62).
- **Finding of Fact # 42:** "CCAs may need specific customer information in order to market energy services and tailor those services to individual customers or groups of customers" (p.63).
- **Finding of Fact #43:** "CCAs need load data in order to develop cost-effective and reliable energy procurement strategies" (p.63).
- **Finding of Fact # 44:** "Customers would benefit from notification that contact information and usage data may be shared with the CCA and may not be disclosed to others" (p.63).

The Commission also approved the following Conclusions of Law in D.04-12-046:

- **Conclusion of Law #30:** "Section 366.2(c)(9) requires the utilities to provide all relevant information required by CCAs to "investigate, pursue or implement" meaningful programs. This requirement does not permit the utilities to deny CCAs access to relevant customer or load information" (p.67).
- **Conclusion of Law #31:** "Section 366.2(c)(13)(A) requires CCAs to provide customer notice of their intent to provide service, a requirement a CCA cannot satisfy without relevant customer information. Read in conjunction with Section 366.2(c)(9), this requirement presumes that the CCA will have access to certain customer information held by the utility"(pp.67-8).
- **Conclusion of Law #32:** "Section 366.2(c)(9) requires the provision of detailed billing and load data to CCAs that are investigating, pursuing or implementing CCA programs" (p.68).
- **Commission Order #5**: "PG&E, SDG&E, and SCE's proposed tariffs shall include... (12) the offer to provide access to all relevant customer information, billing information, usage and load information, consistent with this order and which shall be provided to the CCA at cost except that those information services already approved in D.03-07-034 shall be provided at no cost to the CCA; (13) a requirement that all confidential utility information shall be provided subject to nondisclosure agreement and a requirement that the chief administrative officer of a city or county attest that the city or county is investigating or pursuing status as a CCA as a precondition of receiving confidential

customer information; (14) a requirement that customer notifications about prospective CCA operations inform the customer that customer information may be provided to the CCA subject to nondisclosure for any purpose other than those related to facilitating the CCA's services; (15) a provision for CCAs to indemnify the utilities from liabilities associated with the CCA's disclosure of confidential customer information where the utility has taken all reasonable steps to prevent such disclosure" (pp.70-71).

R.08-12-009 Smart Grid Privacy

This rulemaking is centered on the determination of what privacy and security rules for energy usage data. SFPUC staff has stated that IOUs are being scrutinized over information (Smart Meter data) disclosure. Staff do not want the CPUC to impose rules that are needlessly onerous regarding privacy protocols for CCAs, as CleanPowerSF and the SFPUC already protect the confidentiality of customer data for water and power, and answer to local elected officials and governing boards, unlike the IOUs. CPUC policy has until recently consistently agreed with this line of reasoning.

CPUC staff states that the issue has been presented in the proceeding around *customer* usage information from AMI. SCE and the DRA say that privacy rules apply to the CCAs on a stand-alone basis, and that AMI data would be dealt with separately from CCA-info tariff data, stating, "CPUC can issue rules over the CCA that deal with customer protection."[104] Recently, SB 1476 outlined general privacy rules for AMI data that apply to IOUs and municipal utilities. The CPUC developed rules for the IOUs and municipal utilities; the current proceeding covers CCAs. The rules adopted last July, drawn from SB 1476, give the CPUC the power to monitor the way that this information is used. They allow the customer the ability to share the information with a third party of their choosing. It does not impact the ability of the CCA to receive the AMI data, but establishes rules once they receive it. The rules require the CCA to notify their customers of what they are collecting and with whom they are sharing it. It identifies what they can do without obtaining written customer consent. This is fairly standard utility practice. Energy efficiency management programs are exempt, and a CCA's internal efficiency programs are also exempt. For their part, the IOUs do not want to have to get consent from all their customers to use the data for energy efficiency, as this would limit the IOUs ability to implement their own efficiency programs. There are security standards that CCAs and third parties must comply with, including "FIPs" and DHS privacy directives.[105]

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[104] One of the main statues is Public Utilities Code Section 366.2 (c) (4) and PUC 366.2 (c)(17) -- customer protection is covered by PUC Section; 366.2 (c)(9) covers data sharing rules.

[105] DHS, Department of Homeland Security; FIPs – "Fair Information Practice" principles. The argument for the creation of these rules for smart meter data is well represented by the submission in R.08.012.009 JOINT COMMENTS OF THE CENTER FOR DEMOCRACY & TECHNOLOGY AND THE ELECTRONIC FRONTIER FOUNDATION ON PROPOSED POLICIES AND FINDINGS PERTAINING TO THE SMART GRID, Available from: [http://www.law.berkeley.edu/files/CDT-EFF-JointComment-CPUC-R08-12-009.pdf]

Whatever contracts the CCA has with a third party, that third party would have to comply with the privacy rules (meaning the CPUC decision on the rules). CPUC staff has stated that some parties do not want distributed generation to become a competitive service. If the customer decides to give the data to a third-party directly, which the CPUC believe could be considered a normal utility practice, they could assign individual meter data to a third-party as Utility General Practice, including entering into contracts with third parties to provide power to its customers. These rules do not apply to aggregate or anonymized data within limits, the test being whether any individual account consumption may be extracted or inferred from the data.

Home Area Networks

The utilities are implementing the "green button connect" protocol, a dynamic system by which customers can allow third parties access to their information limited to the meter reading in 1 hour increments, expected to be implemented Q4 2012. The Home Area Network (HAN) component for residential customers has been delayed because of the ability of cyber attacks to potentially take control of the HAN. CPUC staff state that the standard itself is insecure.

The IOUs are required to come up with a HAN implementation plan, and the CPUC is now reviewing their advice letters. While consumer advocates are involved, MEA has not been involved in these discussions until recently, except to argue about cost allocation between generation and distribution components.

The Marin Energy Authority has taken a position contrary to the interests of CleanPowerSF in having full control of Home Area Networks. MEA doesn't want the IOUs to make the data available though MEA, saying those requirements should not compel the CCA to provide that data on a web page. CPUC staff state that MEA wants the utilities to handle this component, and are not pushing for faster implementation or access. MEA is arguing that customers are already paying for that ability through PG&E, so MEA shouldn't have to pay for this software capability twice, and if the CPUC was to direct them to make data available to their customers it would be a double cost. MEA also claims that it doesn't have the money or the capacity to deal with this cost or requirement. This reflects MEA's focus on goals other than localization, unlike CleanPowerSF. The SFPUC should take a more proactive role in the proceeding.

The HAN customer would only get data on a daily report of the previous day's data.[106] It is reconciled the day after. The Smart Meters have two radios: one to communicate consumption data to the utility at 15 minute or 1 hour intervals, and the other for a HAN that would connect to a wireless device in the home. The Smart Meter could also respond to DR signals from the utility, as many large customers do presently. In time, those meters already possessed by commercial and industrial customers may be replaced. The IOUs are conducting pilots with HAN activation. The devices that can be connected are being tested. CPUC staff states it wants to provide an open standard for customers. Just like any communication technology, the

[106] Interview with CPUC staff: Alok Gupta, June 12, 2012

standards are important to establish interoperability; however, thus far, IOU advice letters on the topic do not contain details about interoperability and staff believes the CPUC needs to take some action regarding the utilities to make this deployment successful, as the advice letters were not specific enough. Currently, vendors are trying to get their devices certified by the IOUs. Commissioner Peevey has ordered a pilot and the CPUC will seek to further clarify specifications for devices identified in advice letters during 2012.

The SFPUC should monitor the proceeding to make sure that the CCA can implement home area networks as soon as is possible, where cost-effective, and that IOU costs are allocated appropriately.. An alternative and, given the uncertainty of the proceeding, possibly superior approach would be for CleanPowerSF to begin deploying HAN technologies using Internet-based communications, as many competitive third-party vendors around the country already do. In regards to making Smart Meter data available to customers, CleanPowerSF should treat this as a strategic opportunity to further engage with customers and to accelerate enrollment in demand-side retrofit programs.

R.03-10-003 Community Choice Aggregation Docket

Included in the docket are security requirements and bonding requirements for CCAs. Staff are waiting for a proposed decision and are following related issues in the Direct Access proceeding.

With regard to data issues for CCA, as LPI points out elsewhere, the SFPUC should seek expedited conveyance of requested data from PG&E relative to 15-minute meter reports. Additionally it should petition CPUC to modify its tariff on an expedited timeline, and ask the CPUC Executive Director to order PG&E to provide data within the maximum period of time. It will be more temporally efficient to get a one-off change to provide the data if possible, as tariff changes take time.

A.11-12-009 Direct Access and CCA Billing

This docket addresses CCA cost-allocation issues related to fees charged by PG&E for services provided to CCAs. SFPUC staff say they are heavily involved in the DA docket, related to structure of exit fees, and have achieved good results in recent months. The SFPUC worked actively with MEA and DA interests to support an open methodology on exit fees, changing much in the City's favor regarding bonding requirements for small customers of DA. The SFPUC expressed concerns that precedents for Direct Access will transfer to the CCA financial security requirements docket. The SFPUC should continue to intervene to ensure bonding amounts are not excessive for CCAs.

R.07-05-025 Direct Access Docket (Phase III)

CleanPowerSF will become more involved as customers are enrolled, with the questions around the Power Charge Indifference Adjustment (PCIA); this is the vintaged charge on customers

who depart bundled PG&E service that compensates the IOU for investments made when they were bundled customers.[107] MEA is a participant in revisions to the methodology impacting PCIA and other departing load charges.

Similar to the activity in the CCA billing proceeding, SFPUC staff is interested in questions relating to structure of exit fees. Staff was satisfied with the result believing that the rules changed much in SFPUC's favor. Staff is concerned about the precedent set there regarding bonding requirement for small DA customers that might be transferred to CCA financial security requirements.

More broadly, DA suppliers threaten CCAs with higher opt-out rates by large commercial customers, and harm small customers through cherry picking and redlining, issues which the SFPUC will have to take into account.

A.11-03-001, -002, -003: Demand Response Programs

Demand Response programs and smart grid deployment (e.g. "smart grid pilot"), are proceedings that the SFPUC has not been overtly involved in. However, they are important in terms of how PG&E is spending funds, and to the extent a CCA or the utility gets benefits from DR programs, from which customers the funds are being collected. The IOUs have proposed to recover costs from all customers, even CCA customers who will not be receiving the benefit. The CPUC will continue to fund DR programs (using AMI data) as they have for the past couple of cycles. SFPUC has indicated that while they do not have a strong voice on this particular issue, MEA is doing good job to ensure spending is allocated correctly.[108]

R.07-01-041 Demand Response Rules (Proposed Rule 24)

Regarding the Proposed Rule for a process by which CCAs and ESPs can implement DR programs, it is LPI's understanding that in the PG&E and DA environments the issues that complicate third-party DR activity (e.g. "missing money" issues) do not pose the same problems for the CleanPowerSF deployment design in which the CCA is implementing the Demand Response measures and capturing those benefits directly. Further, CCAs can implement DR programs within their territory without consideration for Rule 24, as it applies to IOU programs and not directly to CCAs.[109]

SFPUC staff indicates that they are not following this proceeding closely, as it will be more important once CleanPowerSF has customers.

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[107] From PG&E "This adjustment (either a charge or credit) is intended to ensure that customers who purchase electricity from non-utility suppliers pay their share of cost for generation acquired prior to 2003."
[108] The Marin Energy Authority declined to be interviewed on this subject.
[109] From interview with Mona Tierney-Lloyd ENERNOC, 2.14.2012, 6.26.2012.

R.10-12-007 Energy Storage

This rulemaking should be monitored for any potential impacts to CCA. The SFPUC has indicated that the CPUC is still working to establish targets for IOU storage, and that they are looking out for non-bypassable charges that may be proposed related to it. LPI recommends that the City seek to have CCAs receive benefits from storage in future the same way it anticipates the treatment of demand response capacity.

R.10-05-004 Virtual Net Metering

SFPUC staff has supported the expansion of net metering to cover multi-tenant situations. San Francisco has a disproportionate share of apartments and renters, and small units that might be precluded from the benefits of net metering. SFPUC is also trying to ensure that VNM rules include how CCA customers can fully participate. VNM simulates an integration process or platform for bundled service customers that that CCAs may independently achieve through aggregation of voluntary rate schedules. There is confusion about PG&E-based tariffs like this (or net metering as a core strategy) compared to the financial and rate-setting authorities of a CCA. CleanPowerSF's deployment approach to site selection, non-exporting systems, and community renewable shares achieves the same goal through the rates without requiring a PG&E tariff.

Combined Heat and Power Standby, Demand and Nonbypassable Charges

The value of CHP is that savings from reductions in purchasing grid power are greater costs of building and maintaining the facility.[110] For purposes of cost analysis, there are two primary costs that CHP must bear, standby and demand charges, and nonbypassable charges, categorized as departing load charges and unique to CHP. The combination of these charges can fatally undermine the economics of a project through increased operating costs. Standby charges force the customer to pay for reserve capacity in case the CHP unit stops generating electricity and a demand charge is assessed as an additional penalty on a monthly basis if one such outage occurs in that thirty day period.[111] The CPUC allows the distribution utilities to impose nonbypassable charges upon CHP generators that have discouraged investment in that field. CHP users must pay volumetric nonbypassable charges on all of the power consume and produce, unlike those who install energy efficiency measures or those technologies exempt from

[110] From American Council for an Energy Efficient Economy overview of standby charges, Available from:: [http://aceee.org/sector/state-policy/toolkit/chp/standby-rates]

[111] "A momentary outage will trigger the demand charge for the entire month. While A CHP system operating 95 percent of the time can avoid 95 percent of the energy charges, except for departing load charges, this same CHP system might avoid only 8 to 9 of 12 monthly demand charges because of outages that occur during the demand period." From CEC consultant ICF International, "COMBINED HEAT AND POWER: POLICY ANALYSIS AND 2011 – 2030 MARKET ASSESSMENT" Pg. 71.

departing load charges.[112] The CEC has recommended as far back as 2007 these nonbypassable charges be eliminated, reflecting the predominant view within the CHP industry and analysts.[113]

The SFPUC persuade the CPUC to remove excessive demand charges and nonbypassable charges for departing load for CHP. Furthermore, revisions to PG&E's standby tariff have placed distribution charges into the energy charges. This cost-shifting should be contested and reversed by the SFPUC at the CPUC.

Exceptions to Exit Fees

CleanPowerSF's renewable power and energy efficiency assets are exempt from paying exit fees under the Customer Responsibility Surcharge (CRS), per CPUC Decision D.03-04-030 and Assembly Bill 1X (2002).

A.10-11-002 PG&E Solar Equity Investment[114]

PG&E filed an application that would ratebase a $9.9M equity investment made by PG&E (not its parent company) in a solar manufacturing facility on the distribution component of customers' bills. The SFPUC raised concerns, specifically that PG&E would be spending ratepayer money on speculative ventures. TURN and DRA have also taken up opposition and the CPUC rejected PG&E's application with a 3-2 vote.

While PG&E's application was denied, this is part of a general problem of utility power over-procurement and treatment of resulting costs as attributable to load fluctuations caused by departing load from CCAs, as both create the same kind of barriers for CCAs whether within the company or in relation to utility retained generation, power contracts or gas contracts to merchant generators on power purchase agreements. Vigilance against anti-competitive activity should be considered a key policy and regulatory direction for CleanPowerSF.

