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Memo

date June 13, 2016

to Kathleen Yurchak, City of Pleasanton Director of Operations and Water Utilities

from Jeff Caton, ESA

subject Review of the *Draft Technical Study for Community Choice Aggregation Program in Alameda County* (MRW, June 2016)

Introduction and Summary

On behalf of the City of Pleasanton (City), ESA reviewed the June 2016 *Draft Technical Study for Community Choice Aggregation Program in Alameda County* (Study) by MRW & Associates, and supporting documentation including comments provided by the East Bay Clean Power Alliance, the City of San Leandro, the IBEW Chapter 1245, as well as comments from individuals, such as Mr. Chuck Rosselle. This Memo presents a summary of our findings and observations regarding the risks identified in the Study and their potential impacts to the City; areas not addressed or thoroughly vetted by the Study; alignment of the CCA with the City's energy and climate goals and objectives[1], and the Study's methodologies, underlying assumptions, and conclusions.

Review of the Joint Powers Agreement (JPA) is considered outside the scope of this review. Accordingly, absent our understanding of the underlying terms and conditions of the JPA, we have focused our comments on the overall risks and opportunities of the Community Choice Aggregation (CCA) initiative, and have not assessed the specific risks to the City of Pleasanton in joining the CCA. We assume that the Alameda CCA will be structured via a similar "lockbox" approach used by both Marin Clean Energy (MCE) and Peninsula Clean Energy that, in combination with specific terms and conditions of the power purchase agreements, is used to limit the financial exposure of the public entities participating in those CCA structures. We also assume that the risks are proportionate with the City's share of energy load, which is approximately 530,000 Megawatt hours (Mwh) out of the total of 8.07 million Mwh for the County.

[1] As described in the City of Pleasanton Climate Action Plan (2012) and the City's Energy Efficiency Conservation Strategy (2010).

Our review of the Technical Study leads us to conclude that there is value for Pleasanton in joining a County-wide CCA based on the City's existing energy and climate goals; however, joining the CCA presents risks that should be thoroughly assessed by the Technical Study. We find shortcomings in the Study's rate forecasting and its assessment of hydropower risks (availability and cost) and the risk of high-cost renewables creating a competitive and rate disadvantage for the CCA. Further, we suspect that some of the load forecasting and GHG savings estimates may be overly optimistic. We recommend that the City of Pleasanton be cautious about joining the CCA without further study of rate design, utility exit fees (Power Charge Indifference Assessment, or PCIA), and the cost premium for local (in County) renewable energy projects and the ability of the CCA to finance those projects. We further recommend benchmarking the Alameda CCA against existing Bay Area CCAs to evaluate the strategies and approaches used to provide their customers with a cost competitive and cleaner energy alternative to PG&E power.

Findings

1. Risk Assessment

The Study reviews the key relevant risks to the formation of a CCA; namely the financial risks to CCA members, energy procurement related risks, legislative and regulatory risks, uncertainty around exit fees imposed by PG&E (also known as Power Charge Indifference Adjustments, or PCIA), rates charged by PG&E, and Bonding Risk. The Study accurately highlights the key risks facing the CCA as a financially viable organization: low power prices offered by PG&E, future high renewable prices and costs, and PCIA charges. It should be noted that these risks are identical to those faced by other CCAs, notably MCE, Sonoma Clean Power, Lancaster Choice Energy, CleanPowerSF and Peninsula Clean Energy.

However, we believe that the Study could have provided a more robust assessment of these key risks, and how they impact customer retention and the financial viability of the CCA:

Low PG&E Rates. The study notes "it is critical that wholesale power market and price assumptions are consistent between the CCA and PG&E." While access to energy markets is regionally on an equal footing between a CCA and PG&E, there are significant economies of scale which PG&E can utilize, which a CCA does not necessarily have available. The cost advantage of these economies of scale can be somewhat minimized by a smaller organization through collaborative purchases with other smaller load serving entities. For example municipal utilities in the Bay Area have regularly made long-term purchases of renewable energy at competitive prices by joining in with other municipal utilities or by purchasing a portion of the output of a specific renewable asset, such as a wind farm under development. In Scenario 3 of the Study, low PG&E rates create a competitive and rate disadvantage for the CCA.

