



CITY COUNCIL SUSTAINABILITY COMMITTEE MEETING

Hayward City Hall – Conference Room 2A
777 B Street, Hayward, CA 94541-5007

Mission Statement:

Make Hayward a more sustainable community in order to ameliorate negative impacts of climate change, conserve natural resources and promote a clean environment.

April 1, 2009
4:30 p.m. – 6:00 p.m.

A G E N D A

- I. Call to Order
- II. Roll Call (Council Member Quirk will be in attendance via telephone from 7253 Nohili Street, Honolulu, HI)
- III. Public Comments: *(Note: For matters not otherwise listed on the agenda. The Committee welcomes public comments under this section, but is prohibited by State Law from discussing items not listed on the agenda. Items brought up under this section will be taken under consideration and referred to staff for follow-up as appropriate. Speakers will be limited to 5 minutes each; organizations represented by more than one speaker are limited to 5 minutes per organization. All public comments are limited to this time period on the Agenda.)*
- IV. Approval of Minutes of March 4, 2009
- V. Community Choice Aggregation
Arlynn J. Camire, Associate Planner
Paul Fenn, Founder and CEO, Local Power, Inc.
- VI. General Announcements and Information Items from Staff
- VII. Committee Referrals and Announcements
- VIII. Next Meeting: Wednesday, May 6, 2009
Community Choice Aggregation, Part 2
- IX. Adjournment



Assistance will be provided to those requiring accommodations for disabilities in compliance with the Americans with Disabilities Act of 1990. Please request the accommodation at least 48 hours in advance of the meeting by contacting Katy Ramirez at 510/583-4234 or by calling the TDD line for those with speech and hearing disabilities at 510/247-3340.

CITY COUNCIL SUSTAINABILITY COMMITTEE MEETING
Hayward City Hall – Conference Room 2A
777 B Street, Hayward, CA 94541-5007

March 4, 2009
4:30 p.m. – 6:00 p.m.

MEETING MINUTES

I. Call to Order – Meeting called to order at 4:31 p.m. Mayor Sweeney welcomed new Sustainability Committee Member, Marvin Peixoto, Planning Commissioner.

II. Roll Call

Members:

- Michael Sweeney, Mayor
- Olden Henson, Council Member
- Bill Quirk, Council Member
- Julie McKillop, Planning Commissioner
- Al Mendall, Planning Commissioner
- Marvin Peixoto, Planning Commissioner
- Doug Grandt, KHCG Task Force (Absent)

Staff:

- Fran David, Assistant City Manager
- David Rizk, Director of Development Services
- Robert Bauman, Director of Public Works
- Richard Patenaude, Planning Manager
- Erik Pearson, Senior Planner
- Arlynne J. Camire, Associate Planner

Others:

- Paul Fassinger, ABAG
- Christy Riviere, ABAG
- Ernest Pacheco, CAP
- Prof. Laurie Price, CSUEB

III. Public Comments – No public comments.

IV. Approval of Minutes of February 4, 2009 - Minutes approved.

V. Summary of Senate Bill 375 (Steinberg) and ABAG's Draft Projections 2009
Erik Pearson, Senior Planner
Christy Riviere, Principal Planner, Association of Bay Area Governments

Senior Planner Erik Pearson introduced Christy Riviere, Principal Planner, of Association of Bay Area Governments (ABAG). Ms. Riviere gave a PowerPoint presentation, entitled “Draft Policies for the Bay Area’s Implementation of SB 375”.

There were questions from Committee during and after the presentation that were addressed by Ms. Riviere and staff.

Council Member Quirk complimented that this was the best demonstration and illustration of a PowerPoint presentation and requested a copy of the map. He also asked that acronyms used in the presentation be clarified.

VI. General Announcements and Information Items from Staff:

Development Services Director Rizk announced the Climate Action Plan press meeting next Wednesday, March 12, 2009, at 10:00 a.m., in Conference Room 2A.

Development Services Director Rizk reminded the Committee about the OptiSolar Presentation and Tour scheduled for March 20, 2009, from 7:30 a.m. to 9:30 a.m., and mentioned that additional information is forthcoming.

Development Services Director Rizk noted that a revised Monthly Meeting Topics list was distributed to the Committee at the meeting and requested that the Committee review the list.

VII. Committee Referrals and Announcements – None.

Council Member Henson announced there is a Recycling Board Meeting next Thursday, March 12, 2009, at 7:00 p.m.

VIII. Next Meeting: Wednesday, April 1, 2009, where the topic will be Community Choice Aggregation – Part I, including a presentation by Paul Fenn.

IX. Adjournment – Meeting adjourned at 5:50 p.m.

CCA in Hayward?



Local Power

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localpower.com

Paul Fenn, CEO

April 1, 2009

paulfenn@localpower.com

Hayward City Council
Sustainability Committee

History of Community Choice: An Evolving Model

Cape Light Compact, Mass.: 180,000 customers served power and energy efficiency under CCA continuous service since 1998



NOPEC, Ohio: 400,000 customers in Northeastern Ohio changed from dirty coal to clean natural gas and a margin of renewables, continuous service since 2000



Variety of Approaches to CCA

- Cape Light Compact, Massachusetts: Local Control, Efficiency, Some Solar
- Northeast Ohio Public Energy Council, Ohio: Gas and Power at Guaranteed Short-Term 5% Discount Below Utility Rates (Now Seeking 10% Discount)
- SJVPA Central Valley, CA: Short-Term Discount With Gas-Fired Power Plant Finance With a Possibility of Future Green Development
- San Francisco, CA: Meet-or-Beat PG&E (no required short-term discount with Guaranteed Development of 360 MW green power, 51% RPS)



If Your Goal is to Reduce GHG

- Carbon Reduction *requires CCA to Build green power facilities and install demand technology, not just buy green power*
- Carbon Reduction requires CCA's RPS to apply to *all customers*, not depend on marketing opt-in "products" that will only reach a small minority willing to pay extra
- CCA RFP must require supplier bids to include cost of designing, building, operating and maintaining green power facilities, *not just comply with an RPS*



Opt-In Service vs. Opt-Out “Products”

- Economics of Opt-Out are the key - 90% of revenue is automatically captured
- Opt-In Green Pricing “Products” *Have Always Failed* - 1% of the market during Direct Access



“How Can CCA Green Power Prices Meet-or-Beat Retail Conventional Utility Power Prices Today?”

1. The Easy Part: CCA Revenue Bonds

H Bonds’ low interest rate gives competitive edge to capital intensive renewable energy projects



A Lot Cheaper

- Cost of Power from a Privately Financed Wind Farm = 11.5 cents/kwh
- *Cost of Power from a Publicly Financed Wind Farm = 6.8 cents/kwh*



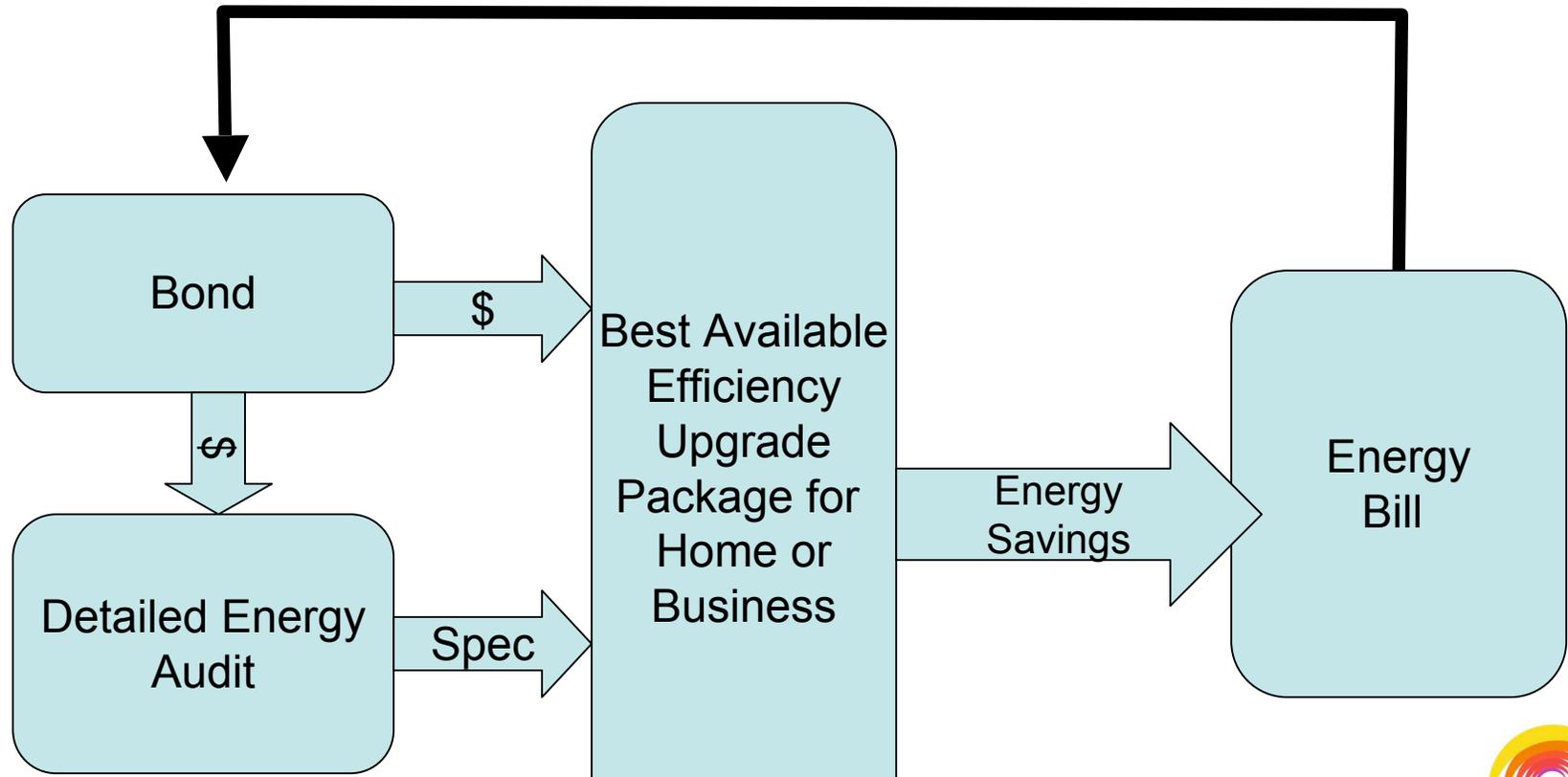
“How Can CCA Green Power Prices Meet-or-Beat Retail Conventional Utility Power Prices Today?”