A.11-06-006, A.11-06-029, A.11-07-001 IOU Smart Grid Deployment

For CleanPowerSF it is important to ensure the appropriate cost allocation of the approximately $1.3 billion to $2.05 billion PG&E is requesting for Smart Grid Deployment. The Commission

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[112] Primarily for the Public Purpose Program charge and DWR bond charge and a much smaller amount for Nuclear decommissioning. Presently for PG&E these are per kWh: Public Purpose Program Charge $0.01279 ; Nuclear Decommissioning $0.00066; DWR Bond Charge $0.00505

[113] "The CPUC and the Energy Commission should work cooperatively to eliminate all non-bypassable charges for distributed generation and combined heat and power, regardless of size or interconnection voltage and standby reservation charges for distributed generation." From the Integrated Energy Policy Report (IEPR) 2007. Pg. 163. Available from: [http://www.energy.ca.gov/2007publications/CEC-100-2007-008/CEC-100-2007-008-CMF.PDF]

[114] Available from: [http://docs.cpuc.ca.gov/PublishedDocs/WORD_PDF/FINAL_DECISION/166542.PDF]

has stated that this is about the plan of investment, or policy, not whether such plans are reasonable, as in ratesetting proceedings.[115]

A.11-11-017 Smart Grid Pilot - PG&E

CPUC staff has informed LPI that SCE and SDG&E have applications for Smart Grid money in their GRC, but that PG&E filed separately for seven pilots, dynamic line ratings and customer education programs, with a cost of $100 million. The proceeding is ongoing, and should be monitored for potential adverse impacts to CleanPowerSF.

R.11-03-012 AB 32 Implementation

CPUC staff stated that rules for carbon trading and launch of the market are expected in Q4 2012. As this new Commission rulemaking will address potential utility cost and revenue issues associated with greenhouse gas (GHG) emissions, it is significant for CCAs.

SFPUC staff explained that IOUs are receiving allowances on behalf of San Francisco's load. Staff is following this proceeding, mostly on allowance allocation issues, (as opposed to the Low Carbon Fuel Standard). CleanPowerSF needs to make sure that its customers get the benefit of these allowances. Staff stated that the IOUs have acknowledged the need to make concessions. Furthermore, there is a need for lower carbon valuation for centralized renewables versus local renewables (that is, inside the RA Local Capacity Resource Area, and highest value distributed renewable generation) and efficiency measures within the substation, those exporting behind the meter and non-exporting behind the meter measures.

The use of funds generated from this new carbon market is a matter of debate within the government; however, there is significant interest in its use for energy efficiency funding from which CleanPowerSF should seek to benefit. Additionally, proposed bill credits provided to electric vehicle owners via the sale of credits under the Low Carbon Fuel Standard (LCFS) are another potential benefit to CleanPowerSF customers. Presently the Marin Energy Authority is arguing that such credits as are awarded to EV customers should be reflected either in the generation portion of their bill or as part of a negative nonbypassable charge. This is contrary to what the IOUs propose, as a credit to the distribution charge, which would dilute the energy value of the investment. If SFPUC is successful in linking the credit value to the official carbon content of their power, a program with the goals of CleanPowerSF would enjoy an even greater benefit.[116]

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[115] "It would be wiser to view the Smart Grid Deployment Plans as a policy guide for utility investment, not as a determination that certain investments are reasonable." Decision 10-06-047 Pg. 22. Quoted in Decision 11-12-012 December 1, 2011 .

[116] Available from: [http://www.marinenergyauthority.com/PDF/July_2012_Regulatory_Packet.pdf]

R.11-05-005 Renewable Portfolio Standard

CleanPowerSF is bound by adopted City ordinance setting a 51 percent RPS for San Francisco by 2017. The City's RPS includes efficiency gains, demand-side measures, and storage in addition to renewables. This benchmark is higher than the state goals articulated in SB 2 (1X) and CPUC regulation of 33% by 2020. CleanPowerSF will not merely achieve the state RPS targets, it will far exceed them within a short timeframe. Under CPUC consideration at this time are the conditions in which waivers can be applied for and granted to retail electricity providers who fail to comply with the RPS.[117]

The SFPUC is participating in the decision-making process regarding rules applicable to CCAs, e.g. when obligations begin for new entrants, and when obligations under D.07-05-028 and other procurement requirements commence. SFPUC staff has stated that there are serious implications and competitive advantage issues contained within this rulemaking. The rules presently favor IOU procurement of renewables compared to smaller entities like CCAs. This rulemaking will effect CleanPowerSF RPS procurement requirements as CCAs must comply with CPUC RPS rules. There are 4-5 tracks within this process and the SFPUC has been involved in all of them.

The CPUC's decided that only fully bundled RECs (RECs sold together with the generated electricity) will be given the highest Type 1 value under the RPS, and that distributed generation may only be counted as Type 3 under this arrangement.[118] The CPUC reasoned that, had distributed generation been allowed to be counted under Type 1, the IOUs would have merely purchased RECs from private developers of distributed generation. However, under the proposed business model for CleanPowerSF, it would be the CCA itself that targets, acquires, finances (and/or arranges private financing), and manages the construction, operation, and maintenance of distributed generation – and allows customers to own Community Shares in the deployed assets. The CPUC decision was made in the context of the IOUs' business models and procurement strategies, and did not consider CleanPowerSF's proposed business model and scale of deployment of distributed generation. The preliminary Financial Model estimates that counting distributed generation as Type 1 instead of Type 3 is worth approximately $5 million per year to the program after full deployment. As such, the SFPUC should request that the CPUC to adopt RPS and REC rules to allow distributed generation to be counted as Type 1 RECs, providing that the compliance entity 1) causes the asset to be constructed and 2) allows community ownership of some portion of the asset.

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[117] D.12.06.038 June 21, 2012 DECISION SETTING COMPLIANCE RULES FOR THE RENEWABLES PORTFOLIO STANDARD PROGRAM. Available from:
[http://docs.cpuc.ca.gov/PublishedDocs/WORD_PDF/FINAL_DECISION/169704.PDF]

[118] "CPUC Issues Final Decision on Renewables Portfolio Standard Content Categories of SB 2X" 12.22.11 By Steven F. Greenwald and Vidhya Prabhakaran. Available from:
[http://www.jdsupra.com/post/documentViewer.aspx?fid=c9fc46ab-0479-472a-a207-594d8b84471f]

R.12-02-009 and SB 790 CCA Code of Conduct

This rulemaking addressed the requirements set forth in SB 790 for the CPUC to consider and adopt a "code of conduct" that is applicable to IOUs for their activities in regards to CCA. The SFPUC participated in the proceeding, as did MEA and other CCA interests (Shell and LPI). A scoping memo has been issued and comments were due regarding it at the end of August. The question of anti-competitive behavior on the part of IOUs appeared within the scoping memo, but Commissioner Peevey has rejected the idea of addressing cost-shifting and energy efficiency funding questions as outside the scope of the proceeding.[119]

An annotated summary and excerpts of SB 790 may be found in the Appendix.

SB 790: "Forced Speech" Should Not be Allowed[120]

Forced Speech by PG&E customers in general, and specifically customers of a municipal agency investigating, pursuing or implementing CCA, should not be allowed through a civil use of ratepayer funds whose actual expenditure remains hidden; and the CPUC should apply the U.S. Supreme Court's precedent in Abood et al. v. Detroit Board of Education et al. to authorize PG&E and the other utilities' books be made available to municipalities that request them under the Public Records Act, much as PG&E currently shares its protected confidential meter data with municipalities under the CCA-INFO tariff. The SFPUC and the City Attorney should advance these 'forced speech' arguments in the proceeding.

Definition of Forced Speech

Forced speech has been defined by the U.S. Supreme Court as forcing a person to pay for political activity that such a person does not in fact support, or actively opposes. Thus, in 1975, the U.S. Supreme Court prohibited captive union members from having their union dues support causes they opposed, and required a disclosure procedure.

With SB 790, sponsor Senator Leno sought to address PG&E's expenditure of millions in funds originally paid by captive PG&E retail electricity distribution, billing and power procurement

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[119] MP1/JHE/gd2 8.9.2012. Available from: [http://docs.cpuc.ca.gov/efile/RULC/172560.pdf]

[120] SEC. 10. Section 707 is added to the Public Utilities Code, to read:
707. (a) Not later than March 1, 2012, the commission shall institute a rulemaking proceeding for the purpose of considering and adopting a code of conduct, associated rules, and enforcement procedures, to govern the conduct of the electrical corporations relative to the consideration, formation, and implementation of community choice aggregation programs authorized in Section 366.2. The code of conduct, associated rules, and enforcement procedures, shall do all of the following:
(5) Provide for any other matter that the commission determines to be necessary or advisable to protect a ratepayer's right to be free from forced speech or to implement that portion of the federal Public Utility Regulatory Policies Act of 1978 that establishes the federal standard that no electric utility may recover from any person other than the shareholders or other owners of the utility, any direct or indirect expenditure by the electric utility for promotional or political advertising (16 U.S.C. Sec. 2623(b)(5)).

customers, in order to shift funds from the ratepayers into "shareholder" accounts, to pay for a political campaign to block their municipal governments from implementing or investigating Community Choice Aggregation.

In the case of CCA, Forced Speech enables PG&E to fund public relations campaigns to protect a power monopoly against customers that are entitled by state law (and paid for in CPUC IOU bailouts) to energy choice and specifically seek out and negotiate with competitive energy suppliers other than PG&E.

AB 117 also requires that Investor-Owned Utilities "fully cooperate" with municipalities that investigate, pursue or implement CCA. A more strict supervision of the IOU's political activities is mandated by this term. The CPUC is bound to ensure that PG&E cannot similarly elude the agency under the mechanism or protocol created to monitor the IOU's funding of political campaigns, funding of third-party groups, and lobbying activities regarding CCA. Both the Legislative Digest preamble and in Section 10 sub 5, SB 790 directs the CPUC to address the point of protection from Forced Speech. The proposed protection SFPUC and City Attorney should address is the "ratepayer's right to be free from forced speech."

The precedent for the question of Forced Speech

The precedent for Forced Speech is provided in Abood v. Detroit Board of Education.[121] The commission should address directly the issue of forced speech as presented in the statute.

In order to implement Abood the CPUC should ensure that no further abuse of funds be allowed by the IOUs in California, by making PG&E's records of expenditures subject to the Public Records Act. If the utilities claim this will harm them in some way, or that such data is confidential, the Commission should consider a protocol for municipal governments to ensure IOU transparency and confidentiality by having a government-level access to such data. LPI sees no reason such secrecy is necessary, but a concern for confidentiality is not a basis for denying a municipality's access to utility data. Municipalities should not have to expend funds or come to the CPUC in order to know what the IOUs are spending money on anti-competitive political activities against them.

In R.03-10-003, the Commission made confidential end-use customer meter data available, without restriction, to CCAs under a tariff, which PG&E created as the CCAINFO tariff. No other parties, such as market participants or the general public, may have access to this data, which CCAs require for CCA program design and implementation. Much as PG&E currently shares its protected confidential meter data with municipalities under the CCA-INFO tariff, PG&E could be ordered by the Commission to share its expenditure records with CCAs so they

[121] Abood et al v. Detroit Board of Education et al. No 75-1153 Supreme Court of the United States 431 U.S. 209; 97 S. Ct. 1782; 52 L. Ed. 2d 261; 1977 U.S. Lexis 91; 81 Lab Cas. (CCH) P55,041; 95 L.R.R.M. 2411 Argued November 9, 1976 May 23, 1977

are able to know PG&E cannot hide or shift funds between accounts while promising the Commission or CCA governments that the hidden dollars funding their political allies, lobbyists andcampaign contractors are somehow not ratepayer-funded.

Access to Smart Meter Data – Electricity and Natural Gas

Advanced metering data is particularly valuable for load curve analysis and the targeting of Demand Side Management measures, as well as enhanced monitoring and information that can simplify contractual ESAs with energy efficiency retrofit customers. Earlier drafts of SB 790 expanded[122] the requirement to a category of data specified in Section 8380 of the Public Utilities Code to include, specifically, data associated with a customer's electrical or natural gas usage that is made available as part of an advanced metering infrastructure, and includes the name, the account number, or residence of the customer.

It would be advantageous to pursue natural gas consumption data for all customer in further legislation or if possible at the CPUC through the CCA INFO TARIFF.

EV Charging/NRG Settlement

The CPUC recently reached a $122.5 million dollar settlement with NRG (Docket Nos. EL02-60-000, *et al.*), stemming from damages incurred during the Energy Crisis. CleanPowerSF is in a unique position to benefit from the investment proposed in the decision.[123] Specifically, the settlement calls for the installation of fast charging stations, 55 of which will be located in the Bay Area, with 20 percent of those in low-income areas. [124] Additionally, $4 million has been set aside for education and workforce training programs to be administered by the Greenlining Institute. The potential harmonization of the approach to the development of CleanPowerSF EV infrastructure and the enactment of the settlement should be pursued in cooperation with the parties described in the settlement. [125]

OIR for AB2514

The CPUC has initiated workshops on energy storage to meet the stipulations of AB2514. The California Energy Storage Alliance (CESA) has commenced modeling of the energy and financial impacts of energy storage in fourteen different use cases. The modeling for the first use case, ancillary services, was recently released, showing that energy storage has a payback of two to three years when used to supply ancillary services.

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[122] Public Utilities Code 366.2(c)(9). See CPUC letter numbered 431574, signed by the CPUC Energy Division Director and dated February 2, 2012, orders Pacific Gas & Electric Corporation, San Diego Gas & Electric Corporation, and Edison International to file modified Electric Schedule E-CCA-INFO enabling governmental agencies and CCAs – as defined in P.U. Code Section 331.1(a-c)—to receive the "electrical consumption data as defined in Section 8380."

[123] Available from: [http://docs.cpuc.ca.gov/PUBLISHED/NEWS_RELEASE/165145.htm]

[124] Available from: [http://www.cpuc.ca.gov/NR/rdonlyres/CD5E3578-5EAD-47BA-BC5A-B6BD398CCBF6/0/JointOfferofSettlement.pdf]

[125] BAAQMD, Greenlining Institute, CPUC, NRG, *et. al.*.

The SFPUC should monitor these workshops and modeling results to inform CleanPowerSF's approach to targeting, deploying and operating distributed energy storage technologies.

The Specter of "Network Access" Charges

Distributed Generation impacts both the generation and distribution revenues of the traditional utility business. Utilities have claimed that the statewide goal of expanding DG presents potentially a significant loss of revenue for distribution utilities, as the utilities must raise rates to recover lost grid revenues, and thereby cause DG to become even less expensive relative to grid-based power. Utilities warn against a revenue "death spiral" for IOUs in a DG-intensive electricity system. The utilities have proposed a "network charge" involving an additional payment to the distribution utility for DG access to the local grid as a solution. While SDG&E's proposed "Network Use Charge" was rejected by the CPUC, it is a topic that will likely persist and may potentially harm CleanPowerSF in the future.[126]

Volumetric surcharges under the current regime may only be charged for consumed grid power. A network charge could impose a flat fee for connection to the distribution grid itself, irrespective of actual energy consumption. Under such a proposed network charge, energy charge reductions resulting from behind-the-meter renewable power generation and efficiency measures would not result in the same level of savings from surcharges as is currently the case under a volumetric-charge only regulatory environment. As such, this design is a disincentive to invest in distributed generation or demand-side measures, and should be strenuously opposed.

Network charges are controversial because they impose charges on customers irrespective of whether they actually consume electricity, in effect shifting costs from customers who use high amounts of grid power to customers who use less. By punishing low users and subsidizing high users, network charges would economically punish customers who by investing in renewable power or efficiency measures, use less electricity. This directly contravenes adopted principle of regulation, both cost shifting prohibitions in AB 117, CPUC regulations, and throughout the law, and violates the state's adopted Loading Order, which prioritizes development and support for energy efficiency and renewable distributed generation above all other resources. If formally pursued and approved, network charges will create an artificial user's tax on all energy efficiency, and all renewable distributed generation, and attempt to win CPUC authorization for PG&E and the other IOUs to impose this fee on its customer bills.

[126] ASSIGNED COMMISSIONER'S SCOPING MEMO AND RULING 1.18.2012, regarding A.11-10-002, Available from: [http://docs.cpuc.ca.gov/EFILE/RULC/157634.PDF]

Network charges proposed at the CPUC would require a lengthy approval process, and potentially legislative authorization. Thus, for the time, being, network charges do not impact CleanPowerSF. Because approval of network charges could have negative impacts on CCAs in California, CleanPowerSF should monitor CPUC actions relative to them, and oppose such charges as anti-competitive and contrary to anti-cost-shifting policies.