High renewable prices and costs. We believe that the Study could develop a more robust analysis of the risks and impacts of high renewable prices and costs. The Study's scenarios focus on two local renewable resources – wind and solar – as supplies for the CCA. Costs for these two sources have declined dramatically over the last decade, and in addition Alameda County does have the potential for repowering (i.e., upgrading with more powerful modern units) its portion of the Altamont Pass wind project.

The Study might be strengthened by additional review of the potential high costs of these sources, either procured from wholesale providers or through local renewable projects. The Study found an average price of $49/Mwh for solar contracts and $55/Mwh for wind power contracts paid by municipal utilities in California in 2015. While the Study assumed a 15% premium for projects in Alameda County, it is not clear if this premium sufficiently takes into account the high land values and costs in the Bay Area in general and Alameda County specifically. In a recent example, the City of Palo Alto utilities purchased both renewable power from a utility scale project in Southern California and simultaneously developed opportunities for local renewable generation projects. While the utility scale projects will cost approximately 3.7 cents per kWh, the City will pay 16.5 cents per kwh for local generation projects (Source: City of Palo Alto Utilities website and City Council meeting notes, 2016).

High renewable costs will directly impact the price differential the CCA can offer. In Scenario 2, for example, a renewable cost of 4.5 cents per kWh is roughly 50% of the total generation costs. This price range will likely only be possible by purchasing power from large utility scale solar generation assets located outside of Alameda County. If local generation comprises a larger portion of the renewable mix, these prices cannot be maintained. Additionally, with the rapid development of CCAs within the Bay Area and California, the demand for renewable energy may increase rapidly, at least in the short term, as these CCAs seek to purchase energy from operating renewable assets while developing lower cost long-term assets. Until long-term projects are financed and come on-line, the short term prices for renewable energy may increase, thus significantly impacting the rate estimates contained in the Study.

PCIA Charges. The Power Charge Indifference Assessment (also known as an exit fee) is assessed by PG&E on an annual basis on all customers who do not opt out of the CCA program. The PCIA charges by PG&E represent a significant cost to CCA customers. The PCIA charges and associated Franchise Fee PG&E has assessed its residential customers over the past 8 years are listed below. While these fees increased by 13.4% between 2009 and 2012, they have stabilized in recent years. The underlying study by Peninsula Clean Energy does note that they expect these PCIA charges to increase by 8% in the 2016-2018 period. The methodology used by PG&E for computing these fees is currently under review. Other CCAs have expressed the view that the PCIA is a critical risk for CCAs in maintaining a price differential to PG&E. One CCA Chief Executive expressed concern that PCIA charges could increase at a much faster rate than has historically occurred. Indeed, on June 1, 2016 PG&E proposed a 2017 Vintage PCIA charge of $0.0286, up from $0.02323, which would increase the average residential monthly PCIA charges to approximately $16.00.[2] Some CCAs are working together in an attempt to manage upcoming risks associated with future PCIA charges. The future Alameda CCA should collaborate with the other CCAs in the Bay Area in ensuring that PCIA charges do not damage the competitive position of the new organization.

[2] Assuming the average residential consumption of 562 kwh per month (EIA, Average Monthly Residential Consumption, 2014).

TABLE 1: PG&E Residential Exit Fees (per kWh)

Vintage	PCIA	Franchise Fee (FFS)	Total
2009 Vintage	$ 0.02073	$ 0.00064	$ 0.02137
2010 Vintage	$ 0.02268	$ 0.00062	$ 0.02330
2011 Vintage	$ 0.02342	$ 0.00061	$ 0.02403
2012 Vintage	$ 0.02363	$ 0.00061	$ 0.02424
2013 Vintage	$ 0.02326	$ 0.00062	$ 0.02388
2014 Vintage	$ 0.02323	$ 0.00062	$ 0.02385
2015 Vintage	$ 0.02323	$ 0.00062	$ 0.02385
2016 Vintage	$ 0.02323	$ 0.00062	$ 0.02385

Source: Peninsula Clean Energy Board Meeting, May 26, 2016.

