City of Davis and Yolo County Technical Study – Draft Final Report

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CONTENTS

1 Executive Summary

The City of Davis and Yolo County have independently adopted policies to pursue local energy programs. Together they have agreed to explore options for implementation of Community Choice Energy that would allow greater consumer choice and an increase in renewable energy supply while remaining cost competitive with the current investor owned utility provider (PG&E). This technical study is designed to guide the City of Davis and Yolo County in their respective decisions on how to proceed in developing a Community Choice Energy ("CCE") program through implementing Community Choice Aggregation ("CCA"). The study discusses three options for developing a CCE program: (1) Establish a new, stand-alone CCE by Davis alone or in collaboration with Yolo County, (2) Become members of the MCE (formerly Marin Clean Energy) Joint Powers Agency CCE, or (3) Establish a stand-alone CCE (Davis or Davis plus Yolo) and then contract with a third-party CCE-services provider – California Clean Power (CCP) – to provide a range of services to the CCE.

This study examines the financial viability of the different options and then assesses the alignment of each option with the vision that Davis and Yolo have for building their energy futures. In addition, this study details Davis' and Yolo County's implementation options, resulting CCE organization structures, and provides a risk assessment and risk mitigation strategies for each approach.

1.1 Background

California enacted legislation in 2002 permitting the creation of CCE programs by cities, counties or Joint Powers Agencies ("JPA"). When a CCE is created, all residents and businesses within the CCE's community (who were previously supplied by the incumbent Investor-Owned Utility (IOU) – PG&E in the case of Davis and Yolo County) are automatically enrolled in the new program and the CCE becomes their default electricity supplier. The transmission and distribution responsibility continues to reside with the IOU. The IOU also continues to create, distribute, and manage payment of the retail electrical bills for the customers. The CCE-provided electricity supply is captured as a line-item on the bill, along with the IOU's rates for transmission, distribution, and other services. Potential CCE customers may choose to opt-out of the CCE and revert to their electricity supply being provided by the incumbent IOU. For those customers who do not opt out, the CCE is responsible for procuring the supply for their electrical load, including required capacity and environmental attributes. The CCE is also responsible for meeting all regulatory requirements imposed upon Load-Serving Entities ("LSE") within the state by the California Public Utilities Commission ("CPUC"), the California Energy Commission ("CEC"), and the California Air Resource Board ("CARB").

To date, three CCEs are operating within California. They are MCE Clean Energy (formerly, Marin Clean Energy), Sonoma Clean Power ("SCP"), and Lancaster Choice Energy. The city of San Francisco is planning to implement a CCE (CleanPowerSF) in 2016. In addition, a number of other communities are exploring CCE programs. Besides the City of Davis and Unincorporated Yolo County, Santa Barbara, Ventura and San Luis Obispo, the City and County of San Diego, Los Angeles County, San Mateo with

other cities and counties on the Peninsula, Alameda County, Humboldt, Lake and Mendocino Counties, and Monterey are in varying phases of exploration.

1.2 Vision

The Davis City Council adopted an Integrated Vision for Community Choice Energy in August 2015 which lays out the goals for a CCE in the short-term and over the long-term. These goals include providing affordable electricity, increasing the use of renewable resources, and decreasing the amount of carbon dioxide emissions related to Davis' power supply. The Vision also calls for accumulating financial reserves in order to implement a wide variety of programs for energy efficiency, rooftop solar electricity production, energy storage systems (batteries), and local renewable resource development. It also calls for employing "the best planning and operational management practices in the electricity service industry". The Vision informs and guides this Technical Study analysis and conclusions.

As MCE, SCP and Lancaster have demonstrated, there are many opportunities for CCEs to develop innovative programs that serve their communities and achieve their visions. Examples of the programs that have been piloted or implemented by other CCEs include:

- Pioneering innovative electric tariffs for greener, locally produced energy (All CCEs)
- Becoming an Energy Efficiency Program Administrator for Cities and Counties within the CCE's service territory, with funding from the CPUC (MCE).
- Offering a Feed-in Tariff and Net Energy Metering rate that are more remunerative than the incumbent utility's in order to incentivize the development of local renewable generation (MCE and SCP)
- Piloting a variety of approaches to increase demand response programs, incentivize additional energy storage, and develop electric vehicle charging stations (MCE and SCP)
- Arranging for and providing financing for on-bill repayment of loans for customers to utilize these programs (MCE)

The table below lays out the retail products offered by the different CCEs.

Plan	*MCE*	*SCP*	*Lancaster*
Basic	Light Green – 50% Renewable	Clean Start – 36% Renewable	Clear Choice – 35% Renewable
Premium	Deep Green – 100% Renewable	EverGreen – 100% Renewable	Smart Choice – 100% Renewable
Local	Local Sol – 100% Local Solar	Not Available	Not Available
Net Energy Metering	✓	✓	✓
Feed-In Tariff	✓	✓	Not Available

1.3 The Current Environment

In many ways, the current market environment provides an opportune time to start a CCE. The industry has seen dramatic declines in the market prices of electricity and in the price of renewable electric generation – particularly solar power. These two developments permit a new CCE to be cost-competitive with the incumbent utility with a greener supply portfolio. However, while the decline in renewable supply costs is expected to continue – especially after the recent extension of Federal tax incentives – market prices can be unpredictable. Therefore, it is not predetermined that the favorable price environment will continue indefinitely.

The success of the currently operating CCEs also provides support to new CCE's. Their success provides confidence and guidance for prospective CCEs. One of the existing CCEs (MCE) has expressed interest in having Davis/Yolo join their membership. This gives Davis/Yolo the option to either create a new, stand-alone CCE or to join an established one. In addition, opposition to the development of new CCEs has become muted over time. The continued growth of CCEs is consistent with, and supportive of, broader efforts in California (and globally) to implement solutions to reduce the carbon footprint of electric generation.

1.4 Implementation Options

Davis and Yolo are fortunate to have a number of options for CCE implementation.

1. **Stand-alone option:** Davis and Yolo may choose to create a new CCE, either as a Joint Powers Agency or in the Enterprise model (the differences will be addressed later in this study). This approach will require the establishment of several CCE functions, including: hiring the necessary human resources; developing policies and procedures; contracting for outside services; and, implementation and operation of the organization focused on achieving the CCE vision. One can expect this process to take some time and involve some risks due to the relative complexity of standing up a brand new organization. Some of these risks may be mitigated by partnering with partial- or full-service solutions providers (such as CCP) for the different aspects of the program. The benefits of creating a new CCE include the opportunity to take full advantage of a favorable market for green energy to provide locally-sourced, environmentally-friendly power to Davis/Yolo's citizens and to retain local control to ensure the Vision is achieved.

2. **Join an existing CCE:** MCE has extended an invitation to the City of Davis and to Unincorporated Yolo County to join their CCE. This option would require very little effort on behalf of Davis/Yolo to implement and operate. The Davis City Council and/or the Yolo Board of Supervisors would need to pass resolutions stating their intention to join the MCE JPA and decide who would represent them on the board. Thereafter, MCE staff would manage the opt-out communications with customers, enrollment, transitioning of service, and provide service and billing to the customers. MCE would also extend their local programs for energy efficiency, net-energy metering (for rooftop solar), feed-in tariff (for local generation development) and various other programs to Davis/Yolo customers. MCE's standard retail product offerings would also be offered to Davis/Yolo customers. As a JPA, MCE also insulates the City and County from

financial exposure should the CCE run into difficulties. While having representation on MCE's board, Davis/Yolo would not have complete control over the governance and decisions of the partner CCE.

From a qualitative perspective, the two options differ in the amount and type of local involvement, investment, risk, and opportunity that they offer. The decision to join an existing CCE would entail less organizational and operational risk. This is particularly true with MCE, given their previous experience with incorporating additional municipalities into their program. The stand-alone approach offers the potential advantage of greater financial flexibility due to recent price trends, the opportunity to accumulate significant financial reserves, and the chance to build and control an organization that's dedicated to meeting the Davis/Yolo vision.

To cover all permutations of each option, as well as the possibility that Yolo County does not join Davis in the CCE effort, this study analyzes the following variations on each option:

- Davis-only, stand-alone CCE
- Davis+Yolo, stand-alone CCE
- Davis +/- Yolo, join MCE
- Davis-only, stand-alone CCE with CCP providing full services
- Davis+Yolo, stand-alone CCE with CCP providing full services

1.5 Key Findings

The analysis below provides guidance on the strengths and weaknesses of each CCE option under consideration. The findings generally fall into three categories: (1) Financial Impacts, (2) Vision Achievement and, (3) Risks. To a large degree, financial viability is the precondition for whether a CCE can achieve its other objectives. However, the Vision includes more than just providing lower cost electricity to customers. This analysis assesses the opportunity under each option for Davis/Yolo to achieve their overall CCE Vision. Each option also exposes a unique set of risks the City and County will have to weigh against the benefits in deciding which course of action to pursue.

1.5.1 Financial Impacts

The primary financial impact analyzed in this study is the effect that each CCE implementation option will have on rate competitiveness with the incumbent IOU (PG&E). The following are the three primary drivers of those costs, in order of importance:

- **Energy-related Portfolio Cost** – This is the total cost of the portfolios for energy, capacity, and environmental attributes. In the case of the existing IOUs and CCEs, the portfolio cost is impacted by legacy costs, which are a function of historic prices and when the portfolio was assembled. For the stand-alone option, the portfolio cost is highly dependent on future prices for these items.
- **Regulatory Costs** – There are certain regulatory costs that are borne uniquely by CCE customers. The primary cost is the Power Cost Indifference Adjustment charge which impacts the CCE's competitiveness with the incumbent IOU's rates.

- **Overhead Costs and Load**– Overhead costs include the fixed operating costs to maintain a CCE. These costs are borne largely without regard to the number of customers who are enrolled with the CCE. The extent to which these costs can be spread over a larger load (more customers) impacts the financial viability of a CCE.

The following table provides the approximate impact of each of these determinants on overall CCE-specific costs given current market and resource prices[1].

Determinant	*Approximate Percent of CCE-Specific Costs*
Portfolio	***60-70%***
Regulatory	***20%***
Overhead/Load	***10-20%***

Energy-related Portfolio Cost Impacts

The Portfolio Cost impacts are a function of the declining costs of renewable generation resources and of natural gas prices (which are a major driver of overall electricity prices) over the past several years. Those declining prices, in combination with when each entity was or will be assembling its portfolio, determine the relative benefit of each option.

PG&E has the oldest vintage portfolio and the highest cost of supply. To some extent, that cost difference is offset by PG&E's ability to charge departing customers a Power Cost Indifference Adjustment ("PCIA"). This adjustment is an exit fee the IOU is allowed to charge CCEs in order to recoup stranded costs of the IOU's older power contracts.