Recommended Local Actions

Water Bill Repayment Mechanism

SFPUC staff should consult with the City Attorney on the need for SFPUC Commission approval or other authorization to use the SFPUC water bill as a repayment mechanism for CleanPowerSF. Staff has indicated that this may require a Charter Amendment.

Rent Board Efficiency Mechanisms

The program should facilitate savings agreements and mechanisms that allow building owners to approve upgrades, and tenants to benefit from lower utility bills. For residential properties, the Rent Board currently allows a limited number of efficiency improvements to be made and the cost passed on to renters, capped at the estimated bill savings and bound by certain amortization periods. This list has to be updated; selection of amortization periods may also need to be broadened, which could require the Rent Board to create an exception to their current practices. SFPUC and SFE should consult with the Rent Board concerning the amortization periods and list of approved efficiency measures to be expanded and aligned with CleanPowerSF program design.

Program Risk Management and Liability

As the City is self-insured, the City Attorney and Risk Management Office have stipulated that a 3rd party contractor must assume the risk for efficiency installations under SFE programs to date. This is an added cost to the program and ultimately to customers, and the SFPUC should ask this be re-evaluated for CleanPowerSF based on the fact that the SFE program has conducted in excess of ten thousand retrofits without ever being sued.

Recommended State Legislation

No new legislation is required to enact the program defined by the City's adopted goals. CleanPowerSF has presently the necessary authorities established under current law to achieve the deployment, including goals of customer ownership and work force engagement. The key authorities required to implement the deployment are California's 2002 CCA law and San

Francisco's voter-approved H Bond authority. All other legislation analyzed in this report has an impact on program design, timeline and cost, or broader strategic issues, but the deployment is achievable irrespective of the outcome of the laws described below.

There are steps the City should take to enhance timing and program finances via action in the legislature in Sacramento or within the San Francisco Public Utilities Commission. This section deals with strengthening and expanding CleanPowerSF's existing authority and capacity.

Office of the Treasurer: Support for CCAs and Manufacturing Jobs

CCA provides an essential strategic tool to ensure that California successfully realizes energy and climate policy mandates. CCA will play a pivotal role in achieving the equally bold objectives of both the Renewable Portfolio Standard schedule pursuant to SB 1178, the solar funding schedule enunciated by SB 1, and the Governor's Clean Energy Jobs Program – in particular his 12,000MW new local renewable energy goal.

CCAs like San Francisco that opt for energy localization, using revenue bonds or private capital funds to finance local renewable energy and energy efficiency, will expand market access for many innovative renewable and efficiency technologies. Expanding local manufacturing capacity to supply a portion of the needed technologies would mean that more of the indirect job impacts of the deployment would be retained locally – ideally in-County or in directly adjacent counties. CleanPowerSF should request that the Treasurer, either independently or in coordination with the Governor's office, implement a program that supports expanding local manufacturing capacity to supply CCAs with renewable and efficiency technologies.

Leveraging State Level Financing Resources

"Promote government and private financing partnerships to carry out local energy programs."

"Creative use of State and Federal financial assistance programs should be explored. A local revolving fund, through the issuance of revenue bonds, might be established to undertake local energy conservation programs. Tax-exempt leasing and lease-purchase arrangements offer another promising method to implement energy conservation and renewable resource strategies."

"Local governments can assist in the formation of special assessment districts to undertake energy projects. Such a district could be applied to certain industrial and neighborhood areas for the production, sale and use of alternate energy systems."

"Government and utility involvement is particularly appropriate in hardship and low income situations. "

GENERAL PLAN POLICY 18.1

If necessary or appropriate, legislation should be introduced for consideration in 2013 that would authorize necessary levels of bonds to be issued for these specified purposes, for both San Francisco and other prospective CCAs. The Treasurer's Office does currently offer financial support for manufacturing, but program funding is extremely limited. CCAs that focus on energy localization are a unique and highly promising market structure that arguably deserves a program tailored to these specific needs.

Bridge Financing for CCAs Focused on Energy Localization

In addition, future CCAs may benefit from supplemental bridge financing to commence operations. The SFPUC has a direct interest in encouraging the development of more CCAs as a way to counter-balance the anti-competitive activities of PG&E, and should request that the Treasurer design a program that supports new CCAs that intend to focus on energy localization.

Subject IOUs to Sunshine Act and Brown Act

The IOUs fulfill a quasi-public role and as such should be held more accountable to the public. The SFPUC should advocate for legislation that requires the IOUs to submit to public meeting laws (the Sunshine Act and Brown Act) for their board meetings.

Limit Connection Charges and Non-Volumetric Fees

PG&E may seek to expand the use of non-volumetric charges as a way to suppress competition from CCAs and ESPs. These charges, sometimes referred to as 'connection' or 'network-access' charges, are flat fees that are paid by customers regardless of their usage volumes and patterns. The use of these fees lessens or removes the price signals for a range of innovative technologies and practices, such as energy efficiency, behind-the-meter distributed generation, demand response, peak load shifting, and dynamic pricing. As such, the use of these fees should be extremely limited and heavily contested at the CPUC by the SFPUC. The SFPUC should further advance legislation that pre-emptively circumscribes the expanded use of these charges.

Legislation should be introduced to prohibit the creation of non-volumetric fees on customers seeking non-PG&E suppliers through a CCA or an ESP. Under the proposed legislation, all charges imposed by the CPUC on CCA or ESP customers would be statutorily limited to volumetric fees (i.e. per kilowatt-hour charges). This would allow revenue recovery from customers in a manner that does not disincentive innovation in renewables and efficiency, and does so equitably by charging customers for their actual usage and not under a fixed fee levied regardless of the volume and pattern of their consumption.

Reinstate Decoupling

An entire area of reform that would lessen incentives for PG&E's opposition to CCA is to reinstate decoupling in California, including:

- The mandated elimination of shareholder incentives from CPUC power procurement which would eliminate any returns on investment for new utility generation costs;
- A legislative ban on 'self-dealing' scenarios, such as an IOU selling gas to a power plant owned by a company that sells the power back to the IOU, or the IOU selling gas to a power plant owned by the IOU.

SB 697 Solar Networking

Solar Networking Bill, Senate 697[127] (Soto, 2005, tabled), sponsored by Senator Nell Soto (drafted by LPI), would require the CPUC to establish separate distribution service rates and charges by an electrical corporation for distribution wheeling between an electric service provider supplying electricity from an eligible renewable electricity source to end-users of a CCA within a single distribution system upon petition or other procedure established by the CPUC. The separate distribution charge would pass on any distribution system cost savings resulting from the development of distributed energy resources to the end-use customer of the CCA. This bill would also, to the extent permitted by federal law, limit CAISO charges for transmission services and would specify how any applicable transmission charges would be allocated.

Expanding Over-the-Fence Transactions

The SFPUC should advance legislation that extends permissible over-the-fence transactions to more than three adjacent buildings (within various restrictions). The definition of PUC Section 218 Load should be extended to include any chain of adjacent buildings whose owners, and any tenants joining them, wish to host a microgrid for the purposes of sharing power and capacity from local renewable energy, storage and demand-side installations.

Disallow IOU Cost-Shifting and Anti-Competitive Rate Structures

The SFPUC should pursue legislation to preempt the CPUC Decision in the 2012 General Rate Case regarding the flattening of California's efficiency block tier system, the imposition of non-bypassable tiered rates for residential CCA customers, and the decision allowing PG&E to offer discriminatory rates between customers (causing cost shifting).

Expand CCA Access to IOU Controlled Data

PG&E has sought to constrain access to electrical billing data, natural gas consumption and billing data, and distribution grid data. Their defense is that CCAs typically do not request this data and that it is not covered by the CCA INFO TARIFF. All of the aforementioned data is highly relevant to any CCA that is studying energy localization. Customer bills are the financial 'baseline' against which behind-the-meter assets are compared. Distribution grid data may impact the timeline and expense associated with siting distributed generation – as the grid may or may not require upgrades, depending on the location. Natural gas consumption and billing data is relevant to both combined heat and power and to energy efficiency retrofits. These assets generate or save both electricity and natural gas – therefore, the targeting of these assets would be better informed by access to natural gas consumption and billing data. If the CPUC is not

[127] California Senate Bill No. 697 (SB697), Introduced by Senator Soto, February 21, 2003. Available from: [http://www.leginfo.ca.gov/pub/03-04/bill/sen/sb_0651-0700/sb_697_bill_20030221_introduced.pdf]

willing to expand the CCA INFO TARIFF to encompass these requests, the SFPUC should pursue legislation that directs the CPUC to do so.

This legislation should further explicitly enshrine the CCA's broad authority to determine what data is relevant, without interference from either the IOUs or CPUC. AB 117 provides that CCAs are entitled to all data requested, but the CPUC has determined that it has authority to limit access to data requested. The CPUC has restricted access based upon this authority. The language set by AB 117 should be modified to more explicitly empower CCAs to make this determination.

Appendix A: Glossary of Terms

AB 2573 (Leno 2006): This law allows swapping between load points to facilitate solar development via Hetch Hetchy.

AB 1823 (Papan 2002): This law mandates improvements to the water system managed by the SFPUC.

AB 117 (Migden 2002): This law created the Community Choice Aggregation mandate.

Advanced Meter Infrastructure (AMI): A system that collects, measures, and analyzes energy usage; includes hardware, software, communications, customer associated systems and meter data management software.

Ancillary Services: Ancillary services refers to several fast- or instantaneous- electric response services necessary to maintain the reliable operation of the interconnected power grid. Several of these services are typically supplied by natural gas fired single-cycle combustion turbines, a portion of which may be more economically supplied – with an environmental benefit – by demand-side resources.

American Recovery and Reinvestment Act (ARRA): ARRA is an act of Congress that instituted a variety of stimulus programs.

Automated Demand Response (AutoDR/ADR): ADR is a program that utilizes a communications infrastructure to transmit customers' demand response signals to CleanPowerSF, and implements load reductions automatically through their facility's control system.

Biomethane (Biogas): Biomethane is biologically-produced gas sourced from biomass waste feedstocks, and injected into natural gas pipelines.

Block Tier Schedule: This is an inverted block rate design which utilizes a tiered pricing structure where higher usage customers pay a higher marginal rate. Since subsequent quantities of energy have higher per-unit prices as usage rises through the tiers, persons who consume more electricity will pay a higher average rate than those who consume less.

California Independent Systems Operator (CAISO): CAISO is a sub-region of the Western Electric Coordinating Council (WECC), and is a not-for-profit public-benefit corporation charged with operating the majority of California's high-voltage wholesale power grid.

California Air Resources Board (ARB): The California Air Resources Board is a part of the California Environmental Protection Agency, an organization which reports directly to the Governor's Office in the Executive Branch of California State Government. ARB manages the State's new Cap and Trade emissions reduction market.

Capacity Balancing: Capacity balancing achieves revenue through several channels, including avoided wholesale procurement, avoided volumetric surcharges including the CRS, offsetting

Resource Adequacy volumes in wholesale power, and selling forward capacity in bilateral contracts.

California Public Utilities Commission (CPUC): The CPUC regulates privately owned electric, natural gas, telecommunications, water, railroad, rail transit, and passenger transportation companies; An administrative agency of the State of California that exercises both legislative and judicial powers. The major duties of the CPUC are to regulate privately-owned utilities, securing adequate service to the public at rates that are just and reasonable both to customers and shareholders of the utilities. The CPUC also provides electricity and natural gas forecasting, and analysis and planning of energy supply and resources.

CleanPowerSF: The CleanPowerSF program is the City's custom-tailored Community Choice Aggregation (CCA) Program, which allows cities and counties to pool their citizen's purchasing power to buy electricity. CleanPowerSF will enhance local control, create competition, and provide the San Franciscans with an alternative 100 percent renewable energy supply. Energy customers will be able to choose what kind of energy they want for their homes and businesses. In June 2007, the City's Board of Supervisors approved an ordinance, adopting a CCA Draft Implementation Plan, Program Description and Bond Revenue Plan, and further implementation steps. The program adopted the CleanPowerSF name in January of 2009. The SFPUC and the San Francisco Local Agency Formation Commission approved this program in the fall of 2011.

CleanPowerSF Standard Service (Standard Service): The CleanPowerSF service, portfolio and rate schedules for customers who neither opt-out of CleanPowerSF nor select an Own-Your-Power option or product.

"Community Anchor" (host/site/rate/meters): An "Anchor" is a large building owner who elects to be a CleanPowerSF customer and signs up to host a community renewable shares renewable energy generation facility. Participation may be limited to receipt of power services, and/or include Own-You-Power shares. Customers will sign up for a rate based on his or her participation; they can sign up for Own-You-Power shares, and can enter into a lease for their property for renewable energy generation with the CleanPowerSF.

Combined Heat and Power (CHP): CHP, also known as cogeneration, recovers the waste heat that would otherwise be lost from conventional central station power plants, and delivers this heat to one or more customers; CHP implies that the generator is at or near the point of energy use to allow highly efficient delivery of both electricity and heat.

Community Choice Aggregation (CCA): CCA is a legal framework enabled by legislation in several states that allows local governments to contract for electric power from a third-party provider that serves all customers in the local government's jurisdiction; customers are given the right to opt out and return to the primary utility service if they choose to do so. Created first in Massachusetts, and adopted in California in 2002 by AB 117 (Migden).

Community Renewable Shares: This refers to the ability of CleanPowerSF customers to make investments in renewable energy through their CleanPowerSF bill; a part of Own-Your-Power.

Conservation Incentive Adjustment (CIA): a new rate structure approved by the CPUC in PG &E's most recent general rate case that increases charges upon high users of energy. Designed to compensate for IOU rate flattening, it represents cost shifting from generation to transmission and distribution, and from the IOUs to CCA customers.

Customer Phase-in (Phase-in): The regulation of AB 117 allows CCAs to offer service to customers in tranches, e.g. the Marin Energy Authority began service to 8,000 accounts before offering service to the rest of the County and participating communities.

Demand Dispatch: Demand dispatch is an expanded form of demand response, which typically sheds customer load in response to peak electrical grid demand periods, and refers to the ability to turn appliances on or off in response to price or grid stability signals in all time periods.

Demand Response (DR): DR refers to the ability to control onsite load and coordinate it with grid events or market pricing; market-based or automated reductions in peak demand; frequently used in power emergencies to keep the grid stable, while avoiding the use of power plants.

Direct Access (DA): DA refers to the ability of large electricity customers to purchase power from third-party Electric Service Providers, suspended in the aftermath of the California energy crisis; recently reintroduced in a limited fashion.

Distributed Generation (DG): DG refers to small footprint power generating facilities at the load, as opposed to large transmission connected central station power plants.

Energy Efficiency (EE): EE refers to technologies that reduce or modulate the consumption of electricity or heat, i.e. energy.

Energy Management System (EMS): Also called a Building Management System, EMS refers to a computer system which is designed for monitoring and controlling features of building systems such as lighting, heating, ventilation, and so on. These systems may be used to trend energy usage, perform optimization or diagnostic routines to conserve energy, or interface with the electrical grid through an aggregator to respond to price and/ or grid reliability signals for demand management.

Electric Program Investment Charge (EPIC): The EPIC is a new utility bill charge, intended to ease the impact of the PGC sunset.

Electric Vehicle (EV): An EV is an automobile powered primarily or exclusively by electricity as opposed to fossil fuel.

Federal Energy Regulatory Commission (FERC): FERC is the United States Federal agency that regulates the interstate transmission of electricity, natural gas, and oil.

Feed-in-tariff: A feed-in-tariff is a payment to alternative energy producers based upon the unit of energy produced. It was popularized first in Aachen and then nationally across Germany in the past decade as a means to subsidize the development of renewable energy.