2. Loads and Forecasts

We find the 0.3% load growth assumed in the report to be lower than might be expected. This is a point raised in the IBEW comments. Other municipal utilities often use a 2% growth rate in electrical load in their long range supply planning. However, when considering the opportunity for energy efficiency to reduce loads as outlined in the Study, this relatively shallow load growth estimate is reasonable, unless electrification opportunities begin to drive growth. Such electrification opportunities involve the widespread adoption of electric vehicles as well as the switching out of traditionally natural gas fired residential water heating for efficient electric on-demand water heaters. The impact of electrification with low or zero GHG electricity supplies is likely to be an important component of the Alameda County and City of Pleasanton GHG reduction plans going forward. For other cities in the Bay Area that have developed post-2020 plans to reduce their GHG emissions, the switching over of vehicles and residential water heaters to clean electricity is a key strategy (e.g., City of Richmond Draft Climate Action Plan, 2016; and Palo Alto Climate Action Roadmap, 2016).

3. Power Supply Procurement and Rate Forecasting

Power procurement and rate forecasting are critical components of a successful CCA program. In this section, we review key aspects of these components presented in the Study.

Analysis of Rates and Customer Bills

The Study's SOW did request an analysis of rates from a scenario analysis and the Study did include such an analysis. But the Study SOW did not request analysis of rates and billing issues from a customer perspective. We believe that additional consideration of the impact of rates on customers is crucial in understanding the risks to the CCA of customers either opting to remain with PG&E or returning to PG&E due to dissatisfaction with the prices offered by the Alameda CCA.

There are many tariff offerings provided by PG&E. It is likely that customers within Alameda County may have as many as 50 unique tariff options. It will be necessary for Alameda CCA to be cognizant of these tariff options in designing their tariffs to ensure that all customers are fairly apportioned costs and benefits. These options include fixed charges (usually in $/meter per day in the billing period), energy charges ($/kwh consumed during the billing period on either a flat, tiered, seasonal or time of use basis) and demand charges ($/kwh of maximum metered demand during the billing period on a seasonal, time of use or connected load basis).

The rates customers are charged include many components. The table below illustrates a typical PG&E residential bill. The key components of the bill are generation charges, distribution charges, conservation incentive adjustments, transmission charges and other costs. The Alameda CCA can impact only the generation charge, which typically represents about 50% of the total charge. This tends to dilute any price advantages that the CCA can gain through energy procurement.

Figure 1: PG&E Residential Rate Breakdown (E-1)

UNBUNDLING OF TOTAL RATES Energy Rates by Component ($ per kWh)	
Generation:	$0.09684 (R)
Distribution:**	$0.08338 (I)
Conservation Incentive Adjustment:	
Baseline Usage	($0.04544) (R)
101% - 130% of Baseline	($0.00275) (I)
131% - 200% of Baseline	$0.05822 (I)
201% - 300% of Baseline	$0.13633 (I)
Over 300% of Baseline	$0.13633 (I)
Transmission* (all usage)	$0.02144 (I)
Transmission Rate Adjustments* (all usage)	$0.00010 (I)
Reliability Services* (all usage)	$0.00023
Public Purpose Programs (all usage)	$0.01405
Nuclear Decommissioning (all usage)	$0.00022
Competition Transition Charges (all usage)	$0.00338
Energy Cost Recovery Amount (all usage)	($0.00002)
DWR Bond (all usage)	$0.00539
New System Generation Charge (all usage)**	$0.00255

Source: Peninsula Clean Energy Board Meeting, May 26, 2016

Efficacy of the Three CCA Scenarios

The Study presents three scenarios for the CCA, with differing assumptions concerning the amount of carbon-free power being supplied to the CCA so as to assess the costs and greenhouse gas (GHG) emissions reductions possible with the CCA.