2. Just as Important: CCA Rate Setting Authority

- Opens retail market to Demand-Side Technology - *Virtual Capacity is already cheaper than coal*
- Allows new services and products to be charged on monthly electric bills
- Takes the Solar PPA to a new level



CCAs Combine (1) Rate Setting Authority With (2) Low-Cost Financing



Where Random Acts of Greenness Fail..	CCA Provides Unique Leverage
One-Off Approach	Multi-Site Approach
High Permitting Exposure	City/County is Permitting Agency
High Marketing Cost	Opt-out NOT Opt-in
Interconnect Problems	City is Wires Path Owner
No Regulatory Leverage	City is Franchise Holder
High Cost of Capital	Tax-Free Municipal Financing



Public Governance & Ownership, Turnkey Implementation

- Single Supplier (ESP)
will procure Grid
Power and Design-
Build-Operate and
Maintain the new
Green Power Facilities
*AND Must Meet-or-
Beat PG&E Rates*



Turnkey Approach

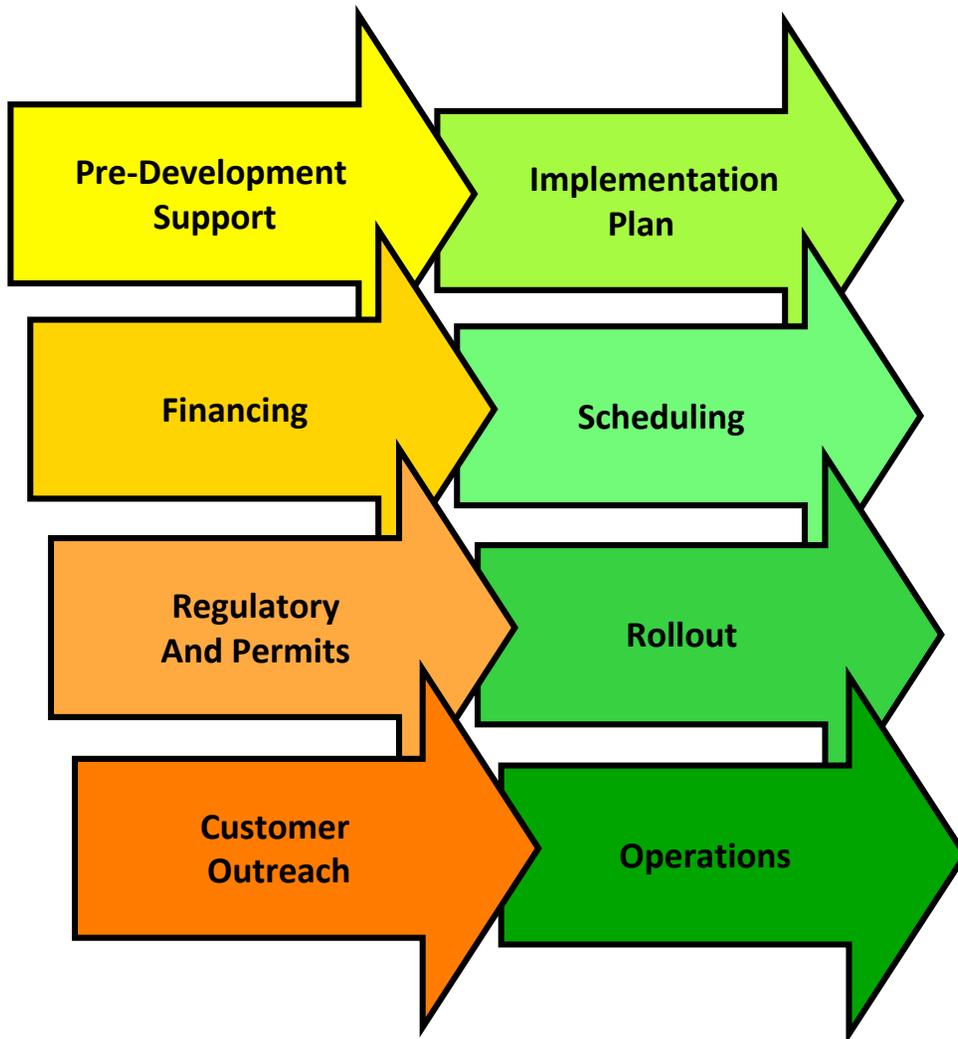
- Government Steers and Owns, Supplier Implements
- Single Counterparty Responsible for Both Power and Designing, Building, Operating and Maintaining New Green Power Infrastructure



Risk and Performance on Supplier

- Local Power Portfolio Approach Places Major Risks and Responsibilities on the Supplier
- Bonding, Insurance Requirements
- Minimal New Bureaucracy Limited to Customer Interface, Planning and Oversight
- Municipal Administrative Costs Recouped





Local Power Inc: “A Turnkey Public/Private Partnership Approach”



Local Power Partners in Implementation



Booz | Allen | Hamilton

And a core group of 25 leading professionals in Electricity Systems Planning, Generation, Transmission, and Distribution; Distribution and Transmission Tariffs and Transactions, Energy Efficiency, Renewable Energy Technologies, Energy Law, Software & Database Mapping, Public Finance, Architecture Design, Zoning and Permitting, Public Relations and Marketing, Smart Grid Design, Design-Build-Operate-Maintain Projects, Implementation Strategy, Bond Counsel, Contract Development, & Financial Management

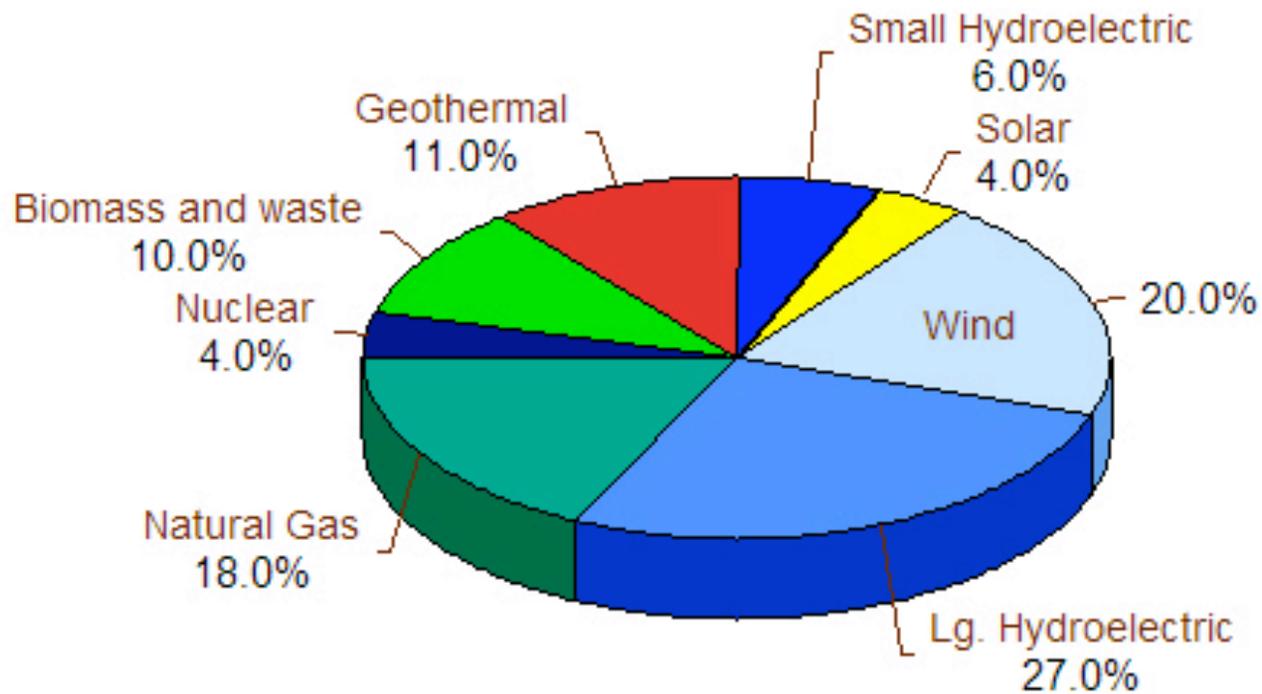
To Deliver Non-Linear Change: San Francisco's CCA Plan