FERC Order No. 745: Order 745 requires every Independent Systems Operator in the U.S. to adopt their methodology for the compensation of Demand Response resources. FERC rejected CAISO's proposed rules for adopting the order, and they are presently resolving CAISO compliance.[128] The issue is expected to be resolved in 2013, with implementation in 2014.

FERC Order No. 888: Order 888 "Promoting Wholesale Competition Through Open Access Non-discriminatory Transmission Services by Public Utilities; Recovery of Stranded Costs by Public Utilities and Transmitting Utilities" A FERC rule requiring all public utilities that own, control or operate facilities used for transmitting electric energy in interstate commerce to have on file open access non-discriminatory transmission tariffs that contain minimum terms and conditions of non-discriminatory service. The rule also permits public utilities and transmitting utilities to seek recovery of legitimate, prudent and verifiable stranded costs associated with providing open access and Federal Power Act section 211 transmission services. The FERC's stated goal is to remove impediments to competition in the wholesale bulk power marketplace and to bring more efficient, lower cost power to the Nation's electricity consumers.[129]

Green Jobs Pool: a pool of laborers certified by the OEWD-managed pre-apprenticeship programs

Heat Islands: Heat islands are district heating systems which use solar thermal panels, ground-source heat pumps, and in limited cases, combined heat and power systems, integrated and offered with thermal appliance retrofits and programmable controllable thermostats, and served by both natural gas and biomethane.

Hetch Hetchy (HH): Hetch Hetchy refers to the system of dams, reservoirs and hydropower generation facilities authorized by the Raker Act in 1913 to provide water and power to the City of San Francisco [in the case of the former, service is provided to many customers outside the City and controlled by the San Francisco Public Utilities Commission.

Hetch Hetchy Water and Power (HHWP): HHWP is an Enterprise of the San Francisco Public Utilities Commission.

Home Area Network (HAN): A HAN is a communications device within a home which allows smart appliances and thermostats to respond to price signals, grid reliability, or control signals from an aggregator, to optimize customer comfort, save money during periods of peak demand, or act as a demand resource for the grid.

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[128] ORDER REJECTING TARIFF REVISIONS (Issued February 16, 2012)
Available from: [http://www.ferc.gov/whats-new/comm-meet/2012/021612/E-7.pdf]
[129] ORDER NO. 888 FINAL RULE (Issued April 24, 1996) Available from:
[http://www.ferc.gov/legal/maj-ord-reg/land-docs/rm95-8-00v.txt]

"Hot tub effect": This refers to an increase in the use of electricity following an energy efficiency retrofit that negates the value of efficiency savings. The expression refers to a situation in which a customer achieves a savings through efficiency, and then buys a hot tub, wiping out the savings. LPI accounts for this with a rate that compensates for this contingency.

Investment Tax Credit (ITC): The ITC a corporate tax credit, equal in the case of PV projects to 30% of the expenditures on a given project.

Deployment: Refers to the deployment of technologies by CleanPowerSF. Is the CleanPowerSF power portfolio construction program, broadly defined, with components conforming to the LPI Financial Model, to provide a minimum level of service to CleanPowerSF load. This minimum is defined at 51 percent by 2017, or at a minimum 360MW as defined by City ordinances 86-04 and 147-07.

LPI Financial Model (Financial Model): The financial model is an account of costs, including debt and revenue, from the CleanPowerSF program and the SFPUC balance sheet, based upon the schedule of investment in the deployment.

Localization Portfolio Standard (LPS): Similar to an Renewable Portfolio Standard, LPS is defined within discrete geographic boundaries; a term coined by Local Power Inc. to describe the achievable scope of replacing distant fossil fuel power sources with local renewables and efficiency in a given timeframe. An LPS can include heat and demand-side resources in addition to electrical energy resources.

Local Hiring Ordinance: The Local Hiring ordinance is adopted City and County of San Francisco law that designs preference and incentive for employing residents, particularly disadvantaged residents, of San Francisco.

Managed Charging (or smart charging): Managed charging is the coordination of when plug-in electric vehicles draw power from the grid to recharge. This is performed by the grid operator or an aggregator, and in accordance with the PEV owner's specified preferences.

Mello-Roos: The Mello-Roos Community Facilities Act of 1982 allows local governmental agencies within the state to finance community facilities and services through the levy of voter approved special taxes. SB 555 (Hancock 2011) adapted Mello-Roos to support PACE financing.

Microgrids: A microgrid consists of sharing generation and demand resources across properties to create a maximum benefit to onsite customers, at the portfolio level, and for the grid itself.

Negawatt/Negawatt Hour: A negawatt hour is the assignment of monetary value to reductions in the use of electricity; a theoretical unit of power representing an amount of energy saved. The energy saved is a direct result of energy conservation or increased efficiency. The term was coined by Amory Lovins in 1989.

Net Energy Metering (NEM): Net Energy Metering as defined by the CPUC refers to customers who install small solar, wind, biogas, and fuel cell generation facilities (1 MW or less) to serve all or a portion of onsite electricity needs are eligible for the state's net metering program. NEM

allows a customer-generator to receive a financial credit for power generated by their onsite system and fed back to the utility. The credit is used to offset the customer's electricity bill.

Open Automated Demand Response (OpenADR): OpenADR is a non-proprietary standard and Linux server platform developed by Lawrence Berkeley National Laboratory to facilitate fully automated demand response and dispatch in reaction to grid signals. It is currently being adopted in national standards.

Over-the-fence (Section 218 Load): Over-the-fence refers to the portion of the Public Utilities Code that authorizes on-site customer generation to share electricity with no more than two adjacent properties.

Own-Your-Power: Own-Your-Power means the offering of ownership, real (on site) and virtual (community renewable shares) of renewable energy and efficiency to CleanPowerSF customers.

Power Charge Indifference Adjustment (PCIA): The PCIA is the vintaged charge assessed on customers who depart bundled PG&E service to compensate the IOU for investments made when they were bundled customers.

Photovoltaic (PV): PV refers to devices, typically panels, from which electricity generated by the reaction of silicon or other materials and exposure to sunlight.

Public Utilities Code: The Public Utilities Code is the compiled regulation that govern the operation of utilities in the State of California.

Tariff: A tariff is the formal definition of services, rate schedules, preliminary statements, rules, forms and advice letters regulated and defined by the CPUC.

Proposition H Bonds (H Bonds): Authorized by voter-approved Proposition H, Charter Section 9.107.8, which authorized the City to issue revenue bonds, whether for customer ownership or city ownership, for renewable energy and energy efficiency installation, construction and maintenance.

Property Assessed Clean Energy (PACE): PACE is a program developed to finance renewables and efficiency using a lien on the property of home and business owners receiving the measure.

Power Purchase Agreement (PPA): Under a PPA, a developer installs a renewable energy system on agency property under an agreement that the agency will purchase the power generated by the system. The agency pays for the system through these power payments over the life of the contract. After installation, the developer owns, operates, and maintains the system for the life of the contract.

Ratesetting: Ratesetting is the authority of CCA to set rates independent of the CPUC. Public Utilities Code Section 366.2(c)(1)(b) and 381.1.(10)(f) allows CCAs to set rates and specifically prohibit CPUC regulation of CCA suppliers.

Raker Act of 1913 (Raker Act): The Paul Raker Act was an act of the United States Congress that permitted building of the O'Shaughnessy Dam and flooding of Hetch Hetchy Valley in

Yosemite National Park, California. Hetch Hetchy Water and Power was established as a result of the Raker Act of 1913, which granted water and power resources rights-of-way on the Tuolumne River in Yosemite National Park and Stanislaus National Forest to the City and County of San Francisco (the City). As a result of the 1913 Raker Act, energy produced above the City's Municipal Load is sold first to Modesto and Turlock Irrigation Districts (the Districts) to cover their pumping and municipal load needs and any remaining energy either sold to other Municipalities and/or Government Agencies (not for resale) or deposited into an account under the City's agreement with PG&E.

Renewable Energy (RE): RE refers to technologies that generate electricity without consuming fuel; for example, solar photovoltaic or wind turbine generation; renewable energy has many characteristics that advantage it over conventional generation: it is shielded from fossil fuel price fluctuations, and can in some cases be sited where energy is consumed reducing the costs associated with transmission and distribution.

Request for Proposals (RFPs): RFP refers to the solicitation documents being prepared by LPI as the final deliverable for the deployment. They cover a broad category of renewable and energy efficient technologies and configurations.

Renewable Portfolio Standard (RPS): The RPS is iterated under several pieces of legislation; presently the RPS is defined by Senate Bill 2 (1X) (Simitian, Stats. 2011, Ch. 1) which mandated a target for renewable content of electricity provided by utilities, at the moment, 33% by 2020.

Resource Adequacy/Local Resource Adequacy (RA): RA as defined by the CPUC is a "policy framework (PU Code section 380) adopted in 2004 to in order to ensure the reliability of electric service in California. The CPUC established RA obligations applicable to all Load Serving Entities (LSEs) within the CPUC's jurisdiction, including investor owned utilities (IOUs), energy service providers (ESPs), and community choice aggregators (CCAs). The Commission's RA policy framework, implemented as the RA program, guides resource procurement and promotes infrastructure investment by requiring that LSEs procure capacity so that capacity is available to the CAISO when and where needed. The CPUC's RA program now contains two distinct requirements: System RA Filings (effective June 1, 2006) and Local RA Filings (effective January 1, 2007). System RA Filings are required annually and also monthly, while Local RA Filings are currently only required annually.

Each LSE is required to file with the Commission demonstrating that they have procured sufficient capacity resources including reserves needed to serve its aggregate system load on a monthly basis. Each LSE's system requirement is 100 percent of its total forecast load plus a 15 percent reserve, for a total of 115 percent. In addition, each LSE is required to file with the Commission demonstrating procurement of sufficient Local RA resources to meet their RA obligations in transmission constrained Local Areas. Commission staff evaluates LSE filings

annually and monthly ensure accuracy and completeness. Commission staff also lead annual RA proceedings (R.09-10-032 is the most recent proceeding) to refine the RA program."[130]

Rule 23 (Bill-ready billing): Rule 23 provides formal definition of requests for services and processes between an IOU and CCAs (amongst others). Rate-ready billing is simply passing on the rate schedule of a particular customer for whom the IOU then calculates a bill. Bill-ready billing allows the CCA to calculate the amount owed for CCA service by a particular customer and passes that information onto the IOU.

Rule 24: Rule 24 refers to the CPUC definition of rules for Demand Response services between third-party providers, IOUs and electricity customers. It focuses on the relationship between IOUs and Demand Response providers.

San Francisco General Plan: The General Plan, according to the City's definition, is based on a creative consensus concerning social, economic, and environmental issues. "Adopted by the Planning Commission and approved by the Board of Supervisors, the General Plan serves as a basis for decisions that affect all aspects of our everyday lives from where we live and work to how we move about. It is both a strategic and long term document, broad in scope and specific in nature. It is implemented by decisions that direct the allocation of public resources and that shape private development. In short, the General Plan is the embodiment of the community's vision for the future of San Francisco.

State law requires that the General Plan address seven issues: land use, circulation, housing, conservation, open space, noise and safety.

The Charter approved by the voters in November 1995 requires that the Planning Commission recommend amendments to the General Plan to the Board of Supervisors for approval. This approval changes the Plan's status from an advisory to a mandatory document and underscores the importance of Referrals establishing with the General Plan prior to actions by the Board of Supervisors on a variety of actions."[131]

San Francisco Department of the Environment (SFE): The SFE is a City and County of San Francisco City department that is responsible for a wide range of programs that constitute a core part of the City & County's vision for sustainability to waste reduction and reuse.

San Francisco Public Utilities Commission (SFPUC): The SFPUC is the agency designated by the charter of the City and County of San Francisco to manage its utility services and operations. The SFPUC manages and operates CleanPowerSF.

Spinning Reserve: Spinning Reserve as defined by CAISO is the "on-line reserve capacity that is synchronized to the grid system and ready to meet electric demand within 10 minutes of a

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[130] This definition and links to the relevant sections of the Public Utilities Code and CPUC rulemakings and decisions, available from: http://www.cpuc.ca.gov/PUC/energy/Procurement/RA/

[131] This definition can be found in the introduction to the General Plan, available from: http://www.sf-planning.org/ftp/general_plan/index.htm

dispatch instruction by the ISO. Spinning Reserve is needed to maintain system frequency stability during emergency operating conditions and unforeseen load swings."[132]

Thermal Gateway (IP-enabled Thermostat): This refers to advanced offerings using smart thermostats (programmable controllable thermostats, which offer two-way communication) such as optimizing customer's heating or cooling schedules against variations in weather, price, and (for electric heating systems and all cooling systems) grid stability signals.

Vehicle to Building/Vehicle to Home (V2B/V2H): V2B and V2H refer to conditions in which a EV owner's home or business draws a portion of power for the building from the vehicle battery, at the customer's discretion and in observance of grid conditions and price signals.

Virtual Net Metering (VNM): Virtual Net Metering is a tariff arrangement that enables a multi-meter property owner to allocate a solar system's energy credits to other tenants. The VNM tariffs were first piloted under the CSI Multi-family Affordable Solar Housing Program (MASH) as a means of providing equal and direct benefits of the solar system to low income tenants in an affordable housing complex.

Virtual Power Plant (VPP): Virtual Power Plants are the coordination of demand and distributed generation resources to create the functionality of conventional grid supply.

"Water First": Water First refers to the policy of the SFPUC to privilege delivery of water services from the Hetch Hetchy system over electrical generation.

Western Electricity Coordinating Council (WECC): The Western Electricity Coordinating Council (WECC) is the Regional Entity responsible for coordinating and promoting Bulk Electric System reliability in the Western Interconnection. In addition, WECC provides an environment for coordinating the operating and planning activities of its members as set forth in the WECC Bylaws.

Western Systems Power Pool (WSPP): An agreement and an organization that creates power trading opportunities and allows WSPP members to manage power delivery and price risk.

[132] This definition can be found in the CAISO Settlements Guide, available from:: [http://www.caiso.com/docs/2003/09/08/2003090815135425649.pdf]

Appendix B: Taxable and Tax-Exempt Revenue Bonds

The following is taken directly from the Nixon Peabody analysis for the San Francisco Local Agency Formation Commission, submitted 10 November 2005 and prepared by Howard Golub.

Tax Exemption

CCSF has a wide degree of discretion regarding the use of Prop H Bond proceeds for renewable energy and conservation projects. However, the particular programs and users of facilities financed with the proceeds of Prop H Bonds will impact whether the interest on such bonds will be tax-exempt under the provisions of the Internal Revenue Code of 1986, as amended (the "Code").

In general, the "use" of facilities or items financed with the proceeds of Prop H Bonds by an entity other than a state or local government could result in such bonds constituting "private activity bonds." In that case, under Section 141 of the Code, the interest is not tax-exempt. Such use is often referred to as "private use". Private use is present where there is any type of privately held "legal entitlements" with respect to the financed facility. Nongovernmental ownership constitute private use as does long term contracts regarding the output to be produced by the facility. For example, a long term contract with a nongovernmental entity in which that entity agrees to purchase the energy output of a facility will generally constitute private use. In addition, contractual arrangements with nongovernmental entities regarding the operations and maintenance of a financed facility will constitute private use, unless such contractual arrangement is consistent with certain contract parameters approved by the Internal Revenue Service and described below.[133] Last, it should be noted that loans of the proceeds of

[133] Generally, bonds constitute private activity bonds if they meet either of the following tests:

b. Both the private business use test ("Private Use Test") AND the private security or payment test ("Private Payment Test" and together with the Private Use Test, the "Private Business Tests")); or

c. the private loan financing test "("Private Loan Test").

A bond issue meets the Private Use Test if more than 10 percent of the proceeds of the issue are to be used for any private business use. A bond issue meets the Private payment Test if the payment of the Implementation Plan of, or the interest on, more than 10 percent of the proceeds of such issue is (under the terms of such issue or any underlying arrangement) directly or indirectly --

A. secured by any interest in property used or to be used for a private business use, or payments in respect of such property, or

B. to be derived from payments (whether or not to the issuer) in respect of property, or borrowed money, used or to be used for a private business use.