Scenario 1 (Renewable Compliance) represents a significant cost savings for consumers across the customer classes but with a large increase in GHG emissions over the PG&E supply, assuming an

average hydro year. As a result, its adoption could negatively impact the City's GHG reduction goals, particularly as they are expected to evolve in future updates to the 2012 City of Pleasanton Climate Action Plan. Indeed, the Scenario would result in a County-wide increase of GHG emissions of approximately 10.3 million metric tons of CO_2. Scenario 1 would thus likely engender strong public opposition and significant customer retention problems for the CCA. The economic viability of this Scenario is therefore questionable.

Scenario 2 (Accelerated RPS) presents a significant reduction in GHG emissions, at a lower cost than PG&E (but higher than Scenario 1). This Scenario utilizes purchases of large hydro to provide low-cost supply and increase the GHG-free portion of portfolio. The Scenario presents an approximately 20% generation cost savings, which translates into a 10% savings over PG&E in the year 2030. This price differential is even greater between 2021 and 2026. This is a very ambitious cost saving goal, and is more aggressive than any of the existing CCAs. For comparison, MCE and CleanPowerSF have as a goal parity with PG&E rates, while Sonoma Clean Power and Peninsula Clean Energy are planning for a 5% cost savings over PG&E. While the CCA could achieve the stated costs savings, it would need to rely on out of state hydro purchases at least initially, which might create an unbalanced supply portfolio with delivery risks in the long-term. Based on our work with other CCAs, we believe that Alameda CCA could achieve a price advantage in Scenario 2 over PG&E, but likely at the 5% rate achieved by other similar organizations.

Scenario 3 (80% RPS by 2021) provides a GHG emissions reduction of roughly 75% from the PG&E equivalent with a stated cost below that of PG&E. The Scenario relies on 50% of the non-renewable supply being met through large hydro-resources. This reliance on deriving a large fraction of the energy from out of state hydro resources does create an undiversified supply portfolio with inherent transmission risks. We do not recommend a portfolio that contains such a high portion of out of state hydro resources for energy risk management reasons. Adjusting this scenario to 25% from out of state hydro and 25% from out of state renewable supplies would represent a more balanced approach, but it would also incur higher costs. In addition, the projected cost savings for Scenario 3 do not correspond with the experiences of other CCAs in the Bay Area. For example, Peninsula Clean Energy is expecting to achieve a similar scenario for a portion of its expected customers with a 2% price premium over normal PG&E rates. While this premium is small for residential customers, we believe it is a more likely price comparison for Scenario 3.

Each of the above scenarios, and our comments on them, are based on PG&E "average hydro year." That is, the availability (and therefore cost) of hydro power sources in State is expected to be equal to the long-term average in the State. Certainly, any specific year between 2017 and 2030 could exhibit average, or even above average, precipitation and hydro volumes in the State. However, hydro power generation in the state has dropped from an average of 14% of overall generation to about 8% in recent years (Energy Information Agency website). Because of the overall reduction in in-state hydro generation, in part due to the impacts of climate change, as well as the year-to-year volatility of hydro production, we believe that that the use of an "average hydro year" could under represent significant price and availability risks.

Role of Local renewables Development

Local renewable energy development can provide an important long-term source of renewable electricity for the Alameda CCA. The Study uses a 15% price increase over the average costs for renewable energy purchases for a total of 5.6 cents per kWh. As noted above, other Bay Area cities have significantly higher costs for local renewable energy projects. Should actual potential projects carry higher prices, this will serve to limit the ability of the CCA to finance local renewables. The Study anticipates renewable power costs of between 2 cents kwh and 7 cents per kwh across the different scenarios (Figures 14, 17 and 19). The Study's Cost and Benefit Analysis illustrates the

importance of renewable costs and demonstrates how high renewable costs can all but eliminate any price advantage of the CCA over PG&E. As such, these costs represent a significant risk for the Alameda CCA.