- \$1.2 Billion in H-Bonds and Interest for Initial Capital Expense
 - 360 MW of *Conservation & Demand Response (107MW), Solar (31MW), Wind (150MW), and Renewable Distributed Generation (72MW) Online in Three Years*
- \$2-3B to Municipally Finance Building a 51% RPS Infrastructure by 2017



SF CCA Power Mix 2020

51 Percent Renewables

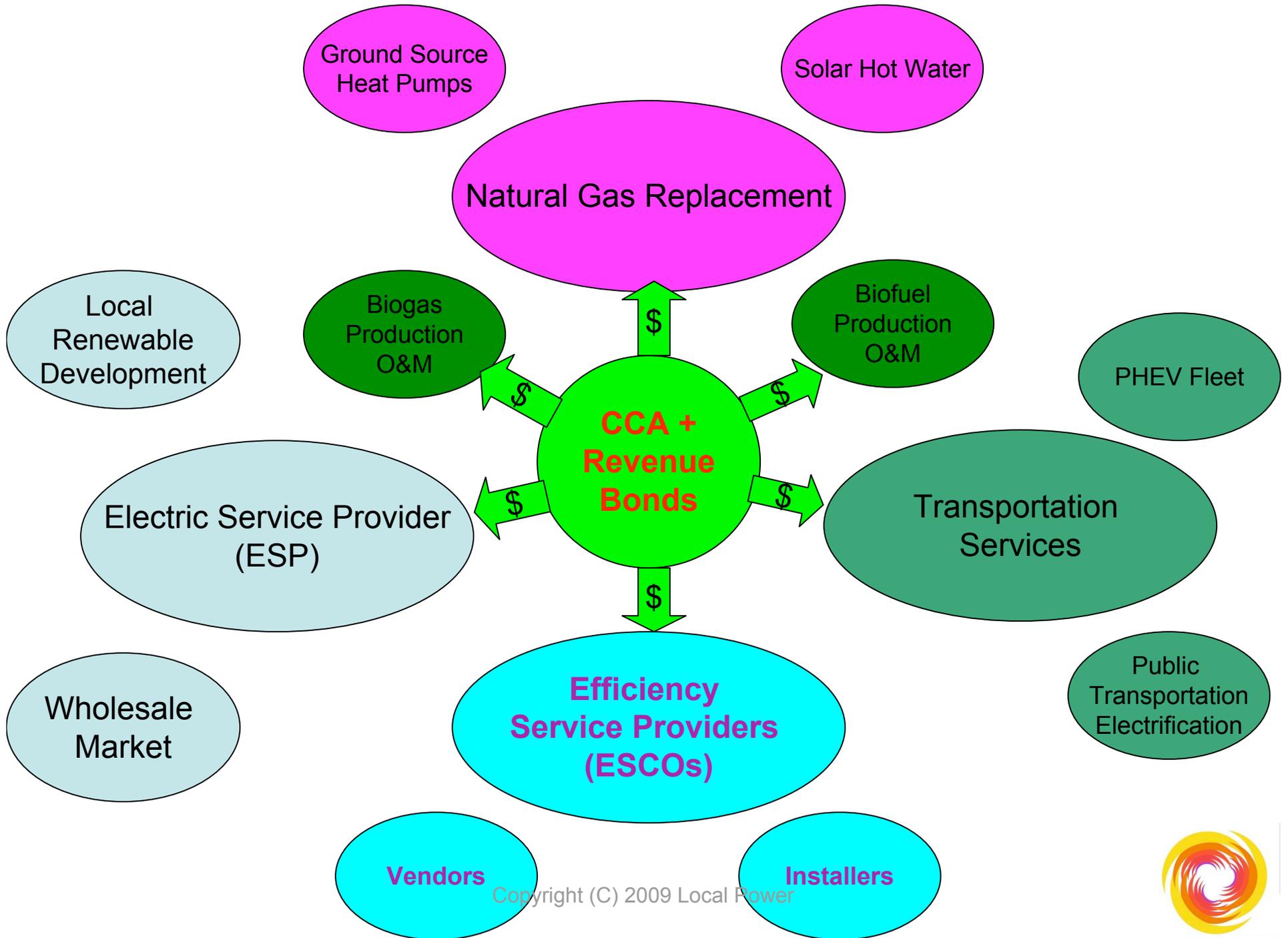


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–A CCA provides the revenue and financial support for an exponentially higher scale of carbon reduction





“Helping Communities Implement Climate Works...”

Thank you.

Visit localpower.com

Telephone 510 451 1727, x702

Email paulfenn@localpower.com





DATE: April 1, 2009
TO: City Council Sustainability Committee
FROM: Director of Development Services
SUBJECT: Community Choice Aggregation

RECOMMENDATION

Staff recommends that the Sustainability Committee reviews and comments on this report.

SUMMARY

At its February 4, 2009 meeting, the Council Sustainability Committee members requested that a presentation and information be presented on Community Choice Aggregation (CCA). In response, City staff has arranged for Paul Fenn to speak at the April 1 meeting. Mr. Fenn was instrumental in establishing the 2002 law that allows municipalities the authority to procure electricity in bulk for resale to customers, and was involved in establishing Marin County's CCA.

As Committee members know, Hayward is in the process of establishing a Climate Action Plan (CAP), which is anticipated to be adopted this summer. The draft CAP states that in order for the City to meet the target of reducing greenhouse gas emissions by 82.5 percent below 2005 levels by 2050, all emissions associated with energy used by buildings will have to be eliminated. A CCA would provide an opportunity to have electricity generated completely from renewable resources, which would significantly help in meeting such an ambitious reduction target. However, there would be no guarantee that utility customers would choose to get power through a CCA.

Establishing a CCA involves significant monetary costs and time commitments prior to the delivery of services. The process also entails legal and financial risks involving multiple jurisdictions and entities. Consultants would be required for several years for technical assistance to prepare feasibility analyses and implementation plans, assist with the establishment of a joint powers agency (JPA), and filing paperwork with the California Public Utilities Commission (CPUC). There would additionally be costs associated with City staff attending workshops, educating residents and businesses, and networking and forming coalitions with other communities interested in forming CCAs. These are costs that must be borne prior to the CCA ever receiving any revenue from ratepayers. At this time, no other municipalities in Alameda County are moving forward with forming a CCA or assessing its feasibility.

Costs and legal and financial risks would continue with the administration of the CCA after it is formed. Electricity rates would be subject to market fluctuations, with the possibility of rates exceeding those of PG&E. Risks and costs would increase if the CCA would be an energy provider generating its own energy versus contracting with an independent energy provider.

This report provides an overview of what CCAs are, as well as a summary of the process entailed in forming a CCA. Also, background information related to what other cities are doing regarding CCAs and financing and other relevant information is included.

BACKGROUND

The draft Climate Action Plan (CAP) includes information about Hayward's current greenhouse gas (GHG) emissions, short (2020) and long (2050) term targets for reducing those emissions, and a prioritized list of actions needed to be taken to achieve those targets. Specifically, Action 5.4 in the draft CAP recommends that the City increase its use of electricity generated from renewable sources and recommends the City consider participating in a CCA. The draft CAP also states that in order for the City to meet the target of reducing emissions by 82.5 percent below the 2005 baseline by 2050, all emissions associated with energy used by buildings will have to be eliminated.

The Sustainability Committee members previously acknowledged that in order to meet GHG emission reduction targets, all possible actions are to be fully explored.

DISCUSSION

Existing CCA programs in California that serve multiple communities include the San Joaquin Valley Power Authority and the Marin Energy Authority. The potential primary benefits of forming a CCA through joint power authorities with other jurisdictions are local control over electricity resources and increased negotiating power that comes from a large consumer aggregation. In addition, aggregated resources allow ease of collectively studying, promoting, developing, and managing energy programs that address climate change, with the goal of decreasing energy-related GHG emissions. The potential disadvantages include no guarantee of increase in renewable energy use due to lower rates for traditional energy, high start-up and administration costs, and reliance on PG&E transmission infrastructure.

California Examples and Process -

The CCA program was established by the California legislature in 2002 (AB117) to give cities and counties the authority to procure electricity in bulk for resale to customers within their jurisdictional boundaries. Under the CCA program, PG&E would deliver the electricity to end use customers and PG&E would continue to read the electric meters and issue monthly bills to customers enrolled in the CCA program. Unlike traditional utility service, the source of the electric supply and the price paid by customers for the generation services procured by the CCA program would be determined by the CCA. Customers would have the choice of being automatically enrolled in the program following a notification process or remaining with PG&E by enrolling in an opt-out process.

Local and County Programs –

Since the California legislature adopted Assembly Bill 117, several cities and counties have expressed interest or have moved forward with adopting Community Choice Aggregation. With funding from the California Energy Commission's Public Interest Energy Research program, the Local Government Commission has worked with Navigant Consulting, Inc. to assist twelve California communities in their investigation of Community Choice Aggregation (CCA) feasibility. They are: Berkeley, Beverly Hills, Emeryville, Los Angeles County, Marin County, Oakland, Pleasanton, Richmond, San Diego County, San Marcos, Vallejo, and West Hollywood. Each community was provided preliminary feasibility studies. Several of the cities and counties moved forward with further studies. Other cities and counties that have considered or completed studies include King County and its cities, Chula Vista, Davis, and San Luis Obispo.

San Joaquin Valley Power Authority -

San Joaquin Valley Power Authority and the Marin Energy Authority operate under joint power agreements that were formed for the purpose of Community Choice Aggregation to have local control of their energy generation.