The Davis/Yolo join MCE option has lower supply costs than PG&E's. However, these costs are still impacted by the relatively higher prices MCE paid when establishing its portfolio as compared to projected future prices. It can be expected that as MCE grows, and as older contracts expire, that their cost of supply should decline if prices continue to do so. They have indicated they expect their rates to remain relatively stable over the next several years.

[1] These percentages exclude the costs of Transmission and Distribution which are common to all options. The calculations are based upon the Resourced 50% RPS portfolio described later in this document. In a higher priced electricity market the Portfolio proportion of costs would be proportionately higher.

The stand-alone and CCP options take into account projected future portfolio costs, which are currently lower than the existing portfolios. The CCP portfolio costs should also be favorable. In communications with CCP it is not clear exactly how a Davis/Yolo CCE supply portfolio would be constructed. They have contracted with a third-party energy marketer who would presumably help them to assemble portfolios for their CCE customers.

Regulatory Cost Impacts

The Regulatory impacts are equal (and equally unfavorable) across the CCE options. This refers to the PCIA charge. The PCIA is calculated annually, and can change substantially from year to year. Between 2015 and 2016 the PCIA rate approximately doubled so that it accounts for about 20% of a potential CCE customer's non-Transmission and Distribution charges. The charge is determined by the difference between what PG&E paid for the power for its customers before they joined the CCE and how much it would cost to buy power for those customers at the time the PCIA is calculated. Therefore, lower power prices lead to higher PCIA charges. (Note that the California Public Utilities Commission has opened a series of workshops on the PCIA calculation that began on February 16.)

Overhead and Load Cost Impacts

The Overhead cost is not applicable for remaining with the status quo. However, there are some relative differences with regards to these charges in the different CCE options. First, the stand-alone Davis + Yolo option allows the new CCE to spread the overhead costs over a much larger potential customer base. Given that the overhead and load costs are mostly fixed regardless of the number of customers the CCE attains, the larger customer base is favorable for allocating these costs and ultimately keeping rates low on a per customer basis. In an interview for this analysis, CCP provided fixed $/MWh pricing. However, in response to the draft version of the study, CCP has indicated that they will provide lower pricing on a $/MWh basis for Davis plus Yolo than for Davis alone, however they have not provided new pricing and the analysis is based upon the originally quoted price.

The forecast or estimated rates for each option are shown in the Table below. As with the MCE Light Green option, the results for the stand-alone and CCP options are for a portfolio that is made up of 50% renewable energy. In these options, the first three years of operations include the cost of Renewable Energy Credits (RECs). These would be replaced by long-term contracts from renewable generation, including local solar, over that three year period.

	Stand-alone Davis-only	*Stand-alone Davis+Yolo*	*MCE Light Green Davis-only*	*CCP Davis-only*	*CCP Davis+Yolo*
2017 Load-weighted Rate Compared to PG&E	**-4.1%**	**-6.7%**	**0.4%**	**-3.6%**	**-4.5%**
10 Year Accumulated Reserves	**$7.5mm**	**$15mm**	**N/A**	**$7.5mm**	**$15mm**
10 Year Load-weighted Rate, Avg Compared to PG&E	**-5.9%**	**-8.7%**	**N/A**	**-5.3%**	**-6.4%**

1.5.2 Vision Achievement and Risks

Looking beyond rate competitiveness, the elements of the Vision can be grouped into three categories with significant overlap among them.

- **Environmental Vision** – Achieving cleaner and more carbon-neutral supply.
- **Local Programs and Local Control** – Developing local programs for energy conservation, for encouraging renewable generation, and for contributing to the local economy. Also, controlling the funds and decision-making process as it pertains to achieving the overall vision.
- **Operational Excellence** – Operating in a way that provides the best chance of success over the long-term.

1.5.2.1 Environmental Vision

Achieving the environmental vision will depend on the CCE supply portfolio as well as when, how and which local programs are implemented. The study analyzed a number of portfolios with different mixes of wholesale supplies and different local program content for the stand-alone (and CCP) options. One of the supply portfolios attempted to replicate the supply portfolio which MCE currently has and plans to develop over the next ten years[2]. Another portfolio simulated the forecasts published in the report "Integrated Energy for Davis, California"[3]. From an overall cost, renewable content, and greenhouse gas emissions perspective, the most important local programs are the Net Energy Metering programs and the Feed-In Tariff which both incentivize development of solar resources within the CCE service area.

[2] http://mcecleanenergy.org/wp-content/uploads/MCE-2015-Integrated-Resource-Plan.pdf

[3] http://www.iresn.org/resources/Integrated%20Energy%20for%20Davis%20-%20Final%20-%20June%202015.pdf

The below table summarizes the environmental effects of different supply portfolios for a stand-alone CCE as well as their costs relative to PG&E. In all of these scenarios reserves are accumulated at a rate of approximately 4% of retail revenue per year, which is comparable to MCE's reserves policy. The results are shown for the Davis+Yolo scenarios.

	PG&E	*Resource-specific 50% RPS*	*Resource-specific 50% → 75% RPS*	*Simulated MCE (MCE-like)*	*Integrated Energy Analysis*
2017 RPS Percent	**27%**	**50%**	**50%**	**50%**	**50%**
2026 RPS Percent	**43%**	**50%**	**73%**	**71%**	**50%**
2017 Zero CO2 Emissions Percent	**59%**	**65%**	**65%**	**67%**	**65%**
2026 Zero CO2 Emissions Percent	**75%**	**80%**	**80%**	**98%**	**80%**
10 Year Total CO2 Emissions [mm lbs]	**1,429**	**1,357**	**1,357**	**666**	**1,202**
Average Electric Rate Relative to PG&E		**-8.7%**	**-7.4%**	**-7.3%**	**-9.9%**

The MCE-like portfolio and the Integrated Energy Analysis portfolio both include growth in rooftop solar over the ten year time horizon. The amount of rooftop solar capacity in each of those scenarios is shown in Figure 1. The other portfolios do not assume any additional growth in rooftop solar. The impact of rooftop solar on CCE rates is relatively small, and the environmental attributes of the supply portfolio do not include the effects of rooftop solar.

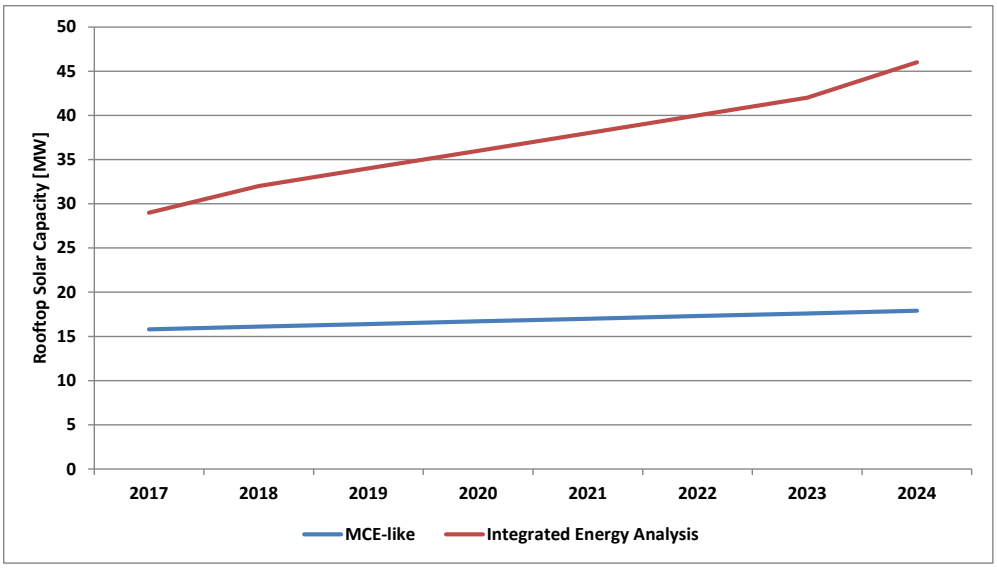

Figure 1: Rooftop Solar penetration for MCE-like and Integrated Energy Analysis Portfolios

Figure 2 shows the supply mix for the Resource-specific 50% RPS portfolio. It shows the addition of resources over the first three years, the use of Renewable Energy Credits to achieve the RPS objective in the initial years, and the procurement of hydro generation to achieve greenhouse gas reductions superior to PG&E's. The composition of the other supply portfolios is discussed later in this study.

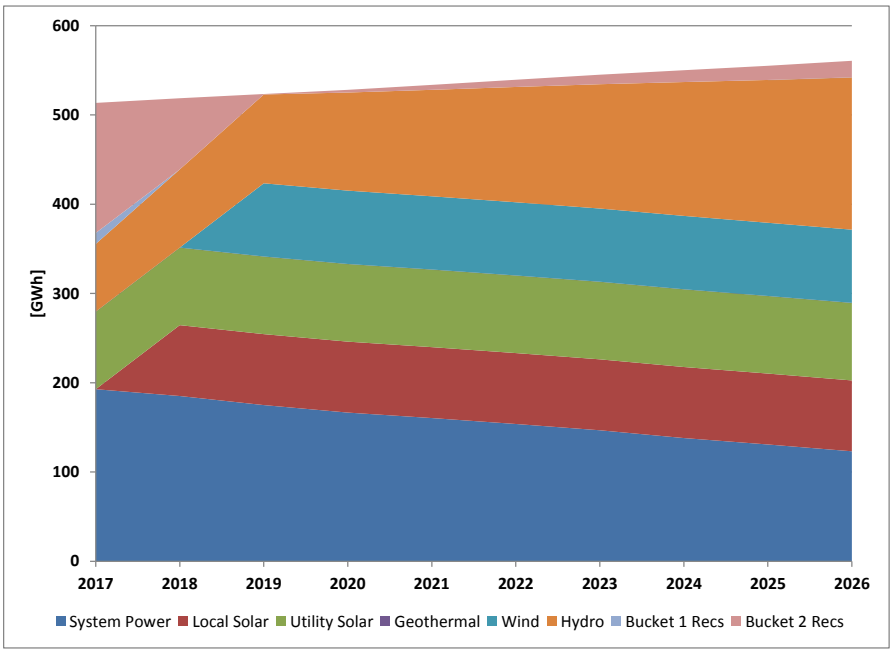

Figure 2: The supply mix for the Resource-specific 50% RPS portfolio

The environmental results are similar for the Davis-only scenarios on a per MWh basis. However, the rates are proportionately higher, as discussed above. These scenarios are the same scenarios that were used for the CCP options, and so the environmental results are the same, although the customer rates

are higher. Finally, the MCE option could presumably achieve similar results to the Simulated MCE portfolio.

Separate from the specific supply portfolios, each option offers different strengths, weaknesses and risks with respect to achieving the Davis/Yolo vision.

1.5.2.2 Stand-alone CCE Options

The stand-alone option provides the greatest opportunity for local control and also presents the greatest opportunity to achieve the Environmental and Operational objectives. However, because it would be a new organization, it also comes with added execution risks relative, in particular, to the MCE alternative.