Certainly the balance of wholesale renewable power purchases and the development of local renewable energy projects has impacts on the CCA power costs as well as on the economic development of the county. Purchasing renewable power resources from within the State, but outside of Alameda County, can be carried out at a relatively low cost. As mentioned above, local municipal utilities have as recently as May 2016 purchased solar power from large utility scale projects for approximately 4 cents a kWh. However, building local solar and wind generation in the Bay Area is considerably more expensive. For example, the City of Palo Alto's CLEAN (Clean Local Energy Accessible Now) program offers to purchase locally generated solar power at 16.5 cents per kWh for a 20 year term. The Study of the Alameda CCA assumes a 15% premium for renewable energy costs for projects in Alameda County. We are concerned that this premium underestimates the costs of renewable power development. Certainly, areas of eastern Alameda County could serve as sites for solar or wind power but we are unable to verify that a 15% premium is sufficient in estimating the costs of such projects. In a high renewable cost scenario, the development of local renewables within Alameda County will lag, unless the CCA is able to increase its rates to attract developers.

Comments on Sensitivity Analysis

The sensitivity analysis presented in the Study highlights the key risks faced by the Alameda CCA. These risks are: low power prices offered by PG&E, future high renewable prices and costs, and PCIA charges. Of these three risks, we expect that short-term high renewable prices and PCIA charges will have the most significant risks on the Alameda CCA rate structure and balance sheet.

In addition to these key risks, we believe that hydro variability and its impact with energy prices are significant risks that are not fully explored in the Study. These risks are discussed above.

As a result, we recommend that additional modeling work be carried out on these three key risks and their impacts on Alameda CCA's balance sheet and reserve requirements.

4. Alignment of the CCA with the City's Energy and Climate Goals

The City of Pleasanton has long been interested in energy independence. In the City of Pleasanton 2002 Energy Plan, CCA was identified as a potential means of accomplishing that independence. The City first investigated the feasibility of implementing CCA locally in 2005, when it participated in a research study by the California Energy Commission Public Interest Energy Research (PIER), which found "that if the City was willing to finance renewable energy development, 50% renewable energy generation could be achieved at no increased cost to the ratepayers." Also in 2005, the City added an Energy Element to its General Plan, which points to a CCA as a prospective means of gaining more local control over the City's energy supply portfolio and electricity rates, and includes the goal to move toward "a sustainable future that increases renewable energy use, energy conservation, energy efficiency, energy self-sufficiency, and limits energy-related financial burdens in Pleasanton." The City has incorporated this goal, and consideration of CCA, into its 2010 Energy Efficiency and Conservation Strategy (EECS) and its 2012 Climate Action Plan (CAP).

The EECS includes a chapter on Community Choice Aggregation, which specifically recommends monitoring neighboring CCA programs in Marin County and San Francisco and to identify potential models for a successful CCA, and to engage with other East Bay cities to explore the viability of

forming a regional CCA program. This is consistent with our recommendations elsewhere in this memo (See "Recommendations for Further Study").

The CAP sets a city-wide GHG emissions reduction target of 15% below the City's 2005 baseline by 2020. With respect to renewable energy, the CAP includes an objective to increase renewable energy generation. The CAP acknowledges the potential benefits of City participation in a CCA, and includes an Action for additional study to assess whether joining a CCA makes sense for the City. The CAP also includes Actions to expand local solar generation through supportive ordinances and permitting processes, more promotion of existing rebates and financing options, and continued participation in the Solar Cities program, which has been very successful in expanding local rooftop solar PV installations. The CAP also call for forming a community solar cooperative for leveraging economies of scale in solar panel purchasing and installation, and neighborhood solar grids for charging electric vehicles.

The City's 2005 baseline GHG emissions inventory, as presented in the CAP, shows that the electricity used by residential, commercial and industrial buildings in the City represented approximately 155,000 metric tons of carbon dioxide equivalents (MT CO2e), with the largest contribution (68%) from commercial/industrial use (including direct access customers), followed by residential use (30%) and municipal operations (2%).[3] Looking to future years, the CAP predicts an overall 41% increase in emissions from electricity by 2020 under business-as-usual conditions,[4] to approximately 219,000 MT CO2e, with the commercial/industrial sector exhibiting the greatest increase (55%). The CAP presents an adjustment for the state RPS[5] that reduces the 2020 forecast for electricity emissions by 21%, to approximately 173,000 MT CO2e. CAP measures for local energy efficiency are expected to further reduce annual electricity emissions by approximately 25,000 MT CO2e, while expansion of local renewable energy is estimated to reduce emissions by approximately 13,000 MT CO2e, bringing the City's 2020 target for electricity-related emissions down to approximately 135,000 MT CO2e.