In September 2006, the San Joaquin Valley Power Authority (Authority) was formed by Kings County and 11 local cities - Clovis, Corcoran, Dinuba, Hanford, Kerman, Kingsburg, Lemoore, Parlier, Reedley, Sanger and Selma. It is the first CCA to be certified by the California Public Utilities Commission. Currently, the Authority is in negotiations for an Energy Service Agreement.

The process began in 2004 when the King River Conservation District (KRCD) received letters of interest from King County and cities to investigate a regional community choice program. Community Choice Aggregation workshops were held and by March of 2005, KRCD developed a Memorandum of Understanding (MOU) with the county and the cities for the purpose of investigating CCA.

The MOU specified the methodology for evaluating potential benefits of implementing a CCA by adopting a two-track approach toward evaluating, planning, and implementing the CCA program. This approach was adopted to limit financial exposure of each community. The first track or phase, with a stipulation that cost was not to exceed \$365,000, included the CCA application process to the CPUC. This also included conducting a feasibility assessment and a financial model with independent peer review. The second track was CCA implementation, consisting of preparation of a business and implementation plan, including details on implementing and operating the CCA program. Regional workshops for the review of the business plan were conducted. This track was to be funded by bonds, grants, and private and public investment. The San Joaquin Valley Power Authority was formed and is governed by a board of directors, inclusive of a representative from each agency. In October 2007, the Authority executed a Power Services Agreement with King River Conservation District authorizing the KRCD to purchase power.

Marin County Energy Authority JPA –

In December 2008, the Marin Energy Authority JPA (Marin JPA) was formed, which consists of Marin County, and the cities of Belvedere, Fairfax, Mill Valley, Ross, San Anselmo, San Rafael, Sausalito and Tiburon. The Marin JPA Board of Directors consists of one representative from each agency. They have completed studies similar to those by the San Joaquin Valley Authority and, additionally, developed a study entitled *Increasing Renewable Energy Sources in Marin County*. At this time, they are considering the formation of a CCA and will begin the application process with the CPUC this year.

The process is lengthy, because it includes contracting for development of a feasibility study based on market assumptions that would identify the benefits and risks of forming CCA programs. As was the case with both the Marin and the San Joaquin Authorities, the feasibility studies generally found that the CCA would allow a significant increase in the use of renewable energy while potentially providing electric rate stability and reduced electric rates over the long-term relative to PG&E. There are some potential consequences/risks related to rates associated with CCAs that are discussed later in this report.

City and County of San Francisco ("CleanPower SF") –

On June 6, 2007, the San Francisco Board of Supervisors approved a Program Description, Revenue Bond Plan, and Draft Implementation Plan for Community Choice Aggregation. On November 21, 2007, SFPUC and the San Francisco Local Agency Formation Commission (LAFCO) released a request for qualifications for implementation of CCA and monitoring and advisory services connected with CCA. San Francisco has completed a business plan.

Berkeley, Oakland and Emeryville-

An East Bay Cities Community Choice Aggregation Business Plan was prepared for the Cities of Berkeley, Oakland, and Emeryville to jointly analyze the feasibility of creating an entity to support Community Choice Aggregation (see Exhibit A). Although CCA apparently appeared promising in the preliminary analyses, after a more comprehensive review, City of Berkeley staff presented a report to Berkeley City Council in October 2008 stating that the Business Plan did not support moving forward with CCA formation. The reasons identified in the Plan that recommended against Berkeley joining Oakland and Emeryville in creating a JPA to implement a CCA included:

1. customers' risk being too great, with estimated total electricity rates expected to be as much as six percent higher than PG&E rates;
2. participating cities needing to commit approximately \$750,000 to establish the JPA and likely being required to provide credit support for up to \$17 million in working capital;
3. Berkeley being required to guarantee payment of JPA financial obligations;
4. regulations covering CCAs being uncertain and potentially expensive; and
5. the environmental benefits gained from CCA would diminish if the State requires 33 percent renewable electricity content from PG&E (Senate Bill 411).

Other items of concern identified were that a CCA may face legal challenges that could slow progress toward becoming fully operational and meeting renewable energy goals, which could add costs that are not included in the Business Plan assumptions.

Currently, Berkeley has not taken action to move forward with establishment of a CCA and Berkeley staff indicates Berkeley intends to further review the pros and cons of formation of a CCA, and may schedule a community workshop in the fall of 2009. In addition, Emeryville has withdrawn from the project and it is anticipated that Oakland will also schedule a community workshop in the fall of 2009.

States with Community Choice Aggregation Laws and Programs –

Community Choice Aggregation (CCA) laws have been adopted in California, Massachusetts, Ohio, New Jersey, and Rhode Island. The formation of a CCA allows cities and counties to aggregate the buying power of individual customers within a defined jurisdiction to secure alternative energy supply contracts. As stated previously, the goal is stabilization of low energy rates with the long term goal in offering CCA service is to achieve 100 percent renewable energy supply resulting in significant reductions in greenhouse gas (GHG) emissions.

Massachusetts -

Massachusetts was the first state to enact CCAs. In November 1997, the *Community Choice Rule* was enacted and became effective March 1, 1998. The most prominent CCA is the Cape Light Compact (www.capelighcompact.org), composed of 21 towns located on Cape Cod and Martha's Vineyard, as well as in Barnstable and Dukes counties. As authorized by each town, the Compact administers and implements a variety of activities and programs to bring competitive market prices for electricity to over 200,000 customers, offers a "green" power alternative, supports regional energy efficiency and renewable power development, and offers energy education to students. The Compact is responsible for negotiating lower cost electricity for its customers. Initially, in 2002, the Compact successfully negotiated with Mirant Corporation to provide cheaper power to 45,000 customers not eligible for lower state-set rates, because they signed up for power on or after March 1, 1998. At that time, customers enjoyed between an 11 and 22 percent generation savings, or between \$3.50 and \$7.00 per month per customer.

Ohio -

Ohio is the second state to enact CCA legislation as part of their 1999 energy deregulation legislation. Parma was the first city in Ohio to get voter approval to aggregate, which occurred in March 2000. Parma's CCA serves 80,000 residents, who enjoy a 17 percent discount on electricity generation for an annual \$60 to \$75 savings per household. The largest CCA in Ohio is Northeast Ohio Public Energy Council (NOPEC), which serves 126 member communities who participate as electricity member communities and natural gas member communities. More than 600,000 customers took part, which is about 90 percent of residential and commercial customers within the NOPEC area. In 2000, NOPEC was approved by each member community, authorizing their local governments to aggregate all of the utility customers in the community. NOPEC is governed by a General Assembly and a Board of Directors, which are comprised of public officials from each

community. In the spring of 2001, the Board of Directors entered into an agreement with Green Mountain Energy to provide its energy generation between September 2001 and 2006 with at least two percent from renewable sources. Their energy supply contract guarantees a discount ranging from four percent to six percent, when compared with investor-owned utility rates (www.nopecinfo.org).

Rhode Island-

In July 1999, the Rhode Island Energy Aggregation Program (REAP), a consortium of 36 cities and towns, was organized under the Rhode Island League of Cities and Towns to purchase the lowest-cost electricity from power suppliers. REAP has saved over \$18 million in electricity costs (www.rileague.org/site/ricap/index.html).

Pros and Cons of Community Choice Aggregation -

Pros -

Local Control – Community Choice Aggregation (CCA) provides communities with local control over energy decisions. CCAs allow community residents and business owners a choice in determining energy generation and the generation source. Energy service providers are chosen based not only on price, but also on the type of source of energy generation. Decisions on the source of the electricity is taken from PG&E and other utility companies that are the only providers of electricity and put in the hands of aggregators, usually cities, counties, or joint powers authorities (JPAs). Unlike traditional utility service, the source of the electric supply and the price paid by customers for the generation services procured by the CCA program would be determined by the CCA. Customers would have the choice of being automatically enrolled in the program following a notification process or remaining with PG&E by enrolling in an opt-out process.

Lower Energy Rates – Since energy markets are open, competition is expected to yield cost savings, although such savings may not be realized in the short-term, due to start up costs for new energy generation systems and costs associated with either negotiating for use of existing transmission and distribution systems, or building new systems.

Renewable and Alternative Energy – Increasing reliance on renewable energy sources appears to be a preference for many California communities interested in CCA formation. In participating in a CCA, communities can pursue higher levels of renewable energy sources than those provided by the traditional investor-owned utilities, even if such utilities meet the anticipated state-mandated requirement for providing at least 33 percent of their electricity from renewable sources by 2020. A CCA can partner with an energy service provider that has a specific portfolio of renewable energy generation resources or procures renewable energy itself via capital investment.

Communities that pursue high levels of renewables would set the stage for "electrification" of transportation, which is the most promising long-term option for weaning transportation from petroleum. However, because of the economic slowdown and the recent decrease in oil prices, investment in alternative energy has slowed.

Energy Efficient Production - Because of an increase in demand for sources of clean energy, CCAs could encourage, but not ensure, the development of new energy generation facilities either through contracting with energy service providers or by direct funding. Development of new generation of renewable or less polluting fossil-fuel energy will displace production from old, inefficient generation sources such as coal or oil-fired plants, which would significantly reduce the environmental impacts of electricity production. According to the California Energy Commission, current natural gas-fired generation units can operate 30-40 percent more efficiently than did the 1960's era generators, some of which are still online in California.