Creating a new organization presents risks with regards to goal achievement due to any number of factors. New organizations must carefully assess risks associated with unforeseen events (such as a sharp rise in market prices), personnel decisions, greater than expected community and incumbent opposition, and lack of alignment among decision makers. However, the CCE business model is proven and there are practical steps that can be taken to mitigate, if not eliminate, each of these risks.

As noted, because external circumstances (i.e. market prices) are currently favorable, establishing a new CCE organization now will allow Davis and Yolo to establish a relatively strong foundation with regards to portfolio costs. If the market environment continues to be favorable, and Davis and Yolo agree to proceed together, the economics should allow a new CCE to achieve significant economic savings relative to PG&E while accumulating substantial reserves to further the Environmental and Local Control objectives. In addition, the suggested approach to a stand-alone model in this report should provide a strong foundation towards achieving Operational Excellence.

1.5.2.3 Join MCE Option

Joining MCE offers distinct advantages in helping the City of Davis and Yolo County achieve their vision for a CCE. MCE shares many of the same environmental objectives and, while local control will not be as great as with the stand-alone options, MCE has shown a willingness and openness towards establishing a presence within the Davis/Yolo community. Davis/Yolo will also belong to the MCE board. These factors will enable Davis/Yolo to influence MCE's decision making and will facilitate local community involvement and outreach, local retail programs such as energy efficiency, and development of local renewable energy resources. MCE has already established these types of retail programs, including obtaining funding sources, and has experience with local renewable development projects that could serve Davis and Yolo well.

An important consideration in joining MCE at this time is that because its portfolio has been built over the last several years, its current supply cost is not as competitive as a new CCE could achieve. As indicated in the rate analysis, the prospective increase in the PCIA charge may result in MCE's rates

being similar to or slightly higher than PG&E's[4,5]. This rate difference could affect the number of Davis customers that choose to opt-out if the decision is made to join MCE with less competitive rates.

In and of itself, this is not a particular risk to Davis or Yolo because the MCE JPA structure will bear any financial risks, and the addition of Davis/Yolo customers should help to lower MCE's supply costs (as they go to market for new supply in this cheaper environment) and reduce their overhead costs per MWh of load. However, to the extent that customers opt-out due to the higher rates of this option, MCE's ability to follow through on the Environmental and Local objectives that have been identified in the Davis CCE vision statement may be impacted. It is also expected, as discussed in Section 5.2.1, that over time MCE's costs should decline as they transition from older supply contracts to newer, less expensive ones.

With respect to Organizational Excellence, MCE has clearly succeeded in starting up and maintaining a well-respected organization that has many impressive achievements to point to in its relatively short history.

1.5.2.4 California Clean Power ("CCP")

Of the three options, CCP currently presents the highest hurdles towards achieving the Davis/Yolo Vision, with the largest risks. The hurdles compared to the stand-alone option are due to the higher cost and the limitations on local control. Higher costs would generally reduce the ability of Davis/Yolo to direct funds towards achieving their environmental and local control objectives. And, local control would necessarily be less than a completely Davis or Davis/Yolo run CCE.

The higher risk comes from compounding the risk of starting up a new CCE organization with committing to a partnership with a new and unproven entity (CCP has not signed any clients as of the time of this report). That risk is mitigated somewhat by the CCE experience of the individuals behind CCP, particularly their experience starting up Sonoma Clean Power.

In the current dynamic CCE environment it may be the case that by the time Davis/Yolo are proceeding forward, and, should they choose not to join an existing CCE, that CCP will offer a more established, competitive service which better meets the Davis/Yolo needs. A solicitation for wholesale services should include CCP as well as other participants in the wholesale services market.

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[4] This statement is based on analyzing the effect of the PCIA charges that will go into effect in 2016 on MCE's 2015 retail rates. MCE may have plans in place to mitigate the higher PCIA charges that is not currently reflected in the rate comparison presented in this study. Prior to finalizing the Technical Study, TEA recommends that it, the City and Yolo engage MCE on this subject.

[5] Under current rates as of February, 2016, MCE's Light Green residential rates are at a slight premium to PG&E's rates (http://www.mcecleanenergy.org/rates/).

1.5.2.5 Regulatory Risks Common to All CCE Options

In the highly regulated electricity industry, all participants face a variety of regulatory risks. Recently, CCEs were threatened by a bill in the legislature proposing to change CCEs from an opt-out model to an opt-in model. If this were to occur the odds are that new CCEs would realize much higher opt-out rates than has been the case to this point. This would impact the economics of CCEs and make it much harder for smaller prospective CCEs to be financially viable. However, the widespread interest in CCE's across the state makes such a legislative action less likely in the future as it becomes more politically risky.

As shown earlier in this section, the PCIA charges which PG&E collects from CCE customers for leaving PG&E service make up a substantial percentage of their overall electricity rate. In the coming year, those charges are going to double from 2015. Should they continue to rise substantially because power prices continue to decline, CCEs with locked in supply costs, which cannot take advantage of the lower power prices that are leading to the higher PCIA charges, will find it more difficult to remain rate competitive with the local utility.

Further, PG&E is planning to move from a four-tiered rate structure to a two- or three-tiered rate structure. This change, along with the possibility that PG&E will add a minimum or fixed charge, may impact the CCEs' financial viability depending upon the details of how those proposals are implemented.

1.5.3 Implementation Considerations

There are significant differences in the effort and commitment required to implement each of the options. Joining MCE requires only that Davis and/or Yolo pass an ordinance declaring their desire to join, signing the JPA agreement with MCE, and appointing representatives to the board. MCE would then take care of all of the other implementation needs – customer noticing and communications, power procurement, billing, etc.

In order to establish its own CCE, Davis / Yolo would need to develop an organization, contract for services, find credit and financing, procure supply and then manage a retail electricity business. While this process has been successfully followed elsewhere, there is still a significant effort and commitment required by the participating entities. Success will also depend on being able to find and empower the right people and partners to carry out this process.

1.6 Comparison Matrix

A comparison evaluation was performed to evaluate how well each option aligns to the CCE vision. The objectives outlined in the vision statements include environmental portfolio goals, rate competitiveness with PG&E, and the benefits of local control. The ultimate objective of the comparative analysis is to determine which CCE implementation option provides the greatest opportunity for Davis to realize its vision for CCE with the least risk.

1.6.1 Criteria and Scoring Method

Each CCE implementation option was evaluated against three primary criteria:

- Rate Competitiveness
- Governance and Local Control

- Risks and Mitigation

Within each of the primary criteria, a number of sub-criterions were evaluated and scored. All criteria were scored on a scale of '+2' to '-2' where a score of:

- +2 is considered highly favorable
- +1 is considered moderately favorable
- 0 is considered neutral
- -1 is considered moderately unfavorable
- -2 is considered highly unfavorable

The matrix provided a helpful way to compare the different options on a consistent basis. Different members of the advisory committee as well as City of Davis staff and consultants from TEA and LEAN engaged in the exercise of weighting and scoring the matrix. Ultimately, the matrix helped the committee and staff to develop recommendations through a process of arriving at consensus.

1.6.2 Rate Competitiveness

Rate Competitiveness is an evaluation based on results from the Pro Forma analysis and estimates of future MCE rates and considers factors such as rate savings relative to PG&E, as well as the ability of Davis to accumulate financial reserves for the purpose of investing in local energy resources and programs. This area served primarily as a threshold issue such that rate competitiveness was a requirement for a particular option to be considered as a potentially good direction for Davis/Yolo.

1.6.3 Governance and Local Control

Assessing issues related to governance and local control of different implementation options is a subjective evaluation. The sub-criterions within this category evaluate the efficiency and effectiveness for Davis to create policies, establish goals, adopt and implement business practices and direct long-term resource investments that meet the unique requirements of Davis rate payers. Although subjective, the analysis is very intuitive.

1.6.4 Risks and Mitigation

The final primary evaluation criteria considered in the comparative analysis is Risks and Mitigation. The sub-criterion in this section evaluates the relative riskiness of each implementation option, as well as the ability to manage and mitigate the identified risks. An identified risk may be material or immaterial, and the materiality needs to be weighed against the ability to manage and mitigate identified risks. In short, the criteria included in this section of the comparative analysis attempts to assess the likelihood of Davis being successful in meeting its stated goals and objectives.

1.6.5 Results

The comparison matrix analysis led to the following conclusions.

1.6.5.1 Rate Competitiveness

All the CCE options were found to be rate competitive – defined as able to meet or beat PG&E rates – over the course of the 10-year study horizon. This is due to the decline in renewables prices and natural

gas prices. New CCE's would have the advantage of building a portfolio from scratch in the current low price environment. Eighty percent of MCE's current portfolio of contracts is expiring over the next several years, so after an initial year or two of higher rates, MCE's costs should also decline (under current price projections). The stand-alone CCE was estimated to have lower overhead costs on a per MWh basis than a stand-alone with outsourcing to CCP. Nevertheless, all of the CCE options were considered to have met the threshold of rate competitiveness.

1.6.5.2 Governance and Local Control

As might be expected, the stand-alone CCE options (Davis-only or Davis plus Yolo) were rated highest in terms of the Governance and Local Control criteria. This is due primarily to the ability to direct energy investments to local objectives; the ability to adopt planning, management and business practices consistent with local objectives; and the ability of the community to interact with the governing board. The option to join MCE rated good but not as highly as stand-alone, with the CCP options also being positive relative to the status quo, but behind the other two options.

1.6.5.3 Risks and Mitigation

The MCE options rated as most favorable among the CCE choices on riskiness. This was due principally to being perceived as having lower operating risk, and little to no startup risk as compared with a new stand-alone CCE. However, in the area considered to be the most significant risk – market and counterparty risk – all the CCE options were judged to have equal risk.

1.6.5.4 Weightings

Given that all of the options passed the rate competitiveness threshold, the favoring of the stand-alone options for governance and local control criteria, and the judgement that the MCE options are less risky, the decision on which option to choose becomes a function of which set of criteria are most significant.

1.7 Recommendations[6]

1.7.1 Davis and Yolo Stand-Alone

The study finds that all CCE options are feasible. They are all highly rate competitive with PG&E and likely to be successful. In the judgement of the Community Choice Energy Advisory Committee, the option most suited to Davis achieving its stated vision is a Davis & Yolo stand-alone CCE model. This option provides the greatest opportunity to implement a CCE focused on the needs of the Davis and Yolo communities while also having the economies of scale to generate sufficient funds to provide rate savings, financial stability and resources to realize the Davis/Yolo CCE vision.

1.7.2 Davis Stand-Alone and Join MCE Options

If Davis and Yolo are unable to agree on a joint stand-alone CCE, the choice becomes more complicated. For Davis, the difference between a "Davis-only, stand-alone CCE" and the "Davis-only, join MCE" scenarios is less clear. In this case, the balance between the local control and governance preference for a stand-alone CCE and the perceived lower risk of the join-MCE option are more equally weighted. Within the team working on the question the choice between these options, should the preferred option not happen, would require more investigation – particularly to more clearly understand the risks.