As part of CAP implementation and monitoring, the City is committed to updating its community inventory at least every five years. The first revision, for 2010, showed that total community-wide GHG emissions had decreased overall by approximately 2.9% in the five years since 2005. Table 2 provides a summary of results, including a 20% drop in emissions from commercial/industrial electricity usage, and a 12% drop in emissions from residential electricity usage.[6] These reductions, achieved by both efficiency improvements and expansion of local rooftop Solar PV systems, exceed the expectations set by the CAP for 2010, and if maintained will enable the City to meet its 2020 target for electricity emissions. The revised inventory also reports a much lower number for Direct Access (DA) electricity based on PG&E data, and notes that DA electricity was likely over-estimated in the 2005 inventory using County-wide DA data provided by the CEC and assuming that Pleasanton's share of DA electricity was proportional to its population ratio with the rest of the County.

In conclusion, participation in the Alameda County CCA is likely to enhance the ability of the City to achieve its Energy and Climate Goals, adding to the demonstrable progress the City is already making toward its energy efficiency, local renewables, and GHG reduction goals.

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[3] City of Pleasanton Climate Action Plan, 2012.

[4] Not accounting for California's Renewables Portfolio Standard (PRS) and local measures to increase energy efficiency and expand local renewable generation.

[5] Assumes 33% carbon-free utility-supplied electricity by 2020.

[6] City of Pleasanton 2010 GHG Inventory Update; April 19, 2013.

Table 2
2005 and 2010 (Revised) Community Emissions by Sector (CO_2e MT)

Emission Sector	2005	2010	% Change
Transportation (on-road)	401,550	402,419[7]	0.2%
Transportation (off-road)	25,410	25,465[8]	0.2%
Commercial/Industrial Electricity[9]	90,498	72,291	-20.1%
Commercial/Industrial Natural Gas	43,455	44,525	2.5%
Commercial/Industrial – Other fuels[10]	3,298	16,065	387%
Residential Electricity	46,881	41,116	-12.3%
Residential Natural Gas	66,684	69,741	4.6%
Solid Waste Disposal	38,826	21,128	-45.6%
Water and Wastewater Systems[11]	34,264	36,367	6.1%
Municipal Operations	5,370	4,990	-7.1%
Total	756,234	734,105	-2.9%

Recommendations for Further Study

1. Benchmark Alameda CCA Approach Against Existing CCAs.

Over the past 6 years many communities have developed and implemented CCAs. As such, their experiences, strategies, and approaches to providing their customers with a cost competitive and cleaner energy alternative can be instructive. We do note, that such a comparison is NOT included in the Technical Study RFP and therefore was out of scope for the Study. However, we believe that such a comparison could be beneficial for the CCA advisory board as well as the individual municipal participants.

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7 Estimate based on population and job growth between 2005 and 2010.

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9 Direct Access (DA) electricity was likely over-estimated in 2005 inventory using County-wide DA data provided by the CEC. PG&E's 2010 electricity data shows that DA electricity use in Pleasanton is much smaller, and is negligible relative to overall usage.

10 High quality stationary source data for 2010 was provided by BAAQMD. This was unavailable for 2005 inventory and it is likely that stationary emissions were underestimated in 2005; however, the 2010 data may include some utility-provided natural gas which would be considered double-counting.

11 Includes power used for upstream water conveyance that occurs beyond the City limits, and indirect process and fugitive emissions from septic tanks and wastewater treatment processes. Note that indirect emissions from electricity used to convey water and wastewater within the City is included in Municipal Operations.

The table below summarizes the existing CCA programs in the Bay Area.