Energy Price Stability - CCAs can provide consumers with energy price stability relative to the current investor- owned utilities, though CCAs could also be subject to rate increases during unexpected events or emergencies (see later discussion). Traditional energy sources are subject to limited supply and uncertain prices. Through increasing their reliance on alternative and renewable sources of energy, CCAs may buffer themselves from future energy spikes. Also, CCAs are able to finance conventional and renewable energy projects, which allows them to avoid the wholesale energy market for a portion of their power needs and further buffers them from market fluctuations. Finally, CCAs lock in multi-year energy prices under contracts with electric service providers, thus shielding themselves from short-term energy fluctuations.

Energy Efficiency Programs - A portion of each PG&E bill goes to energy efficiency programs known as Public Benefit Funds that are distributed through state and PG&E programs. The total of these energy efficiency funds are over \$1.5 billion. CCAs would have the ability to apply for such funds as administrators for energy efficiency programs, as well as issue proposals for programs that might be more suitable for their customers.

Cons -

Given the current economic climate and the volatility of energy markets, the unknowns in energy market models, the potential for variability in forecasting the prices of renewable energy markets, and the long-term commitments involved in energy procurement, communities should carefully examine the potential risks associated with adopting a CCA strategy.

Start-up and Administration Costs - Start-up and program administration costs may be cost prohibitive for Hayward even if it were to partner with other municipalities in a JPA. Costs would include completion of a business plan, establishing a JPA, payment of JPA obligations, renegotiation of energy providers' contacts, and administration of the CCA program, which would include full-time staff and consultant services.

PG&E Infrastructure - PG& E transmission lines would be used to deliver the electricity to end use customers and PG&E would continue to read the electric meters and issue monthly bills to customers enrolled in the CCA program. If PG&E transmission lines were damaged, cost for repairs would be incurred by the CCA. In addition, if a JPA didn't maintain an emergency energy contract with PG&E, the cost of purchasing energy in an emergency or disaster would be borne by the CCA and would likely be very costly. Also, the City may not receive preferred delivery of electricity from PG&E as it does now.

Higher Rates - Rates may be higher than PG&E rates, especially in the near term and with the reliance on renewable energy sources. This is one of the reasons that Berkeley has decided not to move forward at this time. However, well-managed power purchasing and development may mitigate this risk. A well-balanced energy portfolio of resources that includes short- and long-term contracts and CCA financed new generation projects should result in competitive rates.

The only way to mitigate volatile energy prices is to create a rate stabilization fund, which adds further costs to formation of a CCA. This will allow the CCA to keep prices steady, even when factors arise that would otherwise require higher rates. Also, investing in alternative energies that do not have fuel costs, such as solar or wind, would help assure stabilization of energy costs but could also be risky.

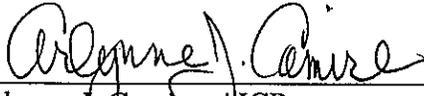
Partnering with Other Jurisdictions -

Start-up costs are substantial and are easier to bear if jurisdictions join to form joint power authorities. Assembly Bill 117 allows groups of cities and counties to join together to establish a CCA program. This provides economies of scale for energy contracts, administration costs, and when negotiating power contracts. A joint CCA may also reduce variability in electric loads, allowing for larger baseload contracts with generally lower prices than peaking or spot-market contracts.

NEXT STEPS

Staff plans to have another speaker at the May 6 meeting to do a presentation on the financial aspects and process associated with formation of CCAs.

Prepared by:



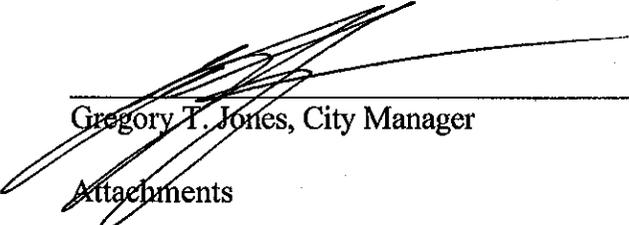
Arlynn J. Camire, AICP
Associate Planner

Recommended by:



David Rizk, AICP
Director of Development Services

Approved by:


Gregory T. Jones, City Manager

Attachments

Exhibit A: East Bay Cities Community Choice Aggregation Business Plan, Executive
Summary 2008



EAST BAY CITIES

COMMUNITY CHOICE AGGREGATION BUSINESS PLAN

September 2008



**Prepared By
Navigant Consulting, Inc.
3100 Zinfandel Drive, Suite 600
Rancho Cordova, CA 95670**

EXECUTIVE SUMMARY

Beginning in 2004, the Cities of Berkeley, Emeryville and Oakland ("Cities") initiated a process to investigate offering retail electric services to customers located within the Cities through a program known as Community Choice Aggregation ("CCA"). The Cities' stated primary objectives in considering CCA service are to reduce carbon emissions, promote greater use of renewable energy and exercise local control over energy policy, and to offer rates that are competitive to PG&E, while insulating taxpayers from any financial liabilities.

The CCA option was established by the legislature in 2002 (AB 117) to give cities and counties the authority to procure electricity in bulk for resale to customers within their jurisdictional boundaries. Under a CCA program the incumbent utility, in this case Pacific Gas and Electric Company ("PG&E"), would deliver the electricity to end use customers, and PG&E would continue to read the electric meters and issue monthly bills to customers enrolled in the CCA program. The difference would be in the source of the electric supply (generation) and potentially in the price paid by customers for the generation services procured by the CCA program. With CCA, resource and ratemaking decisions are made locally, by governing bodies whose constituents are residents and businesses, rather than by private, for-profit corporations, who serve their shareholders in addition to ratepayers. All customers would be given the choice of being automatically enrolled in the Program, following a well publicized community outreach, education and customer notification process, or remaining with the incumbent utility by following the opt-out process described in the customer notices.

Each of the Cities conducted feasibility studies during 2004-2005 to identify the benefits and risks of forming CCA programs. The feasibility studies, which were subject to peer review by a team of independent, expert consultants, generally found that the Cities could, over the medium to long term, increase use of renewable energy, stabilize electric rates, and offer rates that would be competitive with PG&E (+/- 5%). The ability for public agencies to obtain low cost capital financing for generation projects was identified as a key factor in being able to achieve these objectives. Following consideration of the feasibility study findings, the Cities decided to jointly develop a comprehensive business plan that would refine the initial analysis and address issues not included within the feasibility study scope and in order to lay the basis for determining whether the Cities should establish a CCA program.

This business plan presents a proposal for the three Cities to join together to form a regional CCA program serving a large portion of the East Bay to accelerate the shift away from natural gas for new electric power generation toward greater use of wind, solar, geothermal, biomass and other renewable resources. The CCA Program would seek to establish local energy efficiency and renewable energy programs that supplement PG&E programs. The plan sets forth proposals for how an East Bay CCA program would be organized, funded and operated. Highlights of the plan include:

- The Cities would form a new Joint Powers Agency (JPA), tentatively named the East Bay Power Authority (“Authority”) for purposes of offering CCA services to customers. The JPA Agreement would create a “firewall” between the Authority and the Cities’ general funds by specifying that debts and assets of the JPA are not debts or assets of the respective Cities, unless otherwise agreed.
- The Authority would negotiate contracts with third party electric suppliers to provide electricity to customers and provide other technical services required for the Program.
- The Authority would gradually increase its renewable energy procurement until it procures at least one half of its electric supply from renewable resources, such as wind, solar, geothermal and biomass within seven years.
- The Authority would develop up to 125 MW of new wind (or other qualifying renewable) generation, financed with tax-exempt revenue bonds issued by the Authority or in conjunction with another public agency, within four years.
- The Authority would target deployment of over 25 MW of distributed solar (photovoltaic) systems within seven years.
- The Authority would promote additional energy efficiency and energy conservation efforts within its jurisdiction, as envisioned by AB 117.
- The Authority would establish a long-term goal of providing electric rates that are no greater than the rates charged by PG&E, subject to acceptable responses from the market to a future request for proposals, and to provide comparable or better customer service. The current Business Plan anticipates rates that are 3% higher than PG&E generation rates for the first four years of a CCA, followed by rates that are estimated to be approximately the same as PG&E rates in the future.
- Through implementation of the proposed CCA Program, the Cities would cause a reduction in greenhouse gas emissions of approximately 325,000 metric tons per year within seven years, as the renewable resources procured and developed by the Authority would displace production from natural gas fueled power plants.

Certain key assumptions were made for uncertainties inherent at this stage of Program development. If one or more of these assumptions prove to be incorrect, there could be a material impact on the Program, including the possibility that the Program would be unable to commence service or that it would be unable to provide a higher renewable energy content to customers with rates competitive with PG&E. The key threshold assumptions are as follows:

- There is sufficient market response to the Authority’s solicitation of electric supplies, and the market costs of electricity (renewable and non-renewable) do not change significantly relative to PG&E rates from those costs and rates assumed in the plan, before the Authority negotiates the Program electric supply agreement(s);
- The JPA can independently obtain startup financing in the approximate amounts indicated in the plan, or the Cities would be willing to provide a secondary security interest through pledge of general fund revenues or the deposit of reserve funds.
- No significant additions to PG&E’s Cost Responsibility Surcharges result from PG&E’s electric procurement activities up to the time the CCA commits to beginning program operations that would disproportionately increase these surcharges relative to PG&E’s rates.

- The JPA is able to obtain ownership or entitlement to a renewable resource consistent with the operating characteristic and cost assumptions contained in Chapter 3, within approximately four years of Program start-up.
- The JPA successfully issues revenue bonds to finance the renewable resource or contract with another public agency who finances the project.
- No lawsuit materially inhibits program implementation.
- A majority (50% or more) of customers who are offered the Program accept the Program's rates, terms and conditions, including the Exit Fee provisions discussed in Chapter 5.
- The CCA program is managed competently, electric supply contracts are well negotiated, and third parties relied upon to provide electric services for the program meet their contractual obligations.