The MCE option has the lowest risk of outright failure, and, should it fail, the repercussions will primarily be reputational as the financial repercussions will be borne by the JPA as customers revert to bundled service. A particular concern is if and how the City of Davis general fund might be exposed to the CCE's finances under a Davis-only Enterprise CCE model. Another risk identified by the CCEAC Technical Subcommittee that would be mitigated if Davis were to join MCE is the risk associated with failing to find a strong leader for the CCE and failing to establish a decision making ability and culture within the City that is able to make the critical and timely decisions that a CCE requires.

1.7.3 California Clean Power

The California Clean Power alternative, while feasible and likely to be successful, was considered less favorable than the other two options. First, the economics are less favorable due to higher

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[6] This report includes opinions which are based upon the best available factual information at the time the report was created. Energy markets include a complex combination of multiple risk factors including risk related to the commodity, counterparty, process, liquidity, regulatory and technology. The hypothetical results presented may not materialize. Any past performance presented may not be indicative of future results. While there are risks associated with engaging in any of these recommendations, it should be noted there is also risk in doing nothing at all. This brief statement cannot disclose all the risks and other significant aspects of the energy markets. You should therefore carefully review the proposal before you commit to a particular strategy.

administrative costs based on the original CCP quoted price (CCP subsequently indicated prices would be lower, but did not provide updated pricing). Second, Davis/Yolo will have less ability to acquire a resource portfolio to meet its unique needs than it would if it were to develop its own stand-alone model. Finally, CCP is a start-up organization that has its own inherent risks beyond the risks a new CCE would incur.

1.8 Sensitivities and Caveats

The findings of this report and the resultant recommendations are based upon the current market, regulatory, and technology environment. The report attempts to address the known uncertainties – in prices, regulatory costs, participation rates, and other factors - in the sensitivity analysis (Section 5.3). However, the outcomes that were examined may not capture what ultimately may occur. There is also a risk that factors that were not foreseen or anticipated in this analysis prove to be of major significance within the industry and impact the CCE business model.

Table 1 shows the sensitivity of the stand-alone CCE rates to different factors. The base case for these sensitivities is the Resource-specific 50% RPS portfolio. The change in rates due to changes in these factors, for the scenarios studied, do not make the average CCE rates higher than PG&E's.

Table 1: Rate analysis under sensitivity cases. The base case is the Resource-specific 50% RPS supply portfolio. The percentage change in average rates is how much the CCE stand-alone rate would change relative to PG&E rates in the same scenario as compared to the base case. Of these scenarios, for the base case, CCE rates would be most adversely affected in a low-price scenario.

Change in Average Rates in $/MWh	High Price Scenario	Low Price Scenario	20% Opt-Out	5% Opt-Out	Including Direct Access Load	Rooftop Solar (IEA Analysis)
Davis-Only	-6.8%	2.8%	1.4%	-0.6%	-1.5%	1.6%
Davis & Yolo	-6.5%	2.7%	1.0%	-0.4%	-0.8%	1.1%

The CCE business model is new and dynamic. The electricity industry is also going through significant changes due to technological advances and regulatory restructurings. Markets are always volatile and have been changing rapidly as technological advances are made in generation and resource extraction. It is therefore important to consider the findings as the best estimates for what will occur in the future based on the information available at present.

2 Introduction

2.1 Key Determinants of CCE Success

The Community Choice Energy model in California is a hybrid between a retail electric service provider[7] and a municipal utility. Like a municipal utility, a CCE provides service to a distinct geographical region –

[7] Electric Service Providers ("ESPs") are an alternative to traditional utilities. They provide electric services to retail customers in electricity markets that have opened their retail electricity markets to competition. In California the Direct Access program allows large electricity customers to opt out of *(footnote continued)*

specific cities and counties that have elected to join. When combined with the explicit focus on achieving particular environmental objectives, such as greater reliance on renewable and low-carbon generation, the CCE model can provide an attractive alternative to the incumbent IOU for the consumers that it serves. Unlike a municipal utility, however, a CCE is not a monopoly service provider.

Similar to a retail electric service provider, the CCE faces the risk of customers choosing to opt out of the program. If the CCE chooses to make long-term investments in, and/or purchase commitments from, renewable generators then substantial declines in customers and revenue can lead to a negative financial spiral of fixed costs being spread over fewer and fewer customers. The CCE must therefore be focused on rate competitiveness with the IOU's in order to minimize the risk of customer defections.

A number of factors will determine the long-term success of a CCE. Some of those factors, such as cost trends for renewable and non-renewable electric supply, are outside of the CCE's direct control. Others, such as how to construct a portfolio and manage long-term price risk, are well within the CCE's control and critical to its success. The following is a high-level survey of some of the key factors that will determine whether a CCE is successful over the long term.

2.1.1 Supply Costs – Price and Cost Trends

It is no coincidence that there is currently a surge in activity around CCE formation. There have been sustained and dramatic declines in the price of energy, both from conventional and renewable sources. Figure 3 shows the trend in gas prices since Q2 2014, while Figure 4 shows the trend in solar generation costs. Figure 3 captures spot prices from Q2 2014 to the present (white line), and forward prices at various points in time. Forward prices are prices for forward contracts, which allow CCE's to procure electricity at a fixed price for future delivery.

These dramatic price declines have led to a significant delta between the rates that are charged by incumbent utilities – which are based on resource decisions made in the past when prices were higher – and new market entrants that can purchase all of their power supply requirements at current or future price levels. Prospective CCEs now have the opportunity to differentiate themselves from the incumbent IOUs by offering greener supply portfolios to retail consumers. They are able to do so at rates at or below the incumbent utility's rates, even when payments of CPUC-approved exit fees are considered in the analysis. These factors create a favorable environment for new CCEs - especially those with ambitious environmental goals.

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utility-supplied power in favor of ESP-provided power. However, there is a cap on the amount of Direct Access load permitted in the state.

Figure 3: Natural Gas daily (spot) prices (white line) and historical and recent forward prices (colored lines) (from ICE)

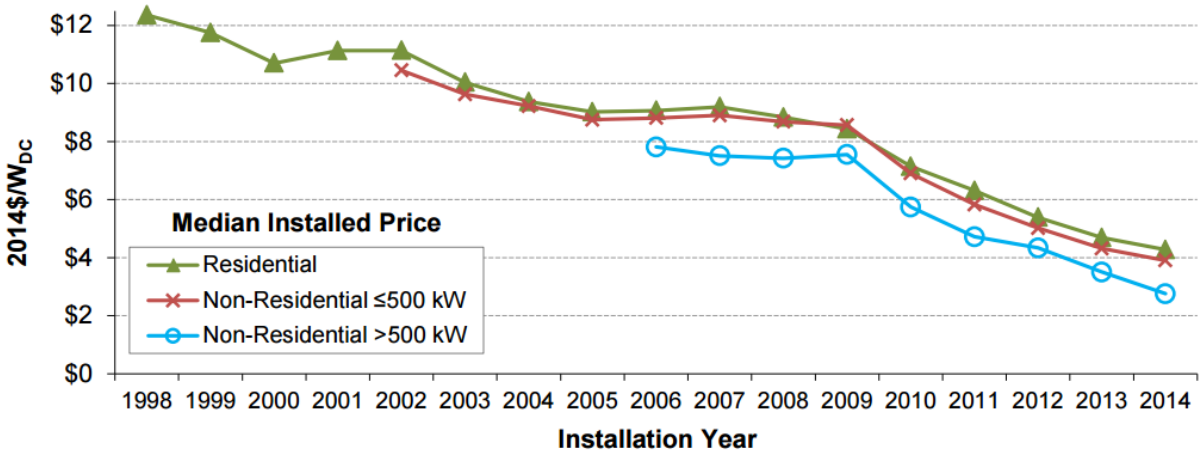

Figure 4: Solar generator costs over time.

2.1.2 Maintaining Rate Competitiveness with Volatile Costs

Although the current cost environment may make CCEs more competitive with the incumbent IOUs, it should not be forgotten market prices are volatile and uncertain. Figure 5 and Figure 6 show longer-term price trends in natural gas and power prices. One can see periods of low and high prices throughout. The challenge for a CCE is that an extended period of rate divergence between itself and the incumbent utility could result in a substantial number of customers opting out of the CCE model and returning to the IOU. This can lead to CCE failure as fixed costs are spread over fewer customers. The rates for these customers would invariably rise, thus making the CCE even less competitive with the IOU.

This leads to more customer defections and the cycle continues. It is therefore important for a CCE to develop a supply portfolio, rate structure, hedge program, and financial reserves strategy that will serve to mitigate the impact of volatile price trends on portfolio costs over both short- and long-term time horizons.