For purposes of these tests, the term "private business use" means use (directly or indirectly) in a trade or business carried on by any person other than a governmental unit. Use as a member of the general public shall not be taken into account.

A bond issue meets the Private Loan Test if the amount of the proceeds of the issue which are to be used (directly or indirectly) to make or finance loans to persons other than governmental units exceeds the lesser of X) 5 percent of such proceeds, or Y) $5,000,000.

Prop H Bonds to a nongovernmental person or entity will generally cause the Prop H Bonds to fail to qualify for tax exemption.

Therefore, the facts regarding the ownership and operational structure of the financed facility will determine whether the bonds may be issued as taxable or tax-exempt. If CCSF (including SFPUC) owns and operates the facility, and if the power is delivered to customers of CCSF, then the facility will probably qualify for tax-exempt financing. It will also be possible to qualify for tax-exemption if CCSF contracts the management of that facility to a private party, provided the management contract requirements of Internal Revenue Service Revenue Procedure 97-13 (discussed below) are satisfied. On the other hand, if an ESP or other nongovernmental entity owns the financed facility or operates it pursuant to an arrangement that does not meet the requirements of Revenue Procedure 97-13. , it will probably not qualify for tax-exempt financing.

Prop H Bond proceeds can be used to fund energy conservation programs. However, to the extent such purpose is accomplished through a loan program wherein residential and business customers can make use of low interest loans in a CAA program to make energy conservation and efficiency improvements the loans of bond proceeds will cause the program to not qualify for tax exempt financing. Grants of bond proceeds could be made to individuals and businesses for conservation and other expenditures so long as an adequate project revenue stream is identified to secure and pay the bonds.

The fact that such Prop H Bonds are not tax-exempt does not in and of itself make such a program nonviable. Taxable rates on such Prop H Bonds could potentially still be substantially less that the rate of interest otherwise available on loans to residential and business customers. However, as pointed out in Chapter 5 of the Draft Implementation Plan there are other potential issues with such a program.

There are a number of ways Prop H Bonds could be used to finance renewable energy facilities. This can accomplished either in a structure wherein the CCSF (or other local government) undertakes acquisition, construction, ownership and management of the facilities or through structures wherein an energy service provides ("ESP") undertakes some or all of the activities. As noted, the tax-exempt status of Prop H Bonds varies depending on the structure.

Structures wherein an ESP takes on one or more of the roles present issues under the Private Business Tests discussed above. Any lease or other similar arrangement with an ESP would likely result in the Prop H Bonds being categorized as taxable "private activity bonds." Again, such a result would not prohibit the structure but rather would result in a higher cost for the program.

An alternative involving an ESP would be to utilize the management contract provisions under IRS Revenue Procedure 97-13 ("Rev Proc 97-13"). Rev Proc 97-13 describes safe harbor

contractual arrangements that may be made with nongovernmental entities to provide management, operations or other services with respect to a tax-exempt bond financed facility. Pursuant and subject to the requirements of Rev Proc 97-13, CCSF could engage an ESP to manage and operate renewable energy facilities financed with Prop H Bonds without the ESP's involvement being in violation of the Private Business Tests discussed above. As discussed

below, Rev Proc 97-13 would permit a contract between CCSF and an ESP for managing and operating a renewable energy facility financed and owned by CCSF for as long as 20 years. Rev Proc 97-13 defines "management contract" as "a management, service or incentive payment contract between a governmental person and a service provider under which the service provider provides services involving all, a portion of, or any function of, a facility."

Rev Proc 97-13 focuses generally on the term of the contract and the manner and amount of compensation paid to the service provider. Generally, the more fixed in periodic amount the compensation paid to the service provider, the longer the permitted term of contract. Contracts pursuant to which the service provider's compensation is 80% fixed may be as long as 20 years in the case of service contracts relating to "public utility property". On the other hand, contracts pursuant to which the service provider's compensation is 50% fixed may not have a term in excess of five years.

"Public utility property" is defined as property used predominantly in the trade or business of the furnishing or sale of (i) water, sewage disposal services, electrical energy, (ii) gas or steam through a local distribution system, and (iii) certain telephone services and communication services.

Thus, for example, if the ESP is paid an annual fee equal to 8x and is also paid additional compensation in each year based on a variable component not in excess of 2x, then the contract can be for as long as twenty years. In addition, the ESP may be paid a one-time incentive award during the term of the contract, equal to a single, stated dollar amount, under which compensation automatically increases when a gross revenue or expense target, but not both, is reached. Further, a contract that satisfies the requirements of Rev Proc 97-13 may be renewed at the expiration of its term.

The full text of Rev Proc 97-13 is attached to this memorandum as Appendix A.

A variety of the foregoing structures involving Prop H Bonds could be used in tandem. For example, the CCSF could enter into am energy supply contract with an ESP which would not directly require the use of Prop H Bonds. The CCSF could then issue Prop H Bonds to construct renewable energy facilities to be owned by the CCSF. The CCSF could then enter into a management contract permitted under Rev Proc 97-13 to manage and operate the facilities. Such a structure would allow for the Prop H Bonds to be tax-exempt.

Appendix A: Revenue Procedure 97-13, 1997-1 CB 632, January 10, 1997.

[Code Secs. 141 and 145]

Private activity bonds: Private business use: Qualified 501(c)(3) bonds: municipal service contract. A revenue procedure sets forth the conditions under which management service contracts will not result in private business use under Code Sec. 141(b). The procedures also apply to determinations of whether a management service contract causes the test in Code Sec. 145(a)(2)(B) to be met for qualified Code Sec. 501(c)(3) bonds. Rev. Proc. 93-19 is obsoleted. BACK REFERENCES: ¶7707.033, 7707.60, 7830.01 and 44,360.10.

SECTION 1. PURPOSE

The purpose of this revenue procedure is to set forth conditions under which a management contract does not result in private business use under §141(b) of the Internal Revenue Code of 1986. This revenue procedure also applies to determinations of whether a management contract causes the test in §145(a)(2)(B) of the 1986 Code to be met for qualified 501(c)(3) bonds.

SECTION 2. BACKGROUND .01 Private Business Use.

(1) Under §103(a) of the 1986 Code , gross income does not include interest on any state or local bond. Under §103(b)(1) of the 1986 Code , however, §103(a) of the 1986 Code does not apply to a private activity bond, unless it is a qualified bond under §141(e) of the 1986 Code. Section 141(a)(1) of the 1986 Code defines "private activity bond" as any bond issued as part of an issue that meets both the private business use and the private security or payment tests. Under §141(b)(1) of the 1986 Code , an issue generally meets the private business use test if more than 10 percent of the proceeds of the issue are to be used for any private business use. Under §141(b)(6)(A) of the 1986 Code , private business use means direct or indirect use in a trade or business carried on by any person other than a governmental unit. Section 145(a) of the 1986 Code also applies the private business use test of §141(b)(1) of the 1986 Code , with certain modifications.

(2) Corresponding provisions of the Internal Revenue Code of 1954 set forth the requirements for the exclusion from gross income of the interest on state or local bonds. For purposes of this revenue procedure, any reference to a 1986 Code provision includes a reference to the corresponding provision, if any, under the 1954 Code.

(3) Private business use can arise by owners Implementation Plan, actual or beneficial use of property pursuant to a lease, a management or incentive payment contract, or certain other arrangements. The Conference Report for the Tax Reform Act of 1986, provides as follows:

The conference agreement generally retains the present-law rules under which use by persons other than governmental units is determined for purposes of the trade or business use test. Thus, as under present law, the use of bond-financed property is treated as a use of bond proceeds. As under present law, a person may be a user of bond proceeds and bond-financed property as a result of (1) owners Implementation Plan or (2) actual or beneficial use of property pursuant to a lease, a management or incentive payment contract, or (3) any other arrangement such as a take-or-pay or other output-type contract.

2 H.R. Conf. Rep. No. 841, 99th Cong., 2d Sess. II-687-688, (1986) 1986-3 (Vol. 4) C.B. 687-688

(footnote omitted).

(4) A management contract that gives a nongovernmental service provider an owners Implementation Plan or leasehold interest in financed property is not the only situation in which a contract may result in private business use.

(5) Section 1.141-3(b)(4)(i) of the Income Tax Regulations provides, in general, that a management contract (within the meaning of §1.141-3(b)(4)(ii)) with respect to financed property may result in private business use of that property, based on all the facts and circumstances.

(6) Section 1.141-3(b)(4)(i) provides that a management contract with respect to financed property generally results in private business use of that property if the contract provides for compensation for services rendered with compensation based, in whole or in part, on a share of net profits from the operation of the facility.

(7) Section 1.141-3(b)(4)(iii) , in general, provides that certain arrangements generally are not treated as management contracts that may give rise to private business use. These are:

(a) Contracts for services that are solely incidental to the primary governmental function or functions of a financed facility (for example, contracts for janitorial, office equipment repair, hospital billing or similar services);

(b) The mere granting of admitting privileges by a hospital to a doctor, even if those privileges are conditioned on the provision of de minimis services, if those privileges are available to all qualified physicians in the area, consistent with the size and nature of its facilities;

(c) A contract to provide for the operation of a facility or system of facilities that consists predominantly of public utility property (as defined in §168(i)(10) of the 1986 Code), if the only compensation is the reimbursement of actual and direct expenses of the service provider and reasonable administrative overhead expenses of the service provider; and

(d) A contract to provide for services, if the only compensation is the reimbursement of the service provider for actual and direct expenses paid by the service provider to unrelated parties.

(8) Section 1.145-2(a) provides generally that §§1.141-0 through 1.141-15 apply to §145(a) of the 1986 Code .

(9) Section 1.145-2(b)(1) provides that in applying §§1.141-0 through 1.141-15 to §145(a) of the 1986 Code , references to governmental persons include section 501(c)(3) organizations with respect to their activities that do not constitute unrelated trades or businesses under §513(a) of the 1986 Code .

.02 Existing Advance Ruling Guidelines. Rev. Proc. 93-19 , 1993-1 C.B. 526, contains advance ruling guidelines for determining whether a management contract results in private business use under §141(b) of the 1986 Code .

SECTION 3. DEFINITIONS

.01 Adjusted gross revenues means gross revenues of all or a portion of a facility, less allowances for bad debts and contractual and similar allowances.

.02 Capitation fee means a fixed periodic amount for each person for whom the service provider or the qualified user assumes the responsibility to provide all needed services for a specified period so long as the quantity and type of services actually provided to covered persons varies substantially. For example, a capitation fee includes a fixed dollar amount payable per month to a medical service provider for each member of a health maintenance organization plan for whom the provider agrees to provide all needed medical services for a specified period. A capitation fee may include a variable component of up to 20 percent of the total capitation fee designed to protect the service provider against risks such as catastrophic loss.

.03 Management contract means a management, service, or incentive payment contract between a qualified user and a service provider under which the service provider provides services involving all, a portion of, or any function of, a facility. For example, a contract for the provision of management services for an entire hospital, a contract for management services for a specific department of a hospital, and an incentive payment contract for physician services to patients of a hospital are each treated as a management contract. See §§1.141-3(b)(4)(ii) and 1.145-2 .

.04 Penalties for terminating a contract include a limitation on the qualified user's right to compete with the service provider; a requirement that the qualified user purchase equipment, goods, or services from the service provider; and a requirement that the qualified user pay liquidated damages for cancellation of the contract. In contrast, a requirement effective on cancellation that the qualified user reimburse the service provider for ordinary and necessary expenses or a restriction on the qualified user against hiring key personnel of the service provider is generally not a contract termination penalty. Another contract between the service provider and the qualified user, such as a loan or guarantee by the service provider, is treated as creating a contract termination penalty if that contract contains terms that are not customary or arm's- length that could operate to prevent the qualified user from terminating the contract (for example, provisions under which the contract terminates if the management contract is terminated or that place substantial restrictions on the selection of a substitute service provider).

.05 Periodic fixed fee means a stated dollar amount for services rendered for a specified period of time. For example, a stated dollar amount per month is a periodic fixed fee. The stated dollar amount may automatically increase according to a specified, objective, external standard that is not linked to the output or efficiency of a facility. For example, the Consumer Price Index and similar external indices that track increases in prices in an area or increases in revenues or costs in an industry are objective external standards. Capitation fees and per-unit fees are not periodic fixed fees.

.06 Per-unit fee means a fee based on a unit of service provided specified in the contract or otherwise specifically determined by an independent third party, such as the administrator of the Medicare program, or the qualified user. For example, a stated dollar amount for each specified medical procedure performed, car parked, or passenger mile is a per- unit fee.

Separate billing arrangements between physicians and hospitals generally are treated as per-unit fee arrangements.

.07 Qualified user means any state or local governmental unit as defined in §1.103-1 or any instrumentality thereof. The term also includes a section 501(c)(3) organization if the financed property is not used in an unrelated trade or business under §513(a) of the 1986 Code . The term does not include the United States or any agency or instrumentality thereof.

.08 Renewal option means a provision under which the service provider has a legally enforceable right to renew the contract. Thus, for example, a provision under which a contract is automatically renewed for one-year periods absent cancellation by either party is not a renewal option (even if it is expected to be renewed).

.09 Service provider means any person other than a qualified user that provides services under a contract to, or for the benefit of, a qualified user.

SECTION 4. SCOPE

This revenue procedure applies when, under a management contract, a service provider provides management or other services involving property financed with proceeds of an issue of state or local bonds subject to §141 or §145(a)(2)(B) of the 1986 Code .

SECTION 5. OPERATING GUIDELINES FOR MANAGEMENT CONTRACTS

.01 In general. If the requirements of section 5 of this revenue procedure are satisfied, the management contract does not itself result in private business use. In addition, the use of financed property, pursuant to a management contract meeting the requirements of section 5 of this revenue procedure, is not private business use if that use is functionally related and subordinate to that management contract and that use is not, in substance, a separate contractual agreement (for example, a separate lease of a portion of the financed property). Thus, for example, exclusive use of storage areas by the manager for equipment that is necessary for it to perform activities required under a management contract that meets the requirements of section 5 of this revenue procedure, is not private business use.

.02 General compensation requirements.

(1) In general. The contract must provide for reasonable compensation for services rendered with no compensation based, in whole or in part, on a share of net profits from the operation of the facility. Reimbursement of the service provider for actual and direct expenses paid by the service provider to unrelated parties is not by itself treated as compensation.

(2) Arrangements that generally are not treated as net profits arrangements. For purposes of §1.141-3(b)(4)(i) and this revenue procedure, compensation based on:

(a) A percentage of gross revenues (or adjusted gross revenues) of a facility or a percentage of expenses from a facility, but not both;

b. (b) A capitation fee; or

c. (c) A per-unit fee

is generally not considered to be based on a share of net profits.

(3) Productivity reward. For purposes of §1.141-3(b)(4)(i) and this revenue procedure, a productivity reward equal to a stated dollar amount based on increases or decreases in gross revenues (or adjusted gross revenues), or reductions in total expenses (but not both increases in gross revenues (or adjusted gross revenues) and reductions in total expenses) in any annual period during the term of the contract, generally does not cause the compensation to be based on a share of net profits.

(4) Revision of compensation arrangements. In general, if the compensation arrangements of a management contract are materially revised, the requirements for compensation arrangements under section 5 of this revenue procedure are retested as of the date of the material revision, and the management contract is treated as one that was newly entered into as of the date of the material revision.

.03 Permissible Arrangements. The management contract must be described in

(1) 95 percent periodic fixed fee arrangements. At least 95 percent of the compensation for services for each annual period during the term of the contract is based on a periodic fixed fee. The term of the contract, including all renewal options, must not exceed the lesser of 80 percent of the reasonably expected useful life of the financed property and 15 years. For purposes of this section 5.03(1) , a fee does not fail to qualify as a periodic fixed fee as a result of a one-time incentive award during the term of the contract under which compensation automatically increases when a gross revenue or expense target (but not both) is reached if that award is equal to a single, stated dollar amount.