TABLE 3: Summary of Community Choice Aggregation Programs in the Bay Area

Criterion	Marin Clean Energy (MCE)	Sonoma Clean Power	CleanPower SF	Peninsula Clean Energy
Launch Year	2010	2014	2016	2016
RE Content (target at launch)	25%	33%	35%	50% (Minimum)
GHG-free content (target at launch)	25%	Parity w/PG&E	N/A	70% incl. 20% L. Hydro
RE Content (2015)	56%	36%	N/A	N/A
GHG-free content (2015)	66% (including 9% L. Hydro)	80% (incl. 44% L. Hydro)	N/A	N/A
Use of Unbundled RECs	Yes	Yes	No	No
Rate savings compared to IOU (at launch)	Parity	5% below PG&E	Parity	Current goal is 5% below PG&E
Primary Power Supplier(s) at Launch	Shell	Constellation & Calpine	Calpine & Iberdrola	Currently out to bid

Source: Peninsula Clean Energy Board Meeting, April 14, 2016

Some of the key lessons of this comparison include:

- Many CCAs are looking to exceed the equivalent of the state mandated RPS by using hydropower to further reduce GHG emissions while securing low cost supplies. These CCAs are setting forth strategies to provide cleaner power than can be provided by PG&E at lower rates. The option of Alameda CCA purchasing hydro power in order to reduce the GHG emissions from the power supply while gaining a cost advantage is a major element in the Study's Scenarios 2 and 3.
- Both CleanPower SF and Peninsula Clean Energy do not include the use of unbundled Renewable Energy Credits. The use of these RECs, which involves purchasing of the energy credit without purchasing the associated power, is not considered in the analysis. The purchase of such unbundled REC's is controversial in some communities.
- None of these CCAs are expected to rapidly build local renewable generation sources, but relied on large producers for their supplies in the short term.

Additionally, each of these CCAs operates on similar goals, which are not explicitly presented or discussed in the Study. The following six goals are the foundation of nearly all CCAs in California. These include:

1. Revenue sufficiency: rates must recover all program expenses, including debt service requirements and reserves.
2. Rate competitiveness: rates must allow the CCA to compete in the marketplace to retain and attract customers in all classes.
3. Rate stability: rates should be stable to reduce volatility of customer bills.
4. Customer understanding: rates should be simple, transparent and easily understood by customers.
5. Equity among customers: rate differences between customers are justified by differences in usage characteristics and cost of service.
6. Efficiency: rates should encourage energy conservation and efficient use of electricity (e.g., off-peak vehicle charging).

2. Develop Rate Design Strategy

One of the key risks of a new CCA is the initial development of its rates. The RFP and the Study do not reference any specific goals or strategies around rate design. The approach to rate design should be included as it drives much of the operational and procurement decisions of the CCA. All similarly situated customers should pay equivalent delivery charges whether taking service from the Alameda CCA or PG&E. The primary basis for rate comparison/competition should be focused on generation charges (energy, demand and related adjustments) and exit fees. Offering a generally similar rate structure would facilitate comparability, ensure alignment with PG&E delivery rates, and ensure smooth service transition without significant bill impacts.

Rates are designed on a forecast "test year" initially, using projects of energy sales and other billing amounts by the proposed rate structure. The total revenue collected from the proposed rates includes all program expenses for the test year including power supply costs, administrative costs, debt servicing and reserves. Rates can be designed in a variety of ways to generate the same total revenue but which can impact costumer segments quite differently. While rate design was not part of the SOW of the feasibility report, it is an important consideration for Pleasanton and the other CCA members as they evaluate their participation in the Alameda CCA.

Basic strategies for rate design could include:

- Establish initial generation rates that are a specified percentage below currently applicable PG&E generation rates.
- Evaluate rates annually for possible adjustment.
- Ensure rates remain competitive over time.

Well-designed rates are important for the success of the Alameda CCA and directly impact two key areas of performance:

- **Financial Performance.** Alameda CCA should be entirely funded through the electric rates charged to its customers. The selected rate structure will impact cash flows, capital financing requirements and Peninsula Clean Energy's credit profile among other considerations.
- **Customer Satisfaction.** Customers have the freedom to choose whether or not to participate in Peninsula Clean Energy, and rates are a primary driver of customer

satisfaction. Stable and competitive rates are among the significant benefits that can/will be provided by Alameda CCA.