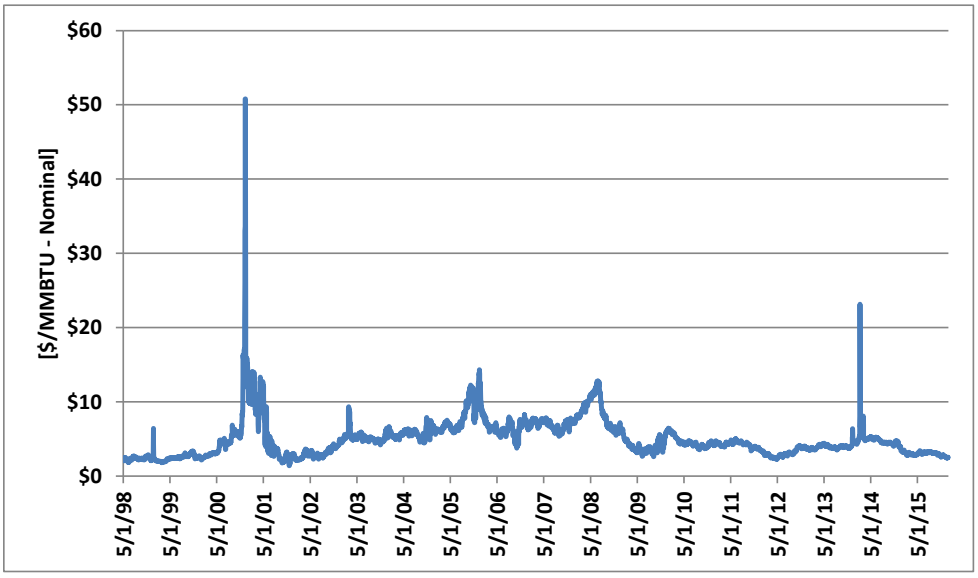

Figure 5: PG&E Citygate Prices

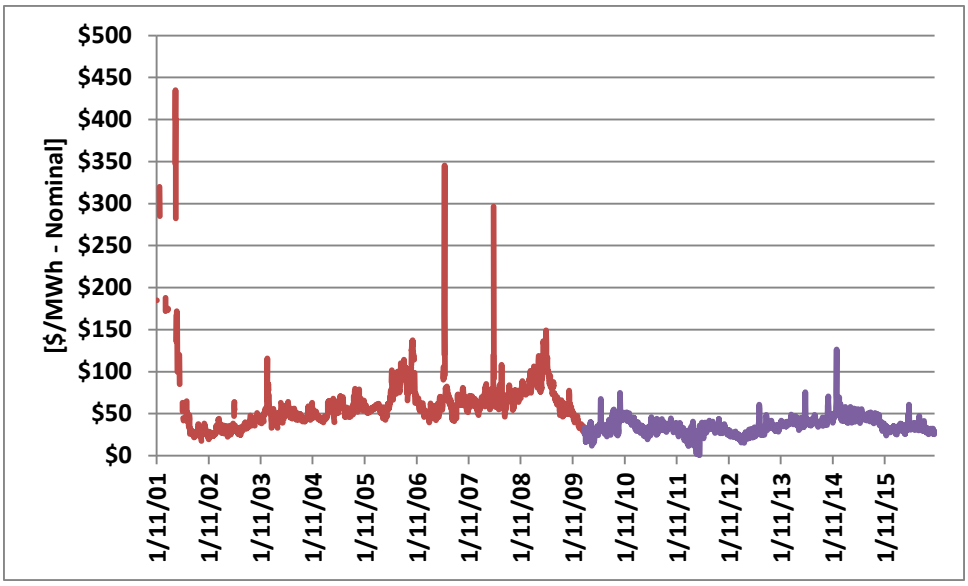

Figure 6: CAISO North of Path 15 (NP15) Peak Day-Ahead Prices, pre-MRTU (Red) and post-MRTU (Purple)[8]

2.1.3 The Vision

Per its Vision Statement, the City of Davis is pursuing a CCE with very clear and specific objectives. These objectives include environmental portfolio goals, rate competitiveness with the incumbent IOU, and the benefits of local control. Since the largest threat to a CCE's viability comes from the ability of customers to opt-out of the program, the CCE needs their vision to be compelling and to inspire loyalty among customers as the CCE works to achieve all of its goals.

2.1.4 Customer Retention

As mentioned previously, given the decline in both conventional and renewal power supply costs in recent years, a new CCE has a distinct advantage of creating a new, greener supply portfolio that is cost competitive. However, CCEs should anticipate and plan for adverse price conditions to arise in the future. Keeping a low cost structure; actively managing a well-diversified supply portfolio across resource types, locations, and time horizons; and partnering with entities that have deep experience and capabilities in the electricity sector are some of the factors that will increase the likelihood of a CCE's success.

[8] The CAISO Market Redesign and Technology Update ("MRTU") was a comprehensive overhaul of the CAISO market. Among other changes it converted CAISO from a zonal market – with only three zones – to a nodal market with approximately 3000 different pricing nodes. This redesign has made it much easier for non-utilities, including CCEs, to function and participate on an equivalent footing within the wholesale market.

Although their risk profiles differ from CCEs with regards to opt-out provisions and the level of control they exert over their electrical systems, municipal utilities have long been able to provide electricity service at significantly lower rates than the IOUs. While CCE's face higher hurdles to achieving similar results, there are many similarities between them and municipal utilities. Both are owned by their local communities and have the ability to exercise local control over their resource portfolio and rates. Both are attuned to the needs and desires of their customers and able to more quickly respond to the will of their communities. These similarities bode well for the long-term success of CCEs.

2.2 Purpose and Scope of Study

This report is a comprehensive evaluation of the feasibility of establishing a Community Choice Energy program through the Community Choice Aggregation process within the City of Davis ("Davis") or in combination with unincorporated Yolo County ("Davis/Yolo"). Additionally, this report evaluates a number of options for how Davis/Yolo may choose to implement a CCE.

The Energy Authority, Inc. ("TEA"), working collaboratively with the Davis/Yolo Community Choice Energy Advisory Committee's ("CCEAC") Technical Subcommittee, has explored all the known potential avenues for CCE formation currently within California. This exploration included meetings with the three currently operating California CCE's – MCE, Sonoma Clean Power ("SCP"), and Lancaster Choice Energy ("LCE"). It also included meetings with two private companies that have offered to provide service to CCE's – California Clean Power ("CCP") and Community Choice Partners.

Following this research it was determined that at the present time there are two viable options to Davis/Yolo with regards to forming a CCE – creating a stand-alone CCE or joining an existing CCE. Additionally, the study considered several permutations of these two options, including variations that did not include Yolo County in the CCE and variations that considered the outsourcing of nearly all CCE functions to a full service provider (CCP). The following is a list of all options considered:

- Davis-only, stand-alone CCE
- Davis+Yolo, stand-alone CCE
- Davis +/- Yolo, join MCE
- Davis-only, stand-alone CCE with CCP providing full services
- Davis+Yolo, stand-alone CCE with CCP providing full services

This study provides a thorough analysis of the pros and cons of each of these. The analysis performs a comprehensive evaluation of the financial viability of each option. It also compares the different rates for each option with forecasted PG&E rates, as well as the qualitative aspects of the different CCE scenarios. The objective is to determine which option(s) provide the greatest opportunity for realizing Davis/Yolo's vision for Community Choice Energy with the least risk. The ultimate purpose of this study is to provide the City of Davis and Yolo County clear direction on how to proceed in their efforts to take ownership of their energy futures through the vehicle of Community Choice Energy.

2.3 Approach

2.3.1 Pro Forma

The study uses a detailed 10-year-forward financial Pro Forma in order to develop a clear understanding of the financial prospects of a stand-alone CCE. The Pro Forma was constructed around hourly prices and load shapes due to the evolving structure of the electricity market in California. Increasing amounts of variable generation on the Western electric grid are having significant impacts on market prices, and the analysis needed to account for those impacts, especially as they become more pronounced over the time-horizon of the study.

Because the future is unpredictable, the Pro Forma is designed to permit easy scenario analysis around significant assumptions within the study. Inputs such as power prices, supply portfolios, customers, Direct Access load participation, opt-out rates, rate discounts to PG&E, start-up costs, and reserve accumulation objectives can all be adjusted within the Pro Forma model to determine their impact on prospective rates. The impact of specific load classes and the penetration of load-modifying resources such as rooftop solar, battery storage, and electric vehicles can also be assessed. The Pro Forma serves as both the key tool for informing the financial viability of a Stand-Alone CCE as well as the basis for future CCE operation and planning should Davis/Yolo decide to proceed with a Stand-Alone model.

2.3.2 PG&E Rates Forecast

One key to the viability of CCE is the rate of customer participation. Because the alternative for customers is to remain with the current electricity provider through the opt-out process, a thorough, detailed PG&E rate forecast was prepared and incorporated into the study. This forecast was performed for the base case as well as the two study price scenarios. PG&E bundled customer rates were forecast along with the charges that PG&E applies to CCE customers.

2.3.3 Comparison Matrix

The study uses a Comparison Matrix to address both the quantitative and qualitative differences between the six scenarios. The Matrix evaluates each scenario against a set of criteria that were developed by TEA, the Technical Subcommittee and the full CCEAC with additional input from LEAN[9].

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[9] "LEAN Energy US (Local Energy Aggregation Network) is a non-profit, membership organization dedicated to the accelerated expansion and competitive success of clean energy CCA nationwide. LEAN works in partnership with a range of organizations to actively support the formation and success of new CCAs around the country. Bringing clarity and direction to a complex arena, LEAN provides information resources, formation support, and market expertise to a national network of local governments, commercial and non-profit organizations, advocacy groups and individuals wishing to launch CCA in their own states and communities." http://www.leanenergyus.org/

The criteria capture the elements that are important to achieving the Davis/Yolo vision as well as those that will drive organizational, operational, and financial success. In order to provide a comprehensive, objective ranking of the options, the Comparison Matrix is weighted and scored and the results summed across criteria to provide a final scoring for each option.

3 Integrated Vision for Community Choice Energy

The following is the entirety of the City of Davis Integrated Vision for Community Choice Energy which serves as the basis for this analysis of what the City of Davis (and Yolo County) are aspiring to achieve through a CCE implementation.

Community Choice Energy (CCE) is a state-authorized partnership with PG&E that lets Davis decide how the electricity used in our homes and businesses is produced and at what cost to Davis customers. PG&E would continue to deliver the electricity procured by the CCE and would perform billing, distribution system maintenance, and other utility functions. Davis customers would not be required to participate in the CCE program.

Start-up Phase Vision

The near term vision for Davis Community Choice Energy is to provide Davis residents and businesses greater choice as to the sources and prices of the electricity they use, by:

- *Offering basic electricity service with higher renewable electricity content at a rate competitive with current utility service;*
- *Offering other low carbon or local options at modest price premiums;*
- *Establishing an energy planning framework for developing local energy efficiency programs and local resources in the near future; and*
- *Accomplishing the above while accumulating reserve funds for future Davis energy programs and to manage energy costs and risks.*

Long Term Vision

The future vision for Davis Community Choice Energy is to continuously improve the electricity choices for Davis residents and businesses, while expanding local energy-related economic opportunities, by:

- *Evaluating and adopting the best planning and operational management practices in the electricity service industry;*
- *Substantially increasing the renewable electricity content of basic electricity service over time;*
- *Developing and managing customized programs for energy efficiency and on-site electricity production and storage;*
- *Accelerating deployment of local energy resources to increase local investment, employment, innovation and resilience;*

- *Working together with other Davis and Yolo County efforts, and in alignment with city goals, to achieve climate action goals and shape a sustainable energy future; and saving Davis ratepayers money on their energy bills.*

4 Study Methodology

The study of CCE feasibility and preferred implementation options consists of two primary parts. The first is a detailed, quantitative financial analysis of a Davis or Davis and Yolo Stand-Alone CCE. This analysis is a 10-year pro forma which begins with forecasted load, incorporates different supply portfolios consistent with Davis' Vision Statement, and allows for testing of sensitivities on a wide variety of inputs. The Pro Forma forecasts CCE rates and financial reserves, with a comparison to PG&E's projected rates. The Pro Forma model is also used to evaluate the cost of implementing a CCE in partnership with CCP.

The second component of the study is a comparative analysis of the various implementation scenarios available for Davis/Yolo. It compares the Stand-Alone model, joining MCE, and contracting with CCP for both Davis alone and a Davis plus Yolo combination across a variety of quantitative and qualitative criteria. The criteria are ultimately derived from the Davis CCE Vision document, but are broken down into more granular and specific pieces. The comparative analysis is presented in Section 10.

4.1 Pro Forma

The Pro Forma analysis forecasts a Stand-Alone CCE's economics over a ten year time horizon. It is designed not only to capture all of the identifiable costs and revenues but also to facilitate easy scenario modeling under a wide variety of circumstances.