(2) 80 percent periodic fixed fee arrangements. At least 80 percent of the compensation for services for each annual period during the term of the contract is based on a periodic fixed fee. The term of the contract, including all renewal options, must not exceed the lesser of 80 percent of the reasonably expected useful life of the financed property and 10 years. For purposes of this section 5.03(2) , a fee does not fail to qualify as a periodic fixed fee as a result of a one-time incentive award during the term of the contract under which compensation automatically increases when a gross revenue or expense target (but not both) is reached if that award is equal to a single, stated dollar amount.

(3) Special rule for public utility property. If all of the financed property subject to the contract is a facility or system of facilities consisting of predominantly public utility property (as defined in §168(i)(10) of the 1986 Code), then “20 years” is substituted--

d. (a) For “15 years” in applying section 5.03(1) of this revenue procedure; and

e. (b) For “10 years” in applying section 5.03(2) of this revenue procedure.

(4) 50 percent periodic fixed fee arrangements. Either at least 50 percent of the compensation for services for each annual period during the term of the contract is based on a periodic fixed fee

or all of the compensation for services is based on a capitation fee or a combination of a capitation fee and a periodic fixed fee. The term of the contract, including all renewal options, must not exceed 5 years. The contract must be terminable by the qualified user on reasonable notice, without penalty or cause, at the end of the third year of the contract term.

(5) Per-unit fee arrangements in certain 3-year contracts. All of the compensation for services is based on a per-unit fee or a combination of a per-unit fee and a periodic fixed fee. The term of the contract, including all renewal options, must not exceed 3 years. The contract must be terminable by the qualified user on reasonable notice, without penalty or cause, at the end of the second year of the contract term.

(6) Percentage of revenue or expense fee arrangements in certain 2-year contracts. All the compensation for services is based on a percentage of fees charged or a combination of a per-unit fee and a percentage of revenue or expense fee. During the start-up period, however, compensation may be based on a percentage of either gross revenues, adjusted gross revenues, or expenses of a facility. The term of the contract, including renewal options, must not exceed 2 years. The contract must be terminable by the qualified user on reasonable notice, without penalty or cause, at the end of the first year of the contract term. This section 5.03(6) applies only to:

(a) Contracts under which the service provider primarily provides services to third parties (for example, radiology services to patients); and

(b) Management contracts involving a facility during an initial start-up period for which there have been insufficient operations to establish a reasonable estimate of the amount of the annual gross revenues and expenses (for example, a contract for general management services for the first year of operations).

.04 No Circumstances Substantially Limiting Exercise of Rights.

(1) In general. The service provider must not have any role or relationship with the qualified user that, in effect, substantially limits the qualified user's ability to exercise its rights, including cancellation rights, under the contract, based on all the facts and circumstances.

(2) Safe harbor. This requirement is satisfied if:

(a) Not more than 20 percent of the voting power of the governing body of the qualified user in the aggregate is vested in the service provider and its directors, officers, shareholders, and employees;

(b) Overlapping board members do not include the chief executive officers of the service provider or its governing body or the qualified user or its governing body; and

(c) The qualified user and the service provider under the contract are not related parties, as defined in §1.150-1(b).

SECTION 6. EFFECT ON OTHER DOCUMENTS

Rev. Proc. 93-19 , 1993-1 C.B. 526, is made obsolete on the effective date of this revenue procedure.

SECTION 7. EFFECTIVE DATE

This revenue procedure is effective for any management contract entered into, materially modified, or extended (other than pursuant to a renewal option) on or after May 16, 1997. In addition, an issuer may apply this revenue procedure to any management contract entered into prior to May 16, 1997.

Appendix C: Relevant Language from SB 790

SB790 (Leno, 2011) made a number of changes to state law designed to enhance the ability of Community Choice Aggregators to implement programs, and to prohibit certain kinds of anti-competitive behavior by investor-owned utilities like PG&E. The CPUC has not yet completed its process of interpreting SB790. Progress in this CPUC proceeding is analyzed in Section 14(c) of this report, entitled "State Regulatory Factors – California Public Utilities Commission Proceedings and Resolutions." Below are listed sections of SB 790 relevant to CleanPowerSF deployment.

Interim Procurement Authorization for System/Local Reliability Needs to be Charged as With Departing Load

SEC. 4. Section 365.1 of the Public Utilities Code was amended relative to Resource Adequacy to ensure that the CPUC can authorize, in the situation of a contract with a third-party, or orders, in the situation of utility-owned generation, an electrical corporation to obtain generation resources that the commission determines are needed to meet system or local area reliability needs for the benefit of all customers in the electrical corporation's distribution service territory, the net capacity costs of those generation resources would be allocated on a fully nonbypassable basis consistent with departing load provisions as determined by the commission, to all of the following:

a) Bundled service customers of the electrical corporation
b) Customers that purchase electricity through a direct transaction with other providers
c) Customers of community choice aggregators.

System or Local Reliability Need Cost Allocation Fairness

(B) If the commission authorizes or orders an electrical corporation to obtain generation resources pursuant to subparagraph (A), the commission shall ensure that those resources meet a system or local reliability need in a manner that benefits all customers of the electrical corporation. The commission shall allocate the costs of those generation resources to ratepayers in a manner that is fair and equitable to all customers, whether they receive electric service from the electrical corporation, a community choice aggregator, or an electric service provider.

Payment and Definition of Net Capacity Costs

(C) The resource adequacy benefits of generation resources acquired by an electrical corporation pursuant to subparagraph (A) shall be allocated to all customers who pay their net capacity costs. Net capacity costs shall be determined by subtracting the energy and ancillary services value of the resource from the total costs paid by the electrical corporation pursuant to a

contract with a third-party or the annual revenue requirement for the resource if the electrical corporation directly owns the resource. An energy auction shall not be required as a condition for applying this allocation, but may be allowed as a means to establish the energy and ancillary services value of the resource for purposes of determining the net costs of capacity to be recovered from customers pursuant to this paragraph, and the allocation of the net capacity costs of contracts with third parties shall be allowed for the terms of those contracts.

(D) It is the intent of the Legislature, in enacting this paragraph, to provide additional guidance to the commission with respect to the implementation of subdivision (g) of Section 380, as well as to ensure that the customers to whom the net costs and benefits of capacity are allocated are not required to pay for the cost of electricity they do not consume.

(d) (1) If the commission approves a centralized resource adequacy mechanism pursuant to subdivisions (h) and (i) of Section 380, upon the implementation of the centralized resource adequacy mechanism the requirements of paragraph (2) of subdivision (c) shall be suspended. If the commission later orders that electrical corporations cease procuring capacity through a centralized resource adequacy mechanism, the requirements of paragraph (2) of subdivision (c) shall again apply.

(2) If the use of a centralized resource adequacy mechanism is authorized by the commission and has been implemented as set forth in paragraph (1), the net capacity costs of generation resources that the commission determines are required to meet urgent system or urgent local grid reliability needs, and that the commission authorizes to be procured outside of the Section 380 or Section 454.5 processes, shall be recovered according to the provisions of paragraph (2) of subdivision (c).

(3) Nothing in this subdivision supplants the resource adequacy requirements of Section 380 or the resource procurement procedures established in Section 454.5.

Only the State May Alter CCA Responsibility for All Generation Procurement Activities

366.2. (a) (5) A community choice aggregator shall be solely responsible for all generation procurement activities on behalf of the community choice aggregator's customers, except where other generation procurement arrangements are expressly authorized by statute.

Opt-Out Rules for Customers Who Move In Or Out of CCA Jurisdiction

366.2(c)(2) Under community choice aggregation…If an existing customer moves the location of their electric service within the jurisdiction of the community choice aggregator, the customer shall retain the same subscriber status as prior to the move, unless the customer affirmatively changes their subscriber status. If the customer is moving from outside to inside the jurisdiction of the community choice aggregator, customer participation shall not require a positive written

declaration, but the customer shall be informed of their right to elect not to receive service through the community choice aggregator.

Calculation of CCA costs to be Offset from Benefits Remaining with Bundled Service Customers

366.2 (g) Estimated net unavoidable electricity costs paid by the customers of a community choice aggregator shall be reduced by the value of any benefits that remain with bundled service customers, unless the customers of the community choice aggregator are allocated a fair and equitable share of those benefits.

Nonbypassable Charges only for Goods, Services or Programs that Benefit CCA Customers

366.2 (k) (1) Except for nonbypassable charges imposed by the commission pursuant to subdivisions (d), (e), (f), and (h), and programs authorized by the commission to provide broader statewide or regional benefits to all customers, electric service customers of a community choice aggregator shall not be required to pay nonbypassable charges for goods, services, or programs that do not benefit either, or where applicable, both, the customer and the community choice aggregator serving the customer.

Encourage CCA Generation Capacity Development

SEC. 6. Section 380 of the Public Utilities Code is amended to read:

380. (a) The commission, in consultation with the Independent System Operator, shall establish resource adequacy requirements for all load-serving entities.

(b) In establishing resource adequacy requirements, the commission shall achieve all of the following objectives:

(1) Facilitate development of new generating capacity and retention of existing generating capacity that is economic and needed.

(2) Equitably allocate the cost of generating capacity and prevent shifting of costs between customer classes.

(3) Minimize enforcement requirements and costs.

(4) Maximize the ability of community choice aggregators to determine the generation resources used to serve their customers.

Load Serving Entity (LSE) Requirements & WECC

(c) Each load-serving entity shall maintain physical generating capacity adequate to meet its load requirements, including, but not limited to, peak demand and planning and operating reserves. The generating capacity shall be deliverable to locations and at times as may be necessary to provide reliable electric service.

(d) Each load-serving entity shall, at a minimum, meet the most recent minimum planning reserve and reliability criteria approved by the Board of Trustees of the Western Systems Coordinating Council or the Western Electricity Coordinating Council.

Equal Responsibility for LSE RPS and RA

(e) The commission shall implement and enforce the resource adequacy requirements established in accordance with this section in a nondiscriminatory manner. Each load-serving entity shall be subject to the same requirements for resource adequacy and the renewables portfolio standard program that are applicable to electrical corporations pursuant to this section, or otherwise required by law, or by order or decision of the commission. The commission shall exercise its enforcement powers to ensure compliance by all load-serving entities.

(f) The commission shall require sufficient information, including, but not limited to, anticipated load, actual load, and measures undertaken by a load-serving entity to ensure resource adequacy, to be reported to enable the commission to determine compliance with the resource adequacy requirements established by the commission.

PG&E Recovery for RA Including System and Local Reliability through Nonbypassable Charge

(g) An electrical corporation's costs of meeting resource adequacy requirements, including, but not limited to, the costs associated with system reliability and local area reliability, that are determined to be reasonable by the commission, or are otherwise recoverable under a procurement plan approved by the commission pursuant to Section 454.5, shall be fully recoverable from those customers on whose behalf the costs are incurred, as determined by the commission, at the time the commitment to incur the cost is made, on a fully nonbypassable basis, as determined by the commission. The commission shall exclude any amounts authorized to be recovered pursuant to Section 366.2 when authorizing the amount of costs to be recovered from customers of a community choice aggregator or from customers that purchase electricity through a direct transaction pursuant to this subdivision.

(h) The commission shall determine and authorize the most efficient and equitable means for achieving all of the following:

(4) Ensuring that the cost of generating capacity is allocated equitably.

(5) Ensuring that community choice aggregators can determine the generation resources used to serve their customers.

Centralized Resource Adequacy Mechanism to Facilitate CCA Control of Generation

380 (i) In making the determination pursuant to subdivision (h), the commission may consider a centralized resource adequacy mechanism among other options.

Energy Efficiency Funds Administration

Under SB 790, the CPUC must allow a registered CCA to elect to become the administrator of funds from electric service customers through a nonbypassable charge excluding statewide and regional programs, with CCA certification and verification provisions:

> 381.1. (d) The commission shall establish an impartial process for making the determination of whether a third-party, including a community choice aggregator, may become administrators for cost-effective energy efficiency and conservation programs pursuant to subdivision (a), and shall not delegate or otherwise transfer the commission's authority to make this determination for a community choice aggregator to an electrical corporation.
>
> (e) The impartial process established by the commission shall allow a registered community choice aggregator to elect to become the administrator of funds collected from the aggregator's electric service customers and collected through a nonbypassable charge authorized by the commission, for cost-effective energy efficiency and conservation programs, except those funds collected for broader statewide and regional programs authorized by the commission.
>
> (f) A community choice aggregator electing to become an administrator shall submit a plan, approved by its governing board, to the commission for the administration of cost-effective energy efficiency and conservation programs for the aggregator's electric service customers that includes funding requirements, a program description, a cost-effectiveness analysis, and the duration of the program. The commission shall certify that the plan submitted does all of the following:
>
> (1) Is consistent with the goals of the programs established pursuant to this section and Section 399.4.

(2) Advances the public interest in maximizing cost-effective electricity savings and related benefits.

(3) Accommodates the need for broader statewide or regional programs.

(4) Includes audit and reporting requirements consistent with the audit and reporting requirements established by the commission pursuant to this section.

(5) Includes evaluation, measurement, and verification protocols established by the community choice aggregator.

(6) Includes performance metrics regarding the community choice aggregator's achievement of the objectives listed in paragraphs (1) to (5), inclusive, and in any previous plan.

(g) If the commission does not certify the plan for the administration of cost-effective energy efficiency and conservation programs submitted by a community choice aggregator pursuant to subdivision (f), the community choice aggregator electing to administer these programs may submit an amended plan to the commission for certification. No moneys may be released to a community choice aggregator unless the commission certifies the plan pursuant to subdivision (f).

End-Use Meter Data Access

SB 790 modified the terms regarding CCA access to PG&E End-Use Meter Data:

> Sec 366.2(c)(13)(a) All electrical corporations shall cooperate fully with any community choice aggregators that investigate, pursue, or implement community choice aggregation programs. Cooperation shall include providing the entities with appropriate billing and electrical load data, including, but not limited to, electrical consumption data as defined in Section 8380 and other data detailing electricity needs and patterns of usage, as determined by the commission, and in accordance with procedures established by the commission. The commission shall exercise its authority pursuant to Chapter 11 (commencing with Section 2100) to enforce the requirements of this paragraph when it finds that the requirements of this paragraph have been violated.

12-Month PG&E Stay Limit Non-Late Opt-Outs

SB 790 placed a twelve month limit on the number of months PG&E may require customers to remain with PG&E after opt-out:

366.2(c)(13)(a)Customers that return to the electrical corporation for procurement services shall be subject to the same terms and conditions as are applicable to other returning direct access customers from the same class, as determined by the commission, as authorized by the commission pursuant to this code or any other provision of law, except that those customers shall be subject to no more than a 12-month stay requirement with the electrical corporation.

Direct Access for Certain Kinds of Public Housing and Elderly Housing

SB 790 authorized limited Direct Access for certain kinds of nonprofit organizations serving poor and elderly needs:

395.5. (a) For purposes of this section, the following terms have the following meanings:

(1) "Nonprofit charitable organization" means any charitable organization described in Section 501(c)(3) of the federal Internal Revenue Code that has as its primary purpose serving the needs of the poor or elderly.

(2) "Electric commodity" means electricity used by the customer or a supply of electricity available for use by the customer, and does not include services associated with the transmission and distribution of electricity.

(b) Notwithstanding Section 80110 of the Water Code, a nonprofit charitable organization may acquire electric commodity service through a direct transaction with an electric service provider if electric commodity service is donated free of charge without compensation.

Appendix D - Selected Financial Incentives (Federal, State and Local)

The following is a selection of financing incentives from the federal, state and local entities. These summaries come from the online DSire database.[134] Where they are applicable to customers, they will be factored into the LPI Financial Model.