Based on results of the quantitative risk assessment summarized in Chapter 4 that examines the cost impacts of key variables, Program rates are highly likely (95% certainty level) to fall within a range of 7% below and 10% above PG&E generation rates during the fifteen-year forecast period. The variables having the greatest impact on CCA rates relative to PG&E's rates are as follows:

- Transmission congestion charges or other unanticipated energy cost increases
- Renewable energy prices
- Natural gas and wholesale electricity prices
- Potential changes in PG&E rates

Customer opt-out percentages, within expected reasonable ranges, did not have a significant impact on the CCA's rates or financial viability. Chapter 4 provides additional detail on program risks and key assumptions.

This Business Plan includes a financial plan and estimated Program rates that reflect market prices and other information provided by potential third party electric suppliers in response to a request for information issued on behalf of the Cities in January 2007. The financial plan also provides a quantitative assessment of the likelihood that the Program would be able to offer rates that are competitive with PG&E under a large number of scenarios for future electricity prices and other variables. Due to the dynamic nature of the electricity markets pending solicitation of final, firm price offers from suppliers, the financial plan presented in Chapter 4 should be considered illustrative pending solicitation of final prices that would be provided by the market if a decision is made to proceed with issuance of a formal request for bids. The analysis presented herein represents a snapshot in time based on market conditions and PG&E rates.¹ Certain plan components would also require input from the Cities' legal and financial professionals, as indicated in this plan.

After considering this Business Plan, the Cities will need to decide whether to proceed with formation of the JPA, which would adopt the Implementation Plan for submission to the

¹ The analysis was conducted during 2007 and completed in January 2008.

California Public Utilities Commission as required by AB 117. The key planning elements that are statutorily required in an Implementation Plan are addressed in this Business Plan. The Public Utilities Code specifies that a CCA Implementation Plan must include the following components:

- Organizational structure of the program, its operations, and funding;
- Rate setting and other costs to participants;
- Disclosure and due process in setting rates and allocating costs among participants;
- Methods for entering and terminating agreements with other entities;
- The rights and responsibilities of program participants, including, but not limited to, consumer protection procedures, credit issues, and shutoff procedures;
- Termination of the Program; and
- A description of the third parties that will be supplying electricity under the program, including, but not limited to, information about financial, technical, and operational capabilities.

California's CCA program is relatively new, and no CCA's are serving customers today. The first CCA Implementation Plan was submitted to the California Public Utilities Commission in January 2007 by the San Joaquin Valley Power Authority, a new public agency consisting of 13 cities and counties in the central San Joaquin Valley. The California Public Utilities Commission (CPUC) certified the San Joaquin Valley Power Authority's Implementation Plan on May 1, 2007, and the Program plans to begin serving customers in 2009.² There are several other CCA development efforts under way in San Francisco, Marin County, Victorville and Sonoma County. Many other cities and counties are in various stages of investigating the formation of CCA programs.

The major elements of the Business Plan are summarized as follows.

1. Governance and Organization

The Program would be implemented by a new JPA whose governing board would have primary responsibility for managing all aspects of the CCA program. The JPA would adopt an Implementation Plan as required by the CCA legislation (AB 117) and register with the California Public Utilities Commission as a Community Choice Aggregator. Regular public meetings of the JPA would be held in accordance with the Brown Act.

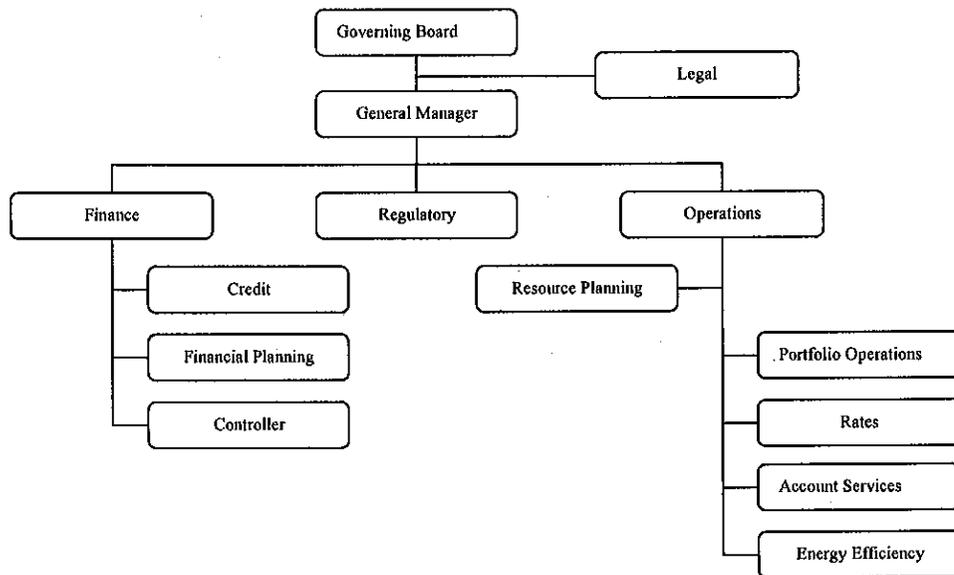
The Authority would be established under the terms of a Joint Powers Agreement, which would establish the Authority with a broad set of powers to study, promote, develop and conduct electricity related projects and programs. The JPA agreement would specify the governance provisions of the Authority.

² Information regarding the SJVPA program can be found at www.communitychoice.info.

The CCA program would most likely be established pursuant to a separate project agreement (Project Agreement No. 1 or PA-1) executed by and among the Authority and the members (Cities). The PA-1 would transfer the Cities' authority under AB 117 to the Authority and authorize the initiation of CCA service to customers within the member's jurisdiction, subject to specified withdrawal rights. Proposed principles for PA-1 are contained in Appendix A.

Operations of the Program would be the responsibility of a General Manager, appointed by the Authority's Board of Directors. The General Manager would manage staff, contractors and third party electric providers, in accordance with the general policies established by the Board. The Program organizational chart showing relationships among the Governing Board, the General Manager and the functional areas is shown in Figure 1.

Figure 1: Program Organization



The Authority would have a full time staff of approximately twenty employees to perform its responsibilities, primarily related to Program and contract management, legal and regulatory, finance and accounting, marketing and customer service. Alternatively, some of these functions could be contracted out to third parties, as determined by the Program's General Manager and Governing Board. Technical functions associated with managing and scheduling electric supplies and those related to retail customer settlements would be performed by experienced third parties selected via a competitive solicitation. In the longer term, these technical functions may be performed by internal staff or continue to be provided by third parties.

2. Phased Customer Enrollment

Service would be offered to customers in three phases, beginning with the service accounts affiliated with the members of the Authority (municipal accounts). The second phase would include the medium to large commercial and industrial customers, and the third phase would include all remaining customers. The proposed schedule for customer enrollments is shown below:

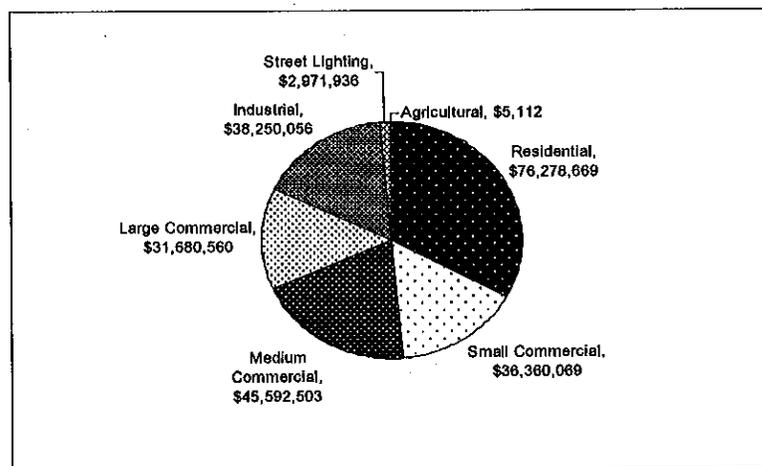
Table 1: Customer Phase-In Schedule

Phase	Start	Eligibility	Customers	Annualized Revenue
Phase 1	To Be Determined	Municipal Accounts	2,000	\$5 Million
Phase 2	Six Months After Phase 1	Commercial and Industrial Accounts	3,000	\$120 Million
Phase 3	Twelve Months After Phase 1	All Others	270,000	\$100 Million

The phasing schedule would enable the Authority and third party electricity suppliers to make any adjustments that may be necessary to ensure the Program is operating effectively. It would also allow for any potential billing, settlement or cash flow problems to be addressed while the actual number of accounts and revenue requirements are small relative to full scale operations. The Authority's Board of Directors would have final authority to approve transitioning from one phase to the next.

At full implementation, the Program is projected to serve approximately 275,000 retail customers and have annual electricity sales of over 2,500 GWh. Annual revenues are projected to be approximately \$230 million. The break down of projected sales by major customer class is shown in the following figure.

Figure 2: Projected Retail Electric Sales for First Full Year of Operation³



³ The sales projections exclude customers currently taking direct access service or customers such as UC Berkeley and the Lawrence Berkeley Laboratory, that are otherwise not taking full "bundled" service from PG&E.