In order to be representative of a CCE located within the California Independent System Operator ("CAISO"), the Pro Forma analysis has been built to simulate financial outcomes at an hourly level of granularity In the CAISO market. All loads are charged at the market price for energy at the location of the load on the CAISO transmission system, and supply is paid the market price for energy at the location of the generation on the system. Given the movement of the supply stack[10] within California and the West as a whole towards variable, renewable energy resources, the hourly and daily shape of both demand and prices is changing and is expected to continue changing in the future. Therefore, the shape of a CCE's load – as well as the shape and location of a CCE's supply – will significantly impact the prices that are paid and received, which in turn will help determine the overall financial viability of the CCA.

[10] The supply-stack is all of the generation resources within an area, "stacked up" in order of their cost to operate. In the West, renewables would be at the bottom of the stack since they don't cost anything to operate, while natural gas "peaker" plants would be at the top of the stack.

4.1.1 Structure

The Pro Forma is designed so that Davis/Yolo can assess their financial prospects under expected circumstances as well as test how financial results may vary under a wide variety of scenarios. Prices, load forecasts, CCE footprint, Direct Access participation, opt-out rates, retail rates by rate class, reserve targets, financing costs, administrative costs, supply mixes, customer product adoption, rate premium by product, retail program uptake, and PG&E rates and pass-throughs may all be varied to determine CCE cost and revenue sensitivities.

4.1.2 Components

The Pro Forma models the following components of the CCE's costs and revenues.

- Wholesale purchases from CAISO to meet load
- Procurement of Resource Adequacy capacity
- Congestion Revenue Rights
- Supply Costs and Revenues paid by CAISO
- Cost of RPS-eligible Renewable Energy Credits
- Impact of Retail Programs on Revenue and Costs
- Retail Revenue by Rate Class
- Impact on Revenue and Costs from Customer Product Adoption
- CCE Program Overhead
- PG&E & Regulatory Charges to the CCE
- Startup and Financing Costs

The model also includes the following additional charges faced by CCE customers directly from PG&E, in order to determine the overall rate competitiveness with PG&E.

- Transmission and Distribution Charges
- Power Cost Indifference Adjustment Charges
- Other PG&E Non-Bypassable Charges

4.1.3 Load Forecast

TEA created a10-year load forecast by hour and by rate class based on two years of historical meter-level data from PG&E and hourly load profiles by rate class for the last several years. The rate of load growth was assumed to be one percent per year, although it is adjustable within the model. Agricultural load was decreased by 25% from the two year average due to the impact of the drought on pumping loads. Loads were forecast for Davis and Yolo separately. Direct Access loads in each area were also forecast and kept separate in order to be able to include or not include them in the Pro Forma calculations. The default cases do not include the Direct Access loads since it is unknown whether Direct Access customers would choose to join the CCE. However, they are included in the Sensitivity calculations. No incremental energy efficiency, rooftop solar, demand response or electric vehicle penetration was assumed in the base case. Sensitivity cases were run for substantial increases in rooftop solar penetration. Increases in the other areas are expected to have little impact in the near term (energy efficiency, demand response), or to be favorable to rates (electric vehicles).

Figure 7 and Figure 8 show historical load data for Davis and Yolo County with breakdowns by rate class. Figure 7 shows monthly aggregated load for Davis and Yolo combined. The strong seasonal component to the usage is evident, especially with respect to Agricultural load. Figure 8 shows the percentage breakdown in each rate class between Davis and Yolo. The diversity of the usage between the two entities should make for a more balanced customer mix and demand profile than the two would separately. Figure 9 shows the Davis and Yolo loads separately.

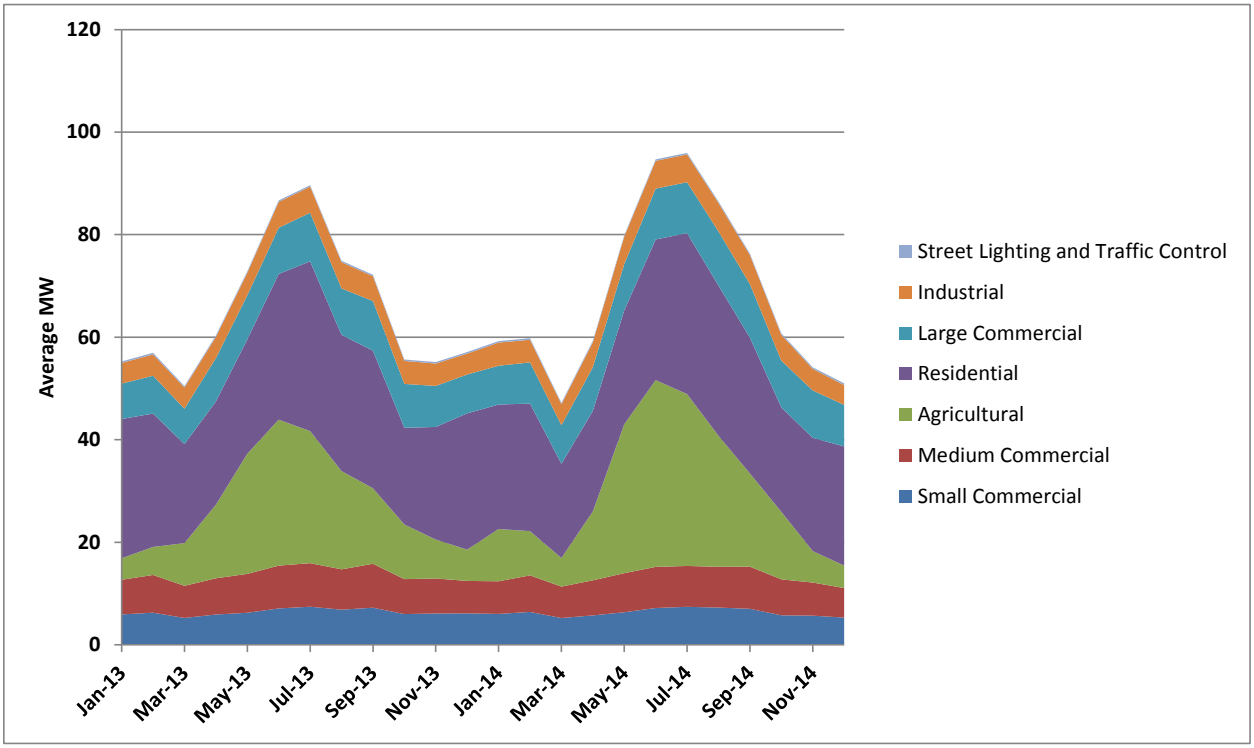

Figure 7: Total City of Davis and Yolo County Historical Monthly Load by Rate Class for 2013-2014

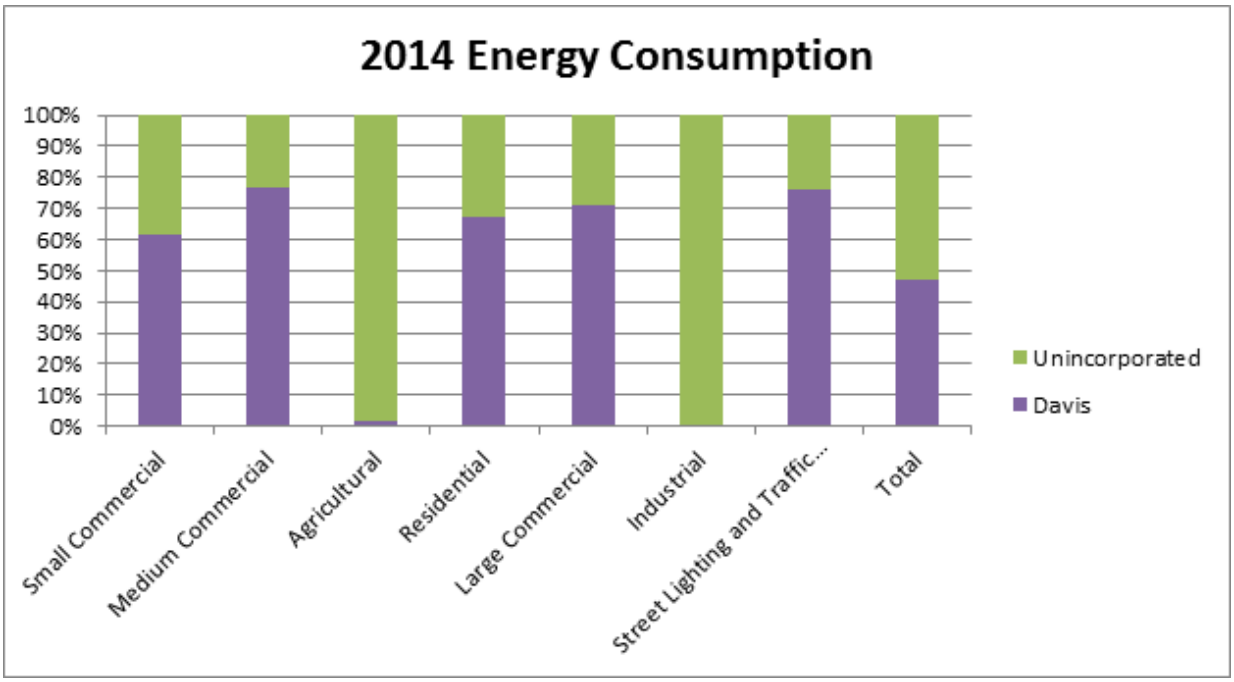

Figure 8: Historical Consumption Percentage Breakdown by Rate Class between City of Davis and Unincorporated Yolo County