3. Assess Value and Risks of Hydropower

Scenarios 2 and 3 each rely on a significant portion of the Alameda CCA supply portfolio as being comprised of hydro generation. However, the risks and volatility impacts of hydro resources and the reliance of the CCA in their procurement are not, in our opinion, fully discussed. We recognize that large hydro is not considered renewable in the State of California's rules around Renewable Portfolio Standards (RPS). Hydro is a critical resource to help the CCA reduce its GHG-free content at a relatively low cost, which in turn helps the region, and the City in particular, meet its GHG reduction targets. As can be seen in Table 2 above (Summary of Community Choice Aggregation Programs in the Bay Area) both Sonoma Clean Power and MCE use large hydro for a significant portion of their supplies.

The consideration of purchasing hydro has financial, economic, regulatory and political risks and ramifications. Each of the scenarios in the Study are based on the PG&E "average hydro year" and do not take into account significant volumetric risk of purchasing hydro or the cost impacts. In recent years hydro generation in the state has dropped from an average of 14% of overall generation to about 8% in recent years (Energy Information Agency website).

For portfolio diversification purposes, hydropower can be purchased at very low rates from the Northwest (primarily Oregon and Washington) and imported along transmission lines. Many existing CCAs use hydropower to increase their GHG-free power content. Such power purchases do face transmission risks, since delivery from the Northwest can be interrupted by transmission outages. Availability risk can also occur during droughts in the Northwest. Additionally potential regulation (such as AB 1110 and SB1305) may make such purchases more expensive or limit their availability. The inclusion of hydropower has been an important component of many CCA launch portfolios, as the resource is GHG free and low-cost and serves as an important diversification of the initial supply portfolio. The purchase of hydropower also allows the CCA to have competitive rates and very-low GHG emissions during its initial start-up period, which is attractive to many customer elements and is a strong competitive advantage when customers decide to opt into the new CCA.

Because of the overall reduction in in-state hydro generation, in part due to the impacts of climate change, as well as the year-to-year volatility of hydro production, we believe that that the use of an "average hydro year" could under represent significant price and availability risks. We recommend that the Study undertake additional sensitivity analyses, which take into account hydro supply variability within California and the Northwest, and the impacts of such variability on overall energy prices.

4. Assess Customer Opt-in and Retention

The Study does not assess in detail issues around customer opt-in retention. Rather the Study assumes that 15% of all customers, across all classes, would opt to remain with PG&E. Under Scenario 1 of the Study, the overall 15% opt out of customers is questionable given the negative GHG impacts of this Scenario. Many cities within the CCA territory, especially those looking for higher (e.g., 100%) renewable options, may choose not to participate in a CCA that chooses to implement Scenario 1. Because of this high opt-out rate, the viability of a CCA could be significantly at risk.

Scenario 2 is likely to have a lower opt out rate, given the environmental and cost advantages over PG&E.

Regarding Scenario 3, significant portions of the residential customer base could have a strong interest in high GHG-free electricity and opt-up to 100% renewable. However, we believe that the costs associated with Scenario 3 are overly optimistic, and based on the experiences of other CCAs in the Bay Area, price parity or a slight increase in costs for Scenario 3 over standard PG&E rates are likely. Peninsula Clean Energy will be charging its 100% renewable product customers approximately 2% more than the standard PG&E rate. We also expect that under Scenario 3 conditions, a significant fraction of large commercial and industrial uses, as well as those who are direct access customers, would choose not to participate in the CCA. As a comparison, the Peninsula Clean Energy CCA Feasibility Study (2016) estimated a 25% opt out rate for a similar scenario for customers in the residential and small commercial sectors, and upwards of 50% opt out for large industrial and commercial customers. This level of opting out would significantly change the revenue and risk projections presented in the Study.

Direct access customers may have little incentive to opt into the CCA. However, the City's relatively small number of Direct Access customers (according to 2010 PG&E data), if accurate, means this could have a relatively small effect in Pleasanton. In San Mateo County, approximately 10% of the total load is consumed by direct access customers (Peninsula Clean Energy CCA Technical Study, 2016).