3. Electric Resources

Beginning with the commencement of service to Phase 1 customers the Authority would contract with a third party electric supplier under a "full requirements" contract, which places the responsibility for arranging for power to be delivered to Program customers with the supplier. Through this contract the day-to-day responsibility of buying power for the Program are transferred to the third party electric provider, and it is the supplier's responsibility to manage the electric supply for the Program according to the pricing and terms of the negotiated electric supply agreement. This agreement is the primary method for the Authority to manage Program risks during the first several years. The Authority would establish specific renewable energy standards that the supplier must meet. The proposed renewable energy standard begins at 20% of total electric supplies in Year 1 and increases to 25% by Year 3 and 50% by Year 8. The term of the initial supply contract is expected to be from three to seven years, depending upon market conditions at the time of negotiation.

The Authority would plan to develop and finance at least 125 MW of wind (or other qualifying renewable) resources (25% of the Program's Peak Demand) to be online within four years.⁴ Renewable energy purchases would supplement the Authority's generation to meet the 50% renewable energy objective. In addition, the Authority would promote expanded customer side energy efficiency and demand response programs and target deployment of approximately 27 MW (5% of total demand) of distributed solar within its service area within seven years. A strong preference for local renewable resources and energy efficiency projects is planned to be included in the Authority's energy solicitations.

The clean electric supply portfolio developed by the Authority is expected to result in net reductions in greenhouse gas emissions of approximately 325,000 metric tons per year within seven years.

4. Rates

The ability to provide increased renewable energy at competitive rates relative to PG&E service would be confirmed during the Program's supplier solicitation process. The goal is to establish rates at or below PG&E's generation rates.⁵ Based on best available information, including prices provided by potential Program suppliers, current PG&E rates, PG&E's declared rate designs for the near future and our forecasts as of 2007, it is anticipated that the Program's generation rates would initially be approximately 3% higher than the rates charged by PG&E, and the rate premium would be eliminated within approximately four years. These estimates are highly dependent upon PG&E rates and market prices at the time the Program is ready to be implemented, and it is possible that Program rates could be more or less than projected.

⁴ The April 2005 Base Case Feasibility Study included greater levels of investment in renewable generation than are contained in this Business Plan. The investment levels were scaled back due to concerns that higher levels would require a greater level of security for issuance of revenue bonds to finance the resources, which would require greater customer commitments in terms of potential Exit Fees following the initial opt out period.

⁵ NCI evaluated whether PG&E rates would be impacted by loss of customers to the Authority's CCA Program and found the impact be a less than 0.5% reduction in the PG&E rate forecast.

The first year projected Program rates are as shown in the following table. *The following rates are illustrative and subject to change pending selection of an electric supplier and negotiation of the initial power supply contract.*

Table 2: EBPA Estimated Year 1 Program Rates⁶

Customer Class	Program Rates, Generation Only (Cents Per kWh)	PG&E Rates Generation Only (Cents Per kWh)
Residential	8.7	8.4
Small Commercial	9.6	9.3
Medium Commercial	9.4	9.1
Medium Industrial	8.7	8.4
Large Industrial	8.2	8.0
Agricultural	8.9	8.6
Street and Area Lighting	8.1	7.9

The Authority would establish its rates on an annual basis, as it adopts its budget for the coming year.⁷ Program customers would be provided with notices of rate changes and be given the opportunity to comment on proposed rate changes at public workshops and hearings before they are made effective by the Authority's Board of Directors at a duly noticed public meeting.

Customers would be provided with four notices and opportunities to opt-out of the Program without penalty of any kind, twice within 60 days prior to enrollment and twice within the first two months of service. Following the free opt-out period, customers would be allowed to discontinue service subject to payment of an Exit Fee, similar to the fees charged by PG&E for customers that discontinue taking bundled generation service from PG&E. The proposed Exit Fee includes an Administrative Fee (\$5 for residential customers) and, if necessary, a Cost Recovery Charge to prevent shifting of costs to remaining Program customers. The Authority's Board would establish the Cost Recovery Charge as part of its ratesetting responsibilities in the case where the costs of the Program's electric supply commitments exceed the prevailing market price for electricity. The Cost Recovery Charge would provide a financial backstop to be used as partial security for financing of the Authority's power supply commitments and as credit support for the electric supply agreement. Additional refinement of the Exit Fee would require input from the Cities' financial advisors, bond counsel and customers for inclusion in the Program's final Implementation Plan. The Authority's Board of Directors would also have the authority to implement entry fees for new customers that initially opt out of the Program, but later decide to participate. Entry fees would help prevent potential gaming, particularly by large customers, and aid in resource planning by providing additional control over the

⁶ Includes Energy Cost Recovery Amount component of the Cost Responsibility Surcharge.

⁷ The JPA could consider implementing some form of automatic adjustment cost for rates which are subject to pass through.

Program's customer base. Entry fees would not be practical to administer, nor would they be necessary, for residential and other small customers.

5. Financial Plan

It is estimated the Authority would need to procure full requirements power supply for the three-year Implementation Period (i.e., the development period for the Authority's planned renewable generation assets) at less than 8.0 cents per kWh to be able to offer rates equal to or below those of PG&E based on current PG&E rate designs. Prices offered in response to the Cities' RFI were slightly higher than this breakeven price, and the Program rates were established at a premium of 3% relative to PG&E's during the three-year Implementation Period for purposes of the financial projections. Rate parity during the Implementation Period would require slightly lower power supply prices than those provided in the RFI or slightly higher PG&E rates than projected. Program rates are projected to be at or below PG&E's within four years as shown in Appendix D.

A pro forma for the Implementation Period is shown in the following table. For purposes of this financial plan, the term of the initial electric supply contract is assumed to be six years and include an annual cost escalation factor of 2.5%. Longer term financial projections are contained in Appendix D. *The figures below are based on indicative price offers and are subject to change following selection of the Program's electric supplier and final negotiations of a power supply contract.*

Table 3: East Bay Power Authority Summary of CCA Program Implementation for the Period Prior to CCA Generation Investment Program Rates at 3% Premium to PG&E Generation Rates

CATEGORY	Year 0	Year 1	Year 2	Year 3	TOTAL
I. REVENUES FROM OPERATIONS (\$):					
(A) ELECTRICITY SALES:					
RESIDENTIAL	\$0	\$8,893	\$76,278,669	\$80,051,567	\$156,339,129
GENERAL SERVICE (A-1)	\$0	\$371,799	\$29,657,961	\$31,124,904	\$61,154,663
SMALL TIME-OF-USE (A-6)	\$0	\$416,894	\$6,702,108	\$7,033,608	\$14,152,610
ALTERN. RATE FOR MEDIUM USE (A-10)	\$0	\$32,592,388	\$45,592,503	\$47,847,600	\$126,032,491
500 - 900kW DEMAND (E-19)	\$0	\$23,129,101	\$31,680,560	\$33,247,544	\$88,057,204
1000 + kW DEMAND (E-20)	\$0	\$27,597,299	\$38,250,056	\$40,141,981	\$105,989,336
STREET LIGHTING & TRAFFIC CONTROL	\$0	\$2,949,981	\$2,971,936	\$3,118,934	\$9,040,851
AGRICULTURAL PUMPING	\$0	\$0	\$5,112	\$5,365	\$10,477
TOTAL REVENUES	\$0	\$87,066,355	\$231,138,904	\$242,571,503	\$560,776,762
II. COST OF OPERATIONS (\$):					
(A) ADMINISTRATIVE & GENERAL (A&G):					
STAFFING	\$335,156	\$2,104,036	\$2,338,987	\$2,398,137	\$7,176,317
INFRASTRUCTURE	\$153,833	\$209,500	\$184,990	\$189,668	\$737,992
CONTRACTOR COSTS	\$434,833	\$1,857,417	\$3,108,875	\$3,100,235	\$8,501,360
IOU FEES (INCLUDING BILLING)	\$201,126	\$459,445	\$2,787,877	\$2,475,796	\$5,924,243
SUBTOTAL - A&G	\$1,124,949	\$4,630,398	\$8,420,729	\$8,163,837	\$22,339,912
(B) CCA PROGRAM OPERATIONS:					
ELECTRICITY PROCUREMENT	\$0	\$71,834,969	\$206,977,090	\$215,333,790	\$494,145,849
EXIT FEES	\$0	\$2,889,322	\$8,075,761	\$8,196,898	\$19,161,980
FRANCHISE FEES	\$0	\$663,545	\$1,854,632	\$1,882,451	\$4,400,627
SUBTOTAL - CCA PROGRAM OPERATIONS	\$0	\$75,387,835	\$216,907,483	\$225,413,139	\$517,708,456
(B) OTHER EXPENSES:					
INTEREST	\$510,000	\$1,020,000	\$1,020,000	\$1,020,000	\$3,570,000
ALLOWANCE FOR UNCOLLECTABLES	\$0	\$696,531	\$1,849,111	\$1,940,572	\$4,486,214
SUBTOTAL - OTHER EXPENSES	\$510,000	\$1,716,531	\$2,869,111	\$2,960,572	\$8,056,214
TOTAL COST OF OPERATION	\$1,634,949	\$81,734,764	\$228,197,323	\$236,537,547	\$548,104,583
CCA PROGRAM SURPLUS / (DEPICIT)	(\$1,634,949)	\$5,331,591	\$2,941,581	\$6,033,956	\$12,672,179

6. Financings

If a CCA program is established, from the date of this plan to the time when the JPA would be in a position to finance its start-up costs, the Cities would need to fund several pre-implementation activities. These include forming and administering the JPA; selecting the program electric suppliers and negotiating the related agreements, regulatory and legal support, and marketing, community and customer outreach. The total of these costs are estimated to range from \$500,000 to \$750,000, which could be shared among the three cities as mutually agreed upon and later repaid from Program rates. One approach to allocating the costs among the Cities would be to allocate one half of the costs based on each City's relative share of electricity sold and to allocate one half of the costs equally among the Cities as indicated in the following table.⁸

Pre-implementation Costs

City	Low	High
Berkeley	\$130,000	\$200,000
Emeryville	\$105,000	\$155,000
Oakland	\$265,000	\$395,000

Staffing and contractor costs related to Program startup activities are estimated at approximately \$3.3 million and working capital requirements are estimated to be approximately \$14 million. The working capital estimate assumes a lag between receipt of revenue from Program customers and the Authority's payment for power purchases. This cost may ultimately be carried by the Program's electric supplier, subject to negotiations during the supplier selection process.