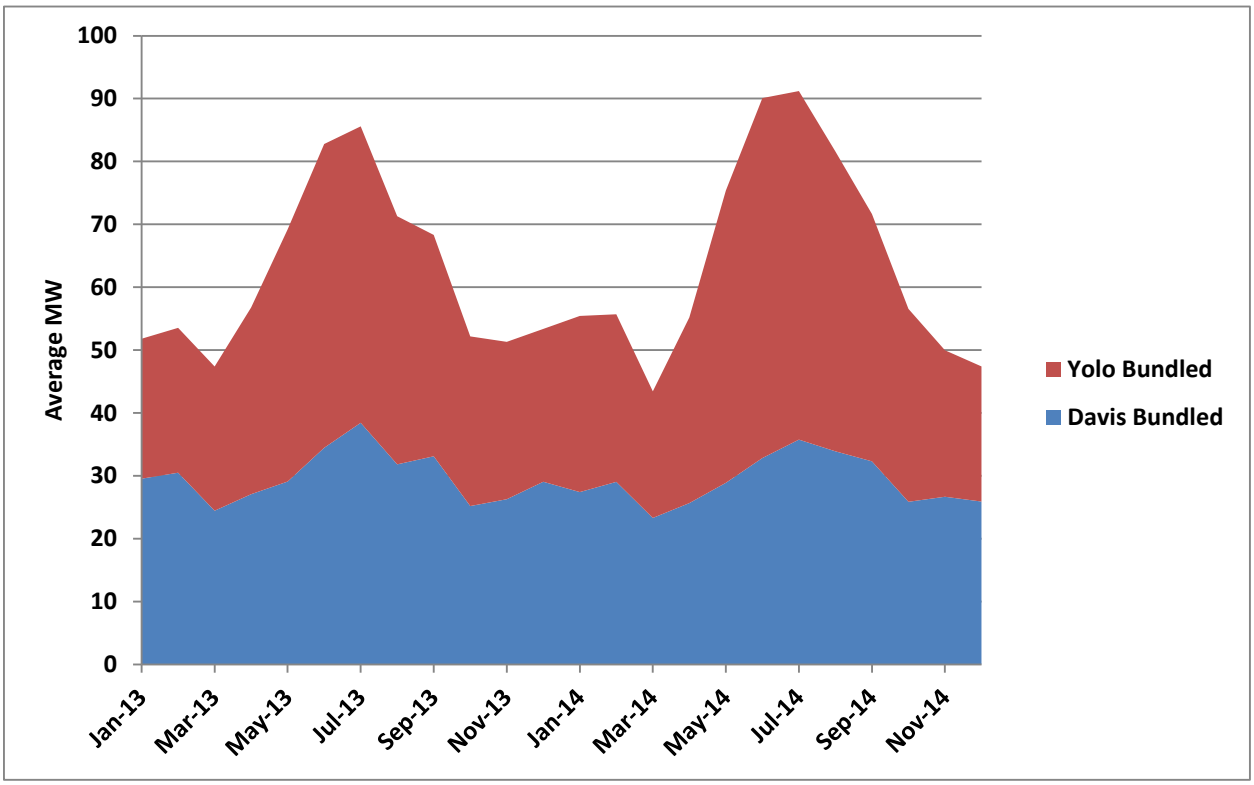

Figure 9: Historical Davis and Yolo Bundled loads.

Figure 10, Figure 11, and Figure 12 show load forecast data from the ten-year forward, hourly load forecast. Figure 10 and Figure 11 show aggregated monthly load, Figure 10 for Davis and Yolo combined, by rate class, and, Figure 11 aggregated by Davis load and Yolo load. Finally, Figure 12 shows the hourly shape of the load forecast for a summer week in 2017.

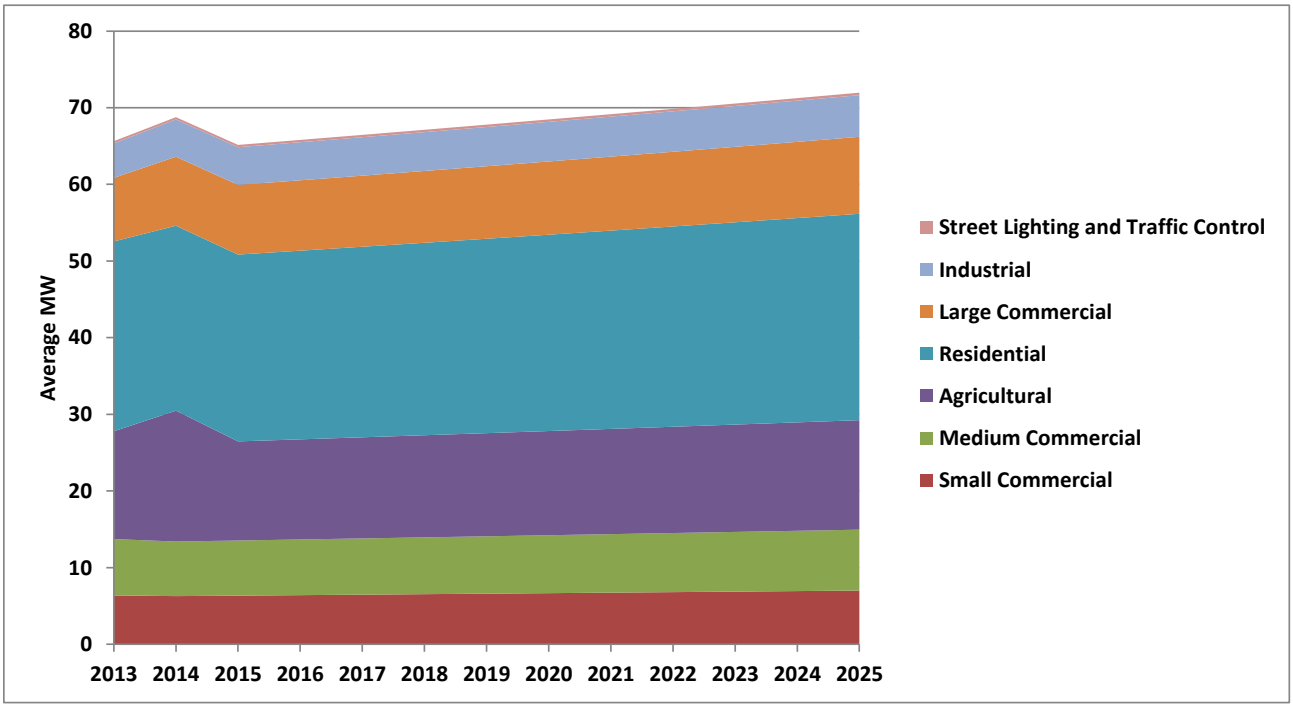

Figure 10: Combined aggregated Davis plus Yolo load forecast by rate class (including Direct Access Load).

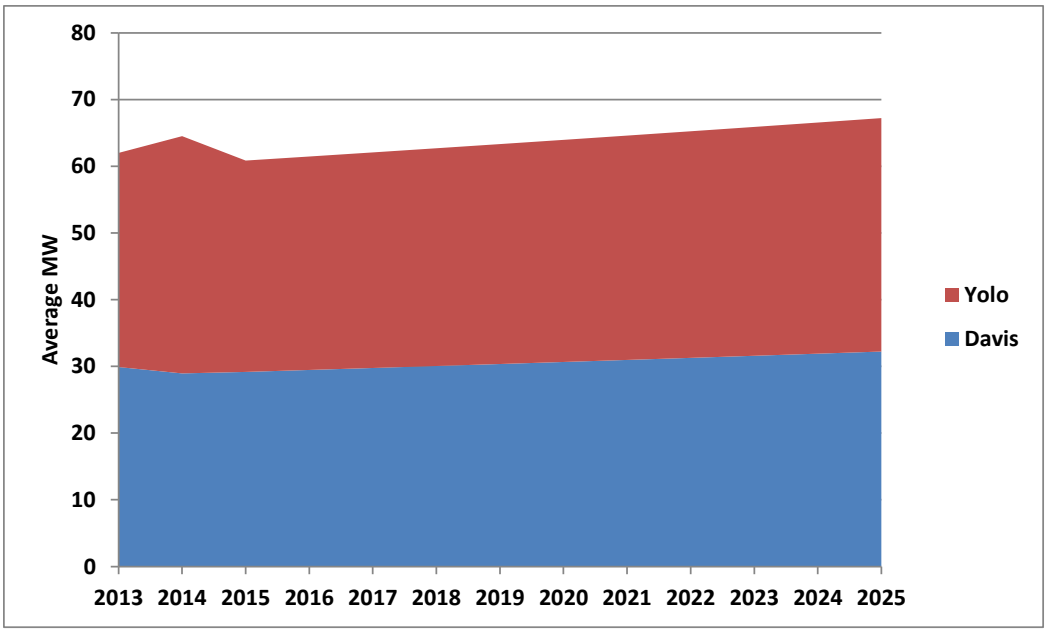

Figure 11: Load forecast for Bundled Davis and Unincorporated Yolo.

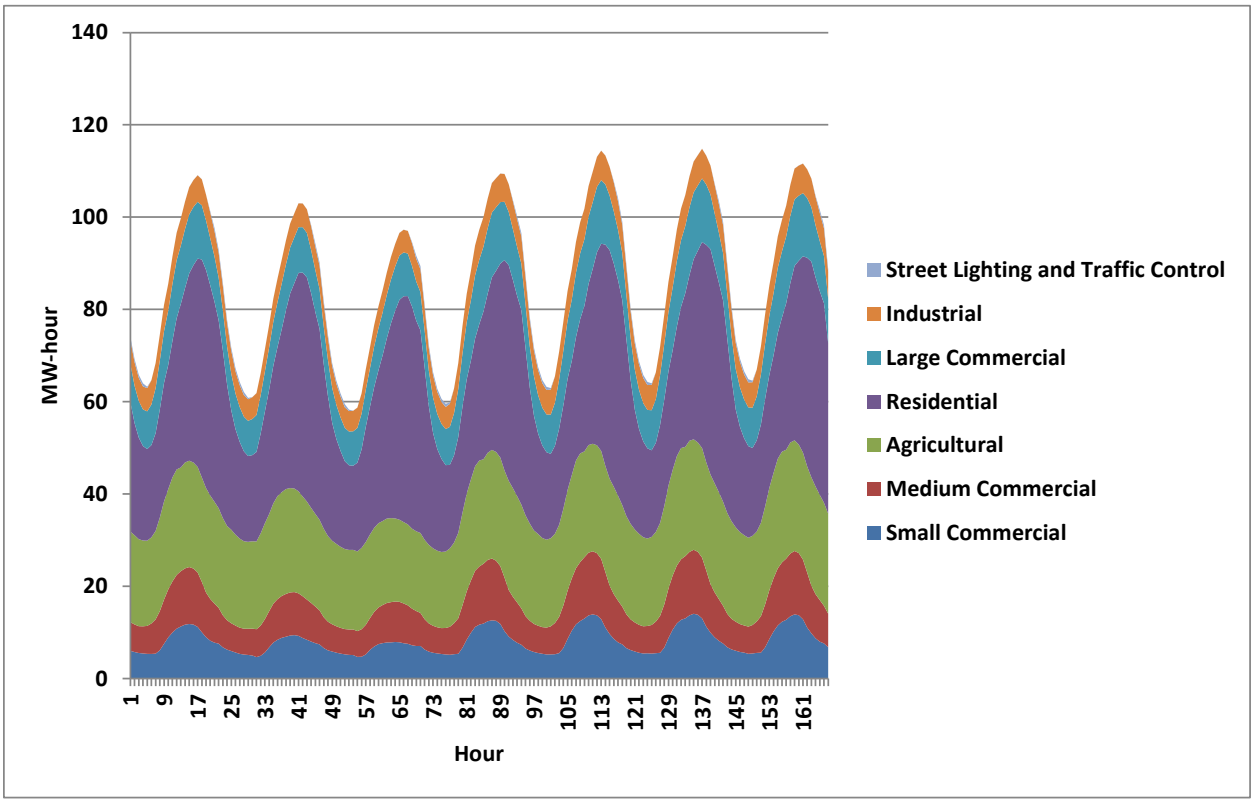

Figure 12: Hourly combined load forecast for a summer week in 2017 by rate class in MWh.