Federal Incentives

Below are quoted summaries referring to federal incentives for renewable energy and efficiency that may lower the cost of CleanPowerSF, to the extent that private capital is used to help finance the deployment.

Investment Tax Credit

"The American Recovery and Reinvestment Act of 2009 allows taxpayers eligible for the federal renewable electricity production tax credit (PTC)** to take the federal business energy investment tax credit (ITC) or to receive a grant from the U.S. Treasury Department instead of taking the PTC for new installations. The new law also allows taxpayers eligible for the business ITC to receive a grant from the U.S. Treasury Department instead of taking the business ITC for new installations. The grant is only available to systems where construction begins prior to December 31, 2011. The Treasury Department issued Notice 2009-52 in June 2009, giving limited guidance on how to take the federal business ITC instead of the federal renewable electricity production tax credit.

The federal business energy investment tax credit available under 26 USC § 48 was expanded significantly by the *Energy Improvement and Extension Act of 2008* (H.R. 1424), enacted in October 2008. This law extended the duration -- by eight years -- of the existing credits for solar energy, fuel cells and microturbines; increased the credit amount for fuel cells; established new credits for small wind-energy systems, geothermal heat pumps, and combined heat and power (CHP) systems; allowed utilities to use the credits; and allowed taxpayers to take the credit against the alternative minimum tax (AMT), subject to certain limitations. The credit was further expanded by *The American Recovery and Reinvestment Act of 2009*, enacted in February 2009.

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[134] "Established in 1995, the Database of State Incentives for Renewables & Efficiency (DSIRE) is an ongoing project of the North Carolina Solar Center and the Interstate Renewable Energy Council (IREC), Inc. It is funded by the U.S. Department of Energy's Office of Energy Efficiency and Renewable Energy (EERE), primarily through the Office of Planning, Budget and Analysis (PBA). The site is administered by the National Renewable Energy Laboratory (NREL), which is operated for DOE by the Alliance for Sustainable Energy, LLC."
Available from: http://www.dsireusa.org/incentives/index.cfm?re=0&ee=0&spv=0&st=0&srp=1&state=CA

In general, credits are available for eligible systems placed in service on or before December 31, 2016:

- **Solar.** The credit is equal to 30% of expenditures, with no maximum credit. Eligible solar energy property includes equipment that uses solar energy to generate electricity, to heat or cool (or provide hot water for use in) a structure, or to provide solar process heat. Hybrid solar lighting systems, which use solar energy to illuminate the inside of a structure using fiber-optic distributed sunlight, are eligible. Passive solar systems and solar pool-heating systems are *not* eligible.
- **Fuel Cells.** The credit is equal to 30% of expenditures, with no maximum credit. However, the credit for fuel cells is capped at $1,500 per 0.5 kilowatt (kW) of capacity. Eligible property includes fuel cells with a minimum capacity of 0.5 kW that have an electricity-only generation efficiency of 30% or higher. (Note that the credit for property placed in service before October 4, 2008, is capped at $500 per 0.5 kW.)
- **Small Wind Turbines.*** The credit is equal to 30% of expenditures, with no maximum credit for small wind turbines placed in service after December 31, 2008. Eligible small wind property includes wind turbines up to 100 kW in capacity. (In general, the maximum credit is $4,000 for eligible property placed in service after October 3, 2008, and before January 1, 2009. *The American Recovery and Reinvestment Act of 2009* removed the $4,000 maximum credit limit for small wind turbines.)
- **Geothermal Systems.*** The credit is equal to 10% of expenditures, with no maximum credit limit stated. Eligible geothermal energy property includes geothermal heat pumps and equipment used to produce, distribute or use energy derived from a geothermal deposit. For electricity produced by geothermal power, equipment qualifies only up to, but not including, the electric transmission stage. For geothermal heat pumps, this credit applies to eligible property placed in service after October 3, 2008. Note that the credit for geothermal property, with the exception of geothermal heat pumps, has no stated expiration date.
- **Microturbines.** The credit is equal to 10% of expenditures, with no maximum credit limit stated (explicitly). The credit for microturbines is capped at $200 per kW of capacity. Eligible property includes microturbines up to two megawatts (MW) in capacity that have an electricity-only generation efficiency of 26% or higher.
- **Combined Heat and Power (CHP).*** The credit is equal to 10% of expenditures, with no maximum limit stated. Eligible CHP property generally includes systems up to 50 MW

in capacity that exceed 60% energy efficiency, subject to certain limitations and reductions for large systems. The efficiency requirement does not apply to CHP systems that use biomass for at least 90% of the system's energy source, but the credit may be reduced for less-efficient systems. This credit applies to eligible property placed in service after October 3, 2008.

In general, the original use of the equipment must begin with the taxpayer, or the system must be constructed by the taxpayer. The equipment must also meet any performance and quality standards in effect at the time the equipment is acquired. The energy property must be operational in the year in which the credit is first taken.

Significantly, *The American Recovery and Reinvestment Act of 2009* repealed a previous restriction on the use of the credit for eligible projects also supported by "subsidized energy financing." For projects placed in service after December 31, 2008, this limitation no longer applies. Businesses that receive other incentives are advised to consult with a tax professional regarding how to calculate this federal tax credit.

** The American Recovery and Reinvestment Act of 2009, which allows PTC-eligible facilities to use the 30% ITC, has implications for some technologies that were already potentially eligible for either incentive in some form. Certain geothermal and open- or closed- loop biomass systems (which may include certain types of biomass CHP projects) now qualify for a 30% tax credit through December 31, 2013, the in-service deadline for these technologies under the PTC. Wind-energy systems of all sizes -- not only systems of 100 kW or less -- also now qualify for the 30% ITC through the wind-energy PTC in-service deadline of December 31, 2012. Applicants should refer to the eligibility definition contained in the PTC to determine if and how their project might qualify for this treatment."*

Production Tax Credit

"The American Recovery and Reinvestment Act of 2009 (H.R. 1) allows taxpayers eligible for the federal renewable electricity production tax credit (PTC) to take the federal business energy investment tax credit (ITC) or to receive a grant from the U.S. Treasury Department instead of taking the PTC for new installations. The grant is only available to systems where construction began prior to December 31, 2011. The new law also allows taxpayers eligible for the business ITC to receive a grant from the U.S. Treasury Department instead of taking the business ITC for new installations. The Treasury Department issued Notice 2009-52 in June 2009, giving limited guidance on how to take the federal business energy investment tax credit instead of the federal renewable electricity production tax credit.

The federal renewable electricity production tax credit (PTC) is a per-kilowatt-hour tax credit for electricity generated by qualified energy resources and sold by the taxpayer to an unrelated person during the taxable year. Originally enacted in 1992, the PTC has been renewed and expanded numerous times, most recently by H.R. 1424 (Div. B, Sec. 101 & 102) in October 2008 and again by H.R. 1 (Div. B, Section 1101 & 1102) in February 2009.

The October 2008 legislation extended the in-service deadlines for all qualifying renewable technologies; expanded the list of qualifying resources to include marine and hydrokinetic resources, such as wave, tidal, current and ocean thermal; and made changes to the definitions of several qualifying resources and facilities. The effective dates of these changes vary. Marine and hydrokinetic energy production is eligible as of the date the legislation was enacted (October 3, 2008), as is the incremental energy production associated with expansions of biomass facilities. A change in the definition of "trash facility" no longer requires that such facilities burn trash, and is also effective immediately. One further provision redefining the term "non-hydroelectric dam," took effect December 31, 2008.

The February 2009 legislation revised the credit by: (1) extending the in-service deadline for most eligible technologies by three years (two years for marine and hydrokinetic resources); and (2) allowing facilities that qualify for the PTC to opt instead to take the federal business energy investment credit (ITC) or an equivalent cash grant from the U.S. Department of Treasury. The ITC or grant for PTC-eligible technologies is generally equal to 30% of eligible costs.*

The tax credit amount is 1.5¢/kWh in 1993 dollars (indexed for inflation) for some technologies, and half of that amount for others. The rules governing the PTC vary by resource and facility type. The table below outlines two of the most important characteristics of the tax credit -- in-service deadline and credit amount -- as they apply to different facilities. The table includes changes made by H.R. 1, in February 2009, and the inflation-adjusted credit amounts are current for the 2012 calendar year. (See the history section below for information on prior rules.)

Resource Type	**In-Service Deadline**	**Credit Amount**
Wind	December 31, 2012	2.2¢/kWh
Closed-Loop Biomass	December 31, 2013	2.2¢/kWh
Open-Loop Biomass	December 31, 2013	1.1¢/kWh
Geothermal Energy	December 31, 2013	2.2¢/kWh

Landfill Gas	December 31, 2013	1.1¢/kWh
Municipal Solid Waste	December 31, 2013	1.1¢/kWh
Qualified Hydroelectric	December 31, 2013	1.1¢/kWh
Marine and Hydrokinetic (150 kW or larger)**	December 31, 2013	1.1¢/kWh

The duration of the credit is generally 10 years after the date the facility is placed in service, but there are two exceptions:

- Open-loop biomass, geothermal, small irrigation hydro, landfill gas and municipal solid waste combustion facilities placed into service after October 22, 2004, and before enactment of the *Energy Policy Act of 2005*, on August 8, 2005, are only eligible for the credit for a five-year period.
- Open-loop biomass facilities placed in service before October 22, 2004, are eligible for a five-year period beginning January 1, 2005.

In addition, the tax credit is reduced for projects that receive other federal tax credits, grants, tax-exempt financing, or subsidized energy financing. The credit is claimed by completing Form 8835, "Renewable Electricity Production Credit," and Form 3800, "General Business Credit." For more information, contact IRS Telephone Assistance for Businesses at 1-800-829-4933.

History

As originally enacted by the *Energy Policy Act of 1992*, the PTC expired in July 1999, and was subsequently extended through the end of 2001 by the *Ticket to Work and Work Incentives Improvement Act of 1999* in December 1999. The PTC expired again at the end of 2001, but was then extended again in March 2002 as part of the *Job Creation and Worker Assistance Act of 2002* (H.R. 3090). The PTC then expired yet again at the end of 2003 and was not renewed until October 2004, as part of H.R. 1308, the *Working Families Tax Relief Act of 2004*, which extended the credit through December 31, 2005. The *Energy Policy Act of 2005* (H.R. 6) modified the credit and extended it through December 31, 2007. In December 2006, the PTC was extended for yet another year -- through December 31, 2008 -- by the *Tax Relief and Health Care Act of 2006* (H.R. 6111).

The American Jobs Creation Act of 2004 (H.R. 4520), expanded the PTC to include additional eligible resources -- geothermal energy, open-loop biomass, solar energy, small irrigation

power, landfill gas and municipal solid waste combustion -- in addition to the formerly eligible wind energy, closed-loop biomass, and poultry-waste energy resources. The *Energy Policy Act of 2005* (EPAct 2005) further expanded the credit to certain hydropower facilities. As a result of EPAct 2005, solar facilities placed into service after December 31, 2005, are no longer eligible for this incentive. Solar facilities placed in-service during the roughly one-year window in which solar was eligible are permitted to take the full credit for five years.

**Prior to H.R. 1, geothermal facilities were already eligible for a 10% tax credit under the energy ITC (26 USC § 48). However, the new legislation permits all PTC-eligible technologies, including geothermal electric facilities, to take a 30% tax credit (or grant) in lieu of the PTC. Recent guidance from the IRS regarding the Treasury grants in lieu of tax credits indicates that geothermal facilities that qualify for the PTC are eligible for either the 30% investment tax credit or the 10% tax credit, but not both. The window for the 30% tax credit runs through 2013, the in-service deadline for the PTC, while the 10% tax credit under the section 48 ITC does not have an expiration date.*

***H.R. 1424 added marine and hydrokinetic energy as eligible resources and removed "small irrigation power" as an eligible resource effective October 3, 2008. However, the definition of marine and hydrokinetic energy encompasses the resources that would have formerly been defined as small irrigation power facilities. Thus H.R. 1424 effectively extended the in-service deadline for small irrigation power facilities by 3 years, from the end of 2008 until the end of 2011 (since extended again through 2013."*

Residential Renewable Energy Tax Credit

" The American Recovery and Reinvestment Act of 2009 does not allow taxpayers eligible for the residential renewable energy tax credit to receive a U.S. Treasury Department grant instead of taking this credit.

Established by the Energy Policy Act of 2005, the federal tax credit for residential energy property initially applied to solar-electric systems, solar water heating systems and fuel cells. The Energy Improvement and Extension Act of 2008 (H.R. 1424) extended the tax credit to small wind-energy systems and geothermal heat pumps, effective January 1, 2008. Other key revisions included an eight-year extension of the credit to December 31, 2016; the ability to take the credit against the alternative minimum tax; and the removal of the $2,000 credit limit for solar-electric systems beginning in 2009. The credit was further enhanced in February 2009 by The American Recovery and Reinvestment Act of 2009 (H.R. 1: Div. B, Sec. 1122, p. 46), which removed the maximum credit amount for all eligible technologies (except fuel cells) placed in service after 2008.

A taxpayer may claim a credit of 30% of qualified expenditures for a system that serves a dwelling unit located in the United States that is owned and used as a residence by the taxpayer. Expenditures with respect to the equipment are treated as made when the installation is completed. If the installation is at a new home, the "placed in service" date is the date of occupancy by the homeowner. Expenditures include labor costs for on-site preparation, assembly or original system installation, and for piping or wiring to interconnect a system to the home. If the federal tax credit exceeds tax liability, the excess amount may be carried forward to the succeeding taxable year. The excess credit may be carried forward until 2016, but it is unclear whether the unused tax credit can be carried forward after then. The maximum allowable credit, equipment requirements and other details vary by technology, as outlined below.

Solar-electric property

- There is no maximum credit for systems placed in service after 2008. The maximum credit is $2,000 for systems placed in service before January 1, 2009.
- Systems must be placed in service on or after January 1, 2006, and on or before December 31, 2016.
- The home served by the system does not have to be the taxpayer's principal residence.

Solar water-heating property

- There is no maximum credit for systems placed in service after 2008. The maximum credit is $2,000 for systems placed in service before January 1, 2009.
- Systems must be placed in service on or after January 1, 2006, and on or before December 31, 2016.
- Equipment must be certified for performance by the Solar Rating Certification Corporation (SRCC) or a comparable entity endorsed by the government of the state in which the property is installed.
- At least half the energy used to heat the dwelling's water must be from solar in order for the solar water-heating property expenditures to be eligible.
- The tax credit does not apply to solar water-heating property for swimming pools or hot tubs.
- The home served by the system does not have to be the taxpayer's principal residence.

Fuel cell property

- The maximum credit is $500 per half kilowatt (kW).
- Systems must be placed in service on or after January 1, 2006, and on or before December 31, 2016.
- The fuel cell must have a nameplate capacity of at least 0.5 kW of electricity using an electrochemical process and an electricity-only generation efficiency greater than 30%.
- In case of joint occupancy, the maximum qualifying costs that can be taken into account by all occupants for figuring the credit is $1,667 per 0.5 kW. This does not apply to married individuals filing a joint return. The credit that may be claimed by each individual is proportional to the costs he or she paid.
- The home served by the system must be the taxpayer's principal residence.

Small wind-energy property

- There is no maximum credit for systems placed in service after 2008. The maximum credit is $500 per 0.5 kW, not to exceed $4,000, for systems placed in service in 2008.
- Systems must be placed in service on or after January 1, 2008, and on or before December 31, 2016.
- The home served by the system does not have to be the taxpayer's principal residence.

Geothermal heat pumps

- There is no maximum credit for systems placed in service after 2008. The maximum credit is $2,000 for systems placed in service in 2008.
- Systems must be placed in service on or after January 1, 2008, and on or before December 31, 2016.
- The geothermal heat pump must meet federal Energy Star criteria.
- The home served by the system does not have to be the taxpayer's principal residence.

Significantly, The American Recovery and Reinvestment Act of 2009 repealed a previous limitation on the use of the credit for eligible projects also supported by "subsidized energy

financing." For projects placed in service after December 31, 2008, this limitation no longer applies.