The Authority would need to establish credit about one year in advance of initiating service to customers sufficient to obtain short term financing, likely a letter of credit, for approximately \$3 million to cover Program startup costs and \$14 million for working capital. These amounts would be repaid over a five to seven year time horizon. One of the city's primary objectives is to eliminate any risk to taxpayers. While the Cities have a legal opinion confirming that the JPA agreement can be structured such that the financial obligations undertaken by the Authority are not obligations of the Cities, unless explicitly agreed to by the Cities, it is possible that investors who provide an approximately \$17 million line of credit will require some form of secondary security interest to keep the interest rate costs down. This would most likely be in the form of a general fund pledge from cities, or through the deposit of reserve funds from the Cities. Such credit support only applies to the costs required for startup and working capital until the Authority becomes independently creditworthy. The Cities could also explore negotiating payment terms with the Program's electric supplier to significantly reduce working capital requirements. It is not anticipated that credit support would be required for the electric

⁸ This allocation method has been used to by the Cities to fund the Cities' share of program development expenses to date.

supply contract or for Authority generation investments. These commitments would be wholly supported by anticipated revenues from the CCA program.

Financing for the Authority's wind resource would require an approximately \$190 million issuance of revenue bonds. This financing would occur once the CCA Program is fully up and running and a specific project is completely sited. The anticipated financial close for the renewable resource project would be approximately 12 months after commencement of service to customers. The financing would be in the range of a 20 to 30 year term. The debt could be issued by the Authority, or more likely the Authority would enter into a long term power purchase agreement with another public agency that issues the debt. Such arrangements are common among municipal utilities. For example, many publicly owned utilities procure resources through the Northern California Power Agency (NCPA) and the Southern California Public Power Authority (SCPPA), which are joint powers agencies with membership comprised of publicly owned utilities. Any revenue bonds issued by the Authority would stand on their own and would not be liabilities of the Cities.

The following table summarizes the potential financings in support of the CCA Program.

Table 4: Anticipated Program Financings

Proposed Financing	Estimated Amount	Estimated Term	Estimated Issuance	City Responsibility
1. Pre-Implementation	\$500 - \$750 thousand	1 to 2 years	One Year Prior to Start Date	Loan or Secondary Security
2. Start-Up and Working Capital	\$3.3 million up to \$17 million	No longer than 7 years	Six Months Prior to Start Date	Possible Secondary Security
3. Renewable Resource Project Financing	\$190+ million	20-30 years	One Year Following Start Date	None

7. Conceptual Implementation Schedule

If the Cities decide to establish a CCA Program, as outlined in this Business Plan, there are several major steps that would need to be accomplished prior to its initiation. The first major step would be for the Cities to approve a joint powers agreement and to form the JPA. Each city would also need to pass an ordinance, as required by AB 117, declaring the city's intent to file a CCA Implementation Plan through the Authority. The proposed Program will not happen without strong commitment from each of the Cities. Much work remains to be done to make the Program a reality, and this will involve additional investments of time by City staff and management. Most importantly, this Program will require an executive to lead its implementation, if the Cities decide to move forward. Identifying someone to lead this Program should be a high priority and should occur before expending additional funds on Program implementation.

The planned sequence of events showing major steps prior to the CCA program beginning to serve customers is shown in Table 5.

Table 5: Timeline for Implementation

ACTIVITY	TIMELINE
Authorize JPA and Ordinance	Month 1
Commencement of the Authority	Month 2
Issue Supplier Request for Bids	Month 3
Complete Project Agreement No. 1 (CCA Program)	Month 4
File Implementation Plan with CPUC	Month 5
Begin Staffing and Startup Activities	Month 7
Final Evaluation upon CPUC Certification of Implementation Plan	Month 8
Execute CCA Project Agreement (PA-1)	Month 8
Execute Supplier Contract	Month 9
File Registration Package with CPUC	Month 11
Finalize Initial Rates	Month 11
60 Day Notice	Month 12
Go live phase 1	Month 14

We Can't Get There From Here



BY ALL MEANS, SWAP OUT YOUR REGULAR LIGHT BULBS FOR COMPACT fluorescents, take the bus, weatherize your home and install solar panels on your roof. Oh, heck, go crazy: tell your senators to give the nuclear industry everything it wants so it starts building reactors again. But while you're doing all that to reduce the world's energy use and cut emissions of greenhouse gases, keep this in mind: even if we scale up existing technologies to mind-bending levels,

such as finishing one nuclear plant every other day for the next 40 years, we'll still fall short of how much low-carbon energy will be needed to keep atmospheric levels of carbon dioxide below what scientists now recognize as the point of no return.

As the world gets closer to a consensus that we need to slash CO₂ emissions, a debate is raging over whether we can achieve the required cuts by scaling up existing technologies or whether we need "transformational" scientific breakthroughs. The Intergovernmental Panel on Climate Change, which assesses the causes, magnitude and impacts of global warming, said in 2007 that "currently available" technologies and those on the cusp of commercialization can bring enough zero-carbon energy online to avoid catastrophic climate change. And I regularly get reports from renewable-energy and environmental groups arguing that off-the-shelf technologies, fully deployed, can get us there. In the opposite corner is the Department of Energy, which in December concluded that we need breakthroughs in physics and chemistry that are "beyond our present reach" to, for instance, triple the efficiency of solar panels; DOE secretary Steven Chu has said we need Nobel-caliber breakthroughs.

That is also the view of energy chemist Nate Lewis of the California Institute of Technology. "It's not true that all the technologies are available and we just need the political will to deploy them," he says. "My concern, and that of most scientists working on energy, is that we are not anywhere close to where we need to be. We are too focused on cutting emissions 20 percent by 2020—but you can always shave 20 percent off" through, say, efficiency and conservation. By focusing on easy, near-term cuts, we may miss the boat on what's needed by 2050, when CO₂ emissions will have to be 80 percent below today's to keep atmospheric levels no higher than 450 parts per million. (We're now at 386 ppm, compared with 280 before the Industrial Revolution.) That's 80 percent less emissions from much greater use of energy.

Lewis's numbers show the enormous challenge we face. The world used 14 trillion watts (14 terawatts) of power in 2006. Assuming minimal population growth (to 9 billion people), slow economic growth (1.6 percent a year, practically recession level) and—this is key—unprecedented energy efficiency (improvements of 500 percent relative to current U.S. levels, worldwide), it will use 28 terawatts in 2050. (In a business-as-usual scenario, we would need 45 terawatts.) Simple physics shows that in order to keep CO₂ to 450 ppm, 26.5 of those terawatts must be zero-carbon.

That's a lot of solar, wind, hydro, biofuels and nuclear, especially since renewables kicked in a measly 0.2 terawatts in 2006 and nuclear provided 0.9 terawatts. Are you a fan of nuclear? To get 10 terawatts, less than half of what we'll need in 2050, Lewis calculates, we'd have to build 10,000 reactors, or one every other day starting now. Do you like wind? If you use every single breeze that blows on land, you'll get 10 or 15 terawatts. Since it's impossible to capture all the wind, a more realistic number is 3 terawatts, or 1 million state-of-the-art turbines, and even that requires storing the energy—something we don't know how to do—for when the wind doesn't blow. Solar? To get 10 terawatts by 2050, Lewis calculates, we'd need to cover 1 million roofs with panels every day from now until then. "It would take an army," he says. Obama promised green jobs, but still.

Hence the need for Nobel-caliber discoveries. Lewis's research is on artificial photosynthesis, in which a material (to be determined, thus the research) absorbs sunlight and water and produces hydrogen for fuel but zero CO₂. "If we could figure out how to make and deploy such a system, the capacity would be essentially infinite," he says. Another need is for transmission lines that don't leak 80 percent of what they carry, says physicist David Pines of the University of California, Davis. "The technology is not remotely there," he says. "We're going to have to discover yet another family of superconductors [which do not lose current] that are easily made into wires" and that work at the temperature of liquid nitrogen, a coolant.

Political will and a price on CO₂ won't be enough to bring about low-carbon energy sources.

Prospects stink for discovering what we need to discover, especially when you consider that to get the right energy mix in 2050, given how long it takes to capitalize and deploy new technologies, we need breakthroughs soon, not in 2049. Yet despite the pressing need, DOE spent a pitiful \$2 billion to \$3 billion on nondefense, basic energy R&D last year, less than one fifth what we spent in the 1970s and 1980s. A new report from the Brookings Institution calls for \$20 billion to \$30 billion a year and—to improve the odds of success—revamping the nation's energy labs, which today are "too far removed from the marketplace to produce the kind of transformational research we need for new energy technologies," says Brookings's Mark Muro. The clock is ticking.