4.1.4 Price Simulations

Hourly prices for ten years in the Western interconnect, including CAISO, were simulated using the Aurora XMP production cost model. The model includes all the electric generators in the Western Electric Coordinating Council ("WECC") area. It then adds supply to the stack (and retires supply from the stack) over the study period based upon load growth assumptions, RPS and carbon constraint assumptions, carbon and gas price assumptions, and assumptions about the costs and economic viability of different generating technologies. Finally, future prices are simulated based on commitment and dispatch of the generation stack. The base case price forecast used in the analysis is shown in Figure 13: Base case monthly price forecasts for NP15 in $/MWh (red is HLH, green is LLH, dark gray are HLH & LLH forward prices and light gray are hourly prices)

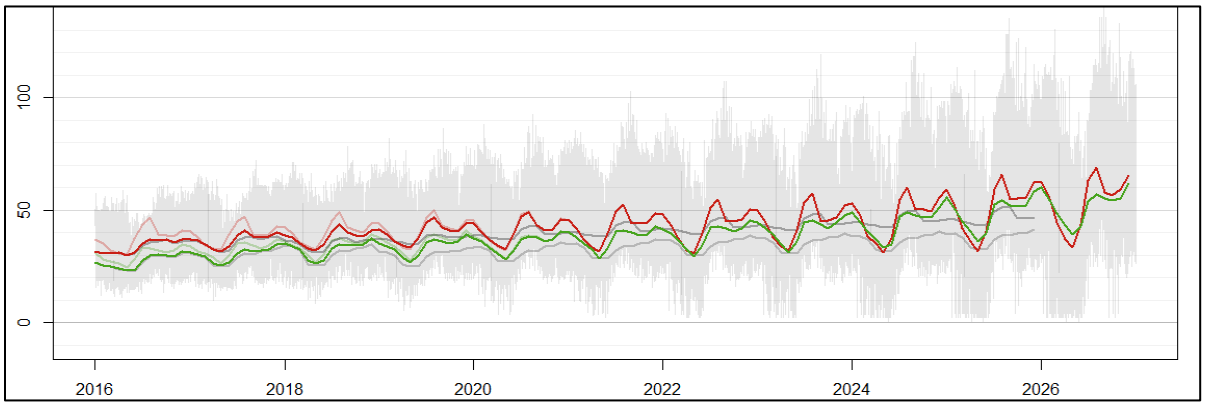

Figure 13: Base case monthly price forecasts for NP15 in $/MWh (red is HLH, green is LLH, dark gray are HLH & LLH forward prices and light gray are hourly prices)

4.1.5 Price Scenarios

The price simulation model was run under three different scenarios – the base case, a high price case, and a low price case. The base case represents the best estimate of future prices, costs and load growth. The high and low price cases are meant to represent potential scenarios that might test the CCE's financial viability rather than outcomes that are particularly likely.

4.1.6 Portfolio Construction

The CCE supply portfolio within the Pro Forma can be constructed from a variety of resources. The resources included in the model include:

- System Power (purchased or indexed to CAISO Day-Ahead prices)
- Bucket 2 and Bucket 3 Renewable Energy Credits (priced at premium to CAISO DA prices)
- Solar and Wind Power Purchase Agreements ("PPA") (up to 2 of each)
- Local Solar PPA (up to 2)
- Large Hydro generation (priced at premium to CAISO DA prices)
- Geothermal generation
- Retail Supply/Storage (Batteries, Demand Response, Rooftop Solar, Energy Efficiency)

4.1.7 PG&E Rates Forecast

The Pro Forma includes a forecast for PG&E rates for bundled customers and a forecast for charges that apply to CCE customers, including the Power Charge Indifference Adjustment (PCIA). As with the price simulations, the model includes a base case, high price case, and low price case for PG&E rates as well. The market inputs to the PG&E rates forecasts for base, high and low scenarios are the same as those used in the hourly price simulations used to determine prospective CCE rates. The load-weighted average[11] PG&E rate forecast is shown in Figure 14. The load-weighted average PCIA forecast is shown in Figure 15. Additional details of the methodology are included in Section 12.9.

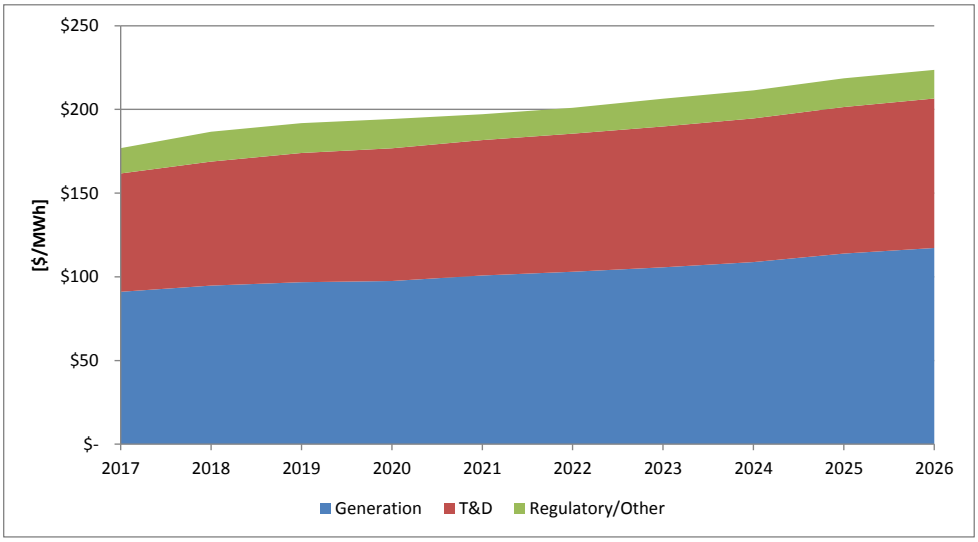

Figure 14: PG&E Bundled Customer Rate Forecast – Davis plus Yolo Load Weighted

[11] The load-weighted average is calculated by multiplying the rate for each load class by the rate for that load class and then dividing by the total load.

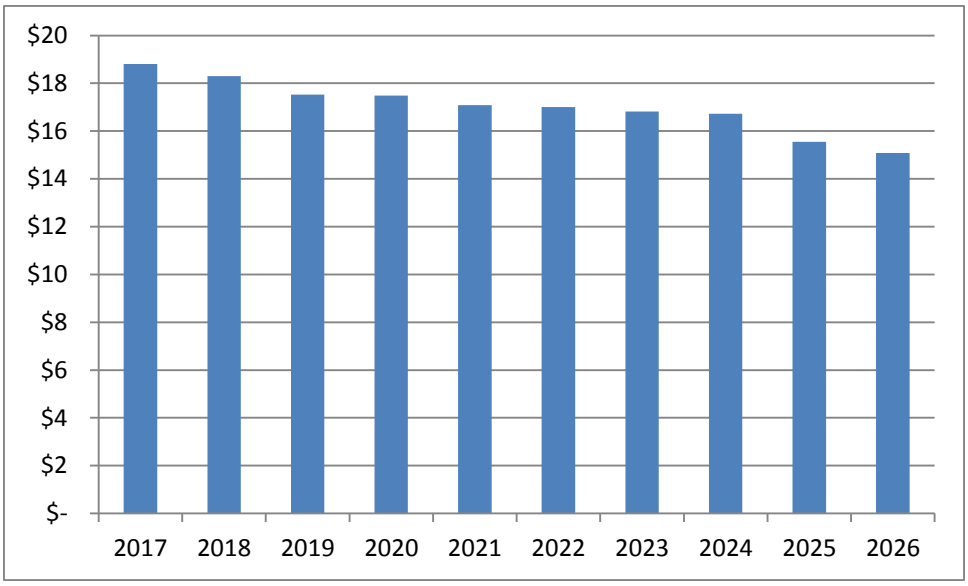

Figure 15: PG&E PCIA Rate Forecast – Davis plus Yolo Load Weighted, in $/MWh

4.1.8 Scenario Testing

The Pro Forma is designed to allow for easy testing of a wide variety of scenarios. The factors which may be varied include:

- CCE participants (Davis-only or Davis plus Yolo)
- Direct Access participation
- Price scenarios
- Reserves target as percent of retail revenue (or in total)
- Opt-out rates by rate class
- Retail program participation (energy efficiency, demand response, batteries, rooftop solar-net energy metering)
- Overhead costs
- Startup loan and financing costs
- Supply mix
- Discount to PG&E's rates
- The premium rate charged and customer adoption percentage by retail energy product
- Inflation rate and interest rate
- Supply prices

For the purposes of this analysis only a few scenarios were analyzed as will be discussed in the results section.

5 Results on Rates and Costs

To summarize the results of the rates analysis this report focuses on a limited number of scenarios that capture the main factors determining rate levels and reflect the extent to which the CCE is able to

achieve its vision. The two factors which are expected to have the greatest impact on CCE costs given the likely range of outcomes are the CCE footprint (whether it includes Davis and Yolo or just Davis) and the supply portfolio mix. The effect of supply portfolios is a function of what sources of supply are included and when they are purchased or built. The impact of other factors will be examined in the sensitivity analysis.

There are a variety of ways to develop rates for a prospective CCE. The method chosen in this analysis to assess CCE feasibility varies overall rate levels relative to PG&E's forecasted rates in order to cover the CCE's costs and achieve particular reserve accumulation targets. If the analysis shows that the overall cost of the CCE, plus the cost of non-bypassable charges that consumers will pay, is less than the cost under PG&E's rates, the CCE can later determine how to allocate the savings among the different rate classes. Specific supply portfolios were chosen to demonstrate the possible range of outcomes. Rates were calculated for a Davis-only CCE and also for a Davis plus Yolo CCE. Direct Access load was assumed not to participate, although the impact of participation is examined in the sensitivity analysis.

5.1 Base Case Rates and Costs for Stand-alone CCE Options

5.1.1 Assumptions

The following major assumptions were made in all of the base case rate calculations. (The Pro Formal allows for variations in these assumptions to run scenarios and check sensitivities.)

Variable	*Value*
Opt-out rate	10% for all rate classes
Reserve accumulation requirement over 10 years[12]	$7.5mm for Davis only, $15mm for Davis + Yolo
Basic service Renewable Portfolio Standard	The Basic Service is set to be 50% Renewables beginning on the first day of service
Retail Rate Selection	All customers are signed up for Basic Service
RECS	Any RECs required to achieve the RPS-standard are the minimum required Bucket[13] 1 with the remainder Bucket 2
In-Service Date	Fully in-service beginning 1/1/2017

5.1.2 Portfolios

Four different supply scenarios were chosen, all of which have a minimum renewable content of 50% of Bucket 1 and Bucket 2 eligible renewables. The Buckets are defined by the California Energy Commission and refer to the contractual arrangement between the generator of renewable energy and the supplier. The four options are:

1. Least Cost
2. Resource-specific