History
The federal Energy Policy Act of 2005 established a 30% tax credit (up to $2,000) for the purchase and installation of residential solar electric and solar water heating property and a 30% tax credit (up to $500 per 0.5 kW) for fuel cells. Initially scheduled to expire at the end of 2007, the tax credits were extended through December 31, 2008, by the Tax Relief and Health Care Act of 2006.

In October 2008, the Energy Improvement and Extension Act of 2008 extended the tax credits once again (until December 31, 2016), and a new tax credit for small wind-energy systems and geothermal heat pump systems was created. In February 2009, The American Recovery and Reinvestment Act of 2009 removed the maximum credit amount for all eligible technologies (except fuel cells) placed in service after December 31, 2008."

State Incentives

Below are quoted summaries referring to state incentives for renewable energy and efficiency that may be of use.

Self-Generation Incentive Program (SGIP)

"Initiated in 2001, the Self-Generation Incentive Program (SGIP) offers incentives to customers who produce electricity with wind turbines, fuel cells, various forms of combined heat and power (CHP) and advanced energy storage. The incentive payments range from $0.50/W - $2.25/W for renewable energy systems depending on the type of system. Retail electric and gas customers of San Diego Gas & Electric (SDG&E), Pacific Gas & Electric (PG&E), Southern California Edison (SCE) or Southern California Gas (SoCal Gas) are eligible for SGIP. Beginning in May 2012, all technologies previously eligible for the expired Emerging Renewables Program are now eligible for the SGIP program. Originally set to expire at the end of 2011, SB 412 of 2009 amended the Public Utilities Code to allow incentives to be available through January 1, 2016. Any program funding remaining after January 1, 2016 must be returned to the utilities to reduce ratepayer costs.

Beginning January 1, 2007, the SGIP no longer provides rebates for solar photovoltaic (PV) installations. The incentive program for installing PV systems on non-residential buildings and existing homes is administered by the California Public Utilities Commission as part of the California Solar Initiative (CSI). Funding for integrating solar in new home construction is administered by the California Energy Commission.

Systems less than 30 kW will receive their full incentive upfront. Systems with a capacity of 30 kilowatts (kW) or greater will receive half the incentive upfront, and the other half will be paid over the following five years based on the actual performance. The following technologies will receive the corresponding upfront incentive (or half of this figure if the system is 30 kW or larger):

Renewable and Waste Heat Capture:

- Wind turbines - $1.25/W
- Waste Heat to Power - $1.25/W
- Pressure Reduction Turbine - $1.25/W

Conventional CHP:

- Internal Combustion Engine (CHP) - $0.50/W
- Microturbine (CHP) - $0.50/W
- Gas Turbine (CHP) - $0.50/W

Emerging Technologies

- Advanced Energy Storage - $2.00/W
- Biogas - $2.00/W
- Fuel Cell - CHP or Electric Only - $2.25/W

There is no minimum or maximum eligible system size, although the incentive payment is capped at 3 MW. Further, the first megawatt (MW) in capacity will receive 100% of the calculated incentive, the second MW will receive 50% of the calculated incentive, and the third MW will receive 25% of the calculated amount. Applicants must pay a minimum of 40% of eligible project costs (the biogas adder is not included in calculating the limit). Projects using the Federal Investment Tax Credit (ITC) must pay 40% of the eligible project costs after the ITC is subtracted from the project costs (i.e., the SGIP credit is limited to 30% of project costs).

PG&E, SCE, and SoCal Gas administer the SGIP program in their service territories, and the California Center for Sustainable Energy administers the program in SDG&E's territory. Customers of PG&E, SDG&E, SCE and SoCal Gas should contact their program administrator for an application, program handbook and additional eligibility information."

California Solar Initiative (CSI)

The California Solar Initiative (CSI) provides financial incentives to customers in investor-owned utility (IOU) territories of Pacific Gas and Electric Company (PG&E), Southern California Edison (SCE), and San Diego Gas & Electric (SDG&E).

SB 585 of 2011 added $200 million to the budget for this program. After having exhausted funding for non-residential systems, PG&E and CCSE are again accepting applications as of December 2011.
In January 2006, the California Public Utilities Commission (CPUC) adopted a program -- the California Solar Initiative (CSI) -- to provide more than $3 billion in incentives for solar-energy projects with the objective of providing 3,000 megawatts (MW) of solar capacity by 2016. The CPUC manages the solar program for non-residential projects and projects on existing homes ($2+ billion), while the CEC oversees the *New Solar Homes Partnership*, targeting the residential new construction market (~$400 million). Together, these two programs comprise the effort to expand the presence of photovoltaics (PV) throughout the state, Go Solar California.

Originally limited to customers of the state's investor-owned utilities, the CSI was expanded in August 2006, as a result of Senate Bill 1, to encompass municipal utility territories as well. Municipal utilities are required to offer incentives beginning in 2008 (nearly $800 million); many already offer PV rebates.

CSI Incentives for Non-residential Buildings and Existing Homes:

The CSI includes a transition to performance-based and expected performance-based incentives (as opposed to capacity-based buydowns), with the aim of promoting effective system design and installation. CSI incentive levels will automatically be reduced over the duration of the program in 10 steps based on the aggregate capacity of solar installed. In this way, incentive reductions are linked to levels of solar demand rather than an arbitrary timetable.

Expected Performance-Based Buydowns for systems under 30 kW began in 2007 at $2.50/W

AC for residential and commercial systems (adjusted based on expected performance) and $3.25/W AC for government entities and nonprofits (adjusted based on expected performance). The incentive levels decline as the aggregate capacity of PV installations increases. Incentives will be awarded as a one-time, up-front payment based on expected performance, which is calculated using equipment ratings and installation factors such as geographic location, tilt, orientation and shading. Systems under 30 kW also have the option of opting for a performance-based incentive rather than the incentive based on expected performance.

Performance-Based Incentives (PBI) for systems 30 kW and larger began in 2007 at $0.39/kWh for the first five years for taxable entities, and $$0.50/kWh for the first five years for government entities and nonprofits. The incentive levels decline as the aggregate capacity of PV installations increases. PBI will be paid monthly based on the actual amount of energy produced for a period of five years. Residential and small commercial projects under the 30 kW threshold can also choose to opt in to the PBI rather than the upfront Expected Performance-Based Buydown approach. However, all installations of 30 kW or larger must take the PBI.

The program is managed by the Pacific Gas and Electric Company (PG&E), Southern California Edison (SCE), and the California Center for Sustainable Energy.

Low-Income Programs

Ten percent of the CSI Program budget ($216 million) has been allocated to two low-income solar incentive programs, the Single-family Affordable Solar Housing (SASH) program and the Multi-family Affordable Solar Housing (MASH) program. As required by the CPUC, the utilities have developed *virtual* net energy metering (VNEM) tariffs which will allow MASH participants to allocate the kWh credits from a single solar system across several electric accounts at the same building complex.

Incentives for Other Solar Electric Generating Technologies

The CSI Handbook released in January 2008 clarified the eligibility of other solar electric generating technologies which either produce electricity or displace electricity. Incentives for other solar electric generating technologies are available for CSI incentives effective October 1, 2008. The CPUC specifically recognizes electric generating solar thermal as including dish stirling, solar trough, and concentrating solar technologies, while technologies that displace electricity include solar forced air heating, and solar cooling or air conditioning. The budget for

electric displacing technologies is capped at $100.8 million. While solar water heaters can also displace electricity, the CPUC excludes them from the CSI because they incentives for solar water heaters through a separate program."

California Solar Initiative – Solar Hot Water

"This program was modified by the California Public Utilities Commission in August 2012 through Decision 12-08-008. The decision establishes separate incentive rates for single-family residential systems and commercial/multifamily systems, each significantly higher than the rates available before. The three program administrators were given 30 days to file a Tier 2 advice letter to modify the program handbook. See website above for more information.

AB 1470 of 2007 authorized the creation of a $350 million incentive program for solar water heating systems. Of the $350 million in total funding, $250 million is reserved for systems that will displace natural gas powered water heaters, and $100 million is set aside for systems replacing electric water heaters. Before developing the program, however, the California Public Utilities Commission (CPUC) had to wait for results from a pilot solar water heating program administered by the California Center for Sustainable Energy (CCSE) in the San Diego area. After reviewing the positive results of the pilot program, the CPUC developed rules for the statewide program and the program administrators began accepting applications retroactively on May 1, 2010 for single-family residential systems installed after July 15, 2009. Rebate applications for multifamily residential and commercial customers have been accepted since June 2010.

The program is being administered by Pacific Gas & Electric (PG&E), Southern California Edison (SCE), Southern California Gas Company (SCGC) and CCSE on behalf of San Diego Gas & Electric (SDG&E). Homes must heat their water using gas or electricity supplied by one of the participating utilities to be eligible for incentives. There are different incentive levels depending on whether the solar water heating system displaces electricity or natural gas. Incentives will be paid upfront based on the SRCC estimated first year energy savings. Similar to the PV incentives offered through the California Solar Initiative, the incentives offered through this program will step down four times as installation milestones are met. Steps will decline separately in each service territory and for the two general customer classes."

Low-Income Solar Water Heating Rebate Program

The California Public Utilities Commission (CPUC) issued Decision 08-10-036 in October 2008, establishing a $108 million solar incentive program for the Multifamily Affordable Solar Housing (MASH) program.

The Multifamily Affordable Solar Housing (MASH) Program provides higher incentives to offset the project costs of installing solar on multifamily affordable housing buildings in California. The goal of the MASH program is to incorporate high levels of energy efficiency and high performing solar systems to help enhance the overall quality of affordable housing.

MASH Track 1:

Provides fixed rebates based on the size and expected performance of the system installed. Incentives range from $1.90 - $2.80 per watt depending on whether common area load or tenant load is offset.

MASH Track 2:

Status: Closed

On July 20, 2011 the CPUC issued Decision 11-07-031, which affected the MASH program in a number of ways. One of the changes shifted all remaining Track 2 funds to Track 1. These incentive amounts are based on expected performance. Incentives are awarded to owners or operators of existing multifamily affordable housing that meets the definition of low-income residential housing in Pub. Util. Code § 2852. In general, a multifamily housing complex fits the definition if it is financed with low-income housing tax credits, tax-exempt mortgage revenue bonds, general obligation bonds, or local, state or federal loans or grants.

To ease the integration of these systems, the CPUC asked that PG&E, SCE and SDG&E adopt "virtual net metering" tariffs which allow participants to allocate the kWh credits associated with the system across multiple accounts at one site. Contact your utility for more information.

The California Solar Initiative (CSI) provides financial incentives for installing solar technologies through a variety of smaller sub-programs. Of the $3.2 billion in total funding for the CSI, $216 million has been set aside for programs to help fund photovoltaic (PV) installations on low-income housing. Half of that $216 million is funding the Multi-Family Affordable Solar Housing (MASH) program, and the other half is funding the Single-Family Affordable Solar Housing (SASH) Program. The SASH program is being administered on behalf of the investor-owned utilities by GRID Alternatives. Income-eligible customers of Pacific Gas and Electric (PG&E), Southern California Edison (SCE) and San Diego Gas and Electric (SDG&E) may participate. In general, the household's total income must be 80% of the area median income (AMI) or less.

Twenty percent of the total funds for the SASH program ($21,668,000) will be dedicated to providing fully subsidized 1 - 1.2 kW systems to qualifying households. Qualifying households are owner-occupied and the total income for the household is up to 50% of AMI. Households

making more than 50% of AMI, but less than 80% of AMI can be eligible for a partially subsidized system according to the following table:

Federal Income Tax Liability	Qualifying Low-Income CARE-Eligible Homeowners	Qualifying Low-Income Homeowners not eligible for CARE
$0	$7.00/W-AC	$5.75/W-AC
$1.00 - $1,000	$6.50/W-AC	$5.25/W-AC
$1,000+	$6.00/W-AC	$4.75/W-AC

Before a PV system is installed through the SASH program, all appropriate energy efficiency measures should be pursued. If an applicant's income status qualifies for the Low Income Energy Efficiency (LIEE) program, GRID Alternatives' staff will the assist applicant in enrolling in the LIEE program. If a client does not qualify for the LIEE service, GRID Alternatives' staff will conduct a basic residential energy audit."

Local Incentives and Programs

Below are quoted summaries referring to local incentives for renewable energy and efficiency that may be of use.

GoSolarSF

"The City and County of San Francisco, through the San Francisco Public Utilities Commission (SFPUC), are providing incentives to residents and businesses who install photovoltaic (PV) systems on their properties. Systems must be at least one kilowatt (kW) in capacity, and there is no maximum size limit to participate. Different incentive levels are available whether the property is residential, commercial, low-income residential, non-profit, or multi-family residential owned and operated by a non-profit.

First, basic installations of residential systems are eligible for incentives of $2,000. Participants who qualify for CARE, are CALHome enrollees and live in 94107 or 94124 zip codes are eligible for an even higher incentive of $3,000. Residential systems installed by a local installer qualify for an additional incentive of $750. And applicants below the median income can receive a bonus incentive of up to $7,000.

Commercial businesses and non-residential buildings owned by a non-profit, or occupied by a non-profit and owned by government entities receive a capacity-based incentive of $1,500 per kW. Commercial businesses can receive a maximum amount of $10,000, and the cap for non-profits is $120,000. Multi-unit residential buildings that are operated by a non-profit may receive $3,500 per kW up to a maximum of $60,000.

To qualify for incentives through this program, applicants must have first applied for and received approval for an incentive through the statewide California Solar Initiative. Applicants can receive both incentives in addition to the federal tax credit.

The San Francisco Solar Energy Incentive Pilot Program was originally funded with $3 million from the SFPUC renewable energy fund, which comes from the sale of power generated by the Hetch Hetchy dam. The renewable energy funds previously provided funding just for solar installations on city buildings, which is expected to continue with a portion of the fund."

GreenFinanceSF

"In April 2010, San Francisco launched the country's largest Property Assessed Clean Energy (PACE) financing program, GreenFinanceSF. The program is funded through a mix of bonds and funds granted to the city through the federal American Recovery and Reinvestment Act (ARRA), and is being administered by Renewable Funding. GreenFinanceSF allows homeowners and businesses to borrow money from the city, and to repay the loans through a special assessment on their property tax bills. When ownership of the building changes, the repayments remain with the property, thus get transferred to the new owner.

Residential participants can borrow between $5,000 and $50,000 dollars and repayment can be spread across a maximum of 20 years. The actual payback period will be tied to the expected life of the equipment being installed. A wide variety of energy projects are eligible for funding including new energy efficient HVAC equipment, building shell improvements, photovoltaic (PV) systems and solar water heaters. Participants must install minimum energy efficiency prior to receiving financing for a PV system. There are two options. The homeowner or business owner can elect to have an energy audit and include energy efficiency projects that will reduce the property's overall energy use by at least 20%, or they can install a basic package of energy efficiency and water efficiency measures in lieu of the audit. In the future, the city will require all participants seeking financing for PV to complete a whole home performance energy audit.

Additional requirements exist for property owners to qualify for financing through the program, and can be found at the website above. Interested homeowners can also apply for

financing at the website above. Commercial applications must be taken directly by the program staff."

Energy Watch Program

"Businesses in San Francisco's PG&E territory can receive equipment rebates, a detailed energy analysis, and the discounted installation of a variety of energy efficiency technologies through San Francisco's Energy Watch Program.

Single family homeowners in San Francisco's PG&E territory can receive Green Home Assessments, providing detailed reports showing energy loss, heat tests, and a list of improvements that will achieve the energy savings goals for San Francisco's Home Improvement & Performance Program. Improvements through this program might include improving insulation, air & duct sealing, and improved heating and cooling systems. Participating contractors can be located and contacted from the website above. Contractors will help complete the paperwork to receive the incentives for achieving at least 15% energy efficiency improvements based on "before and after" computer modeling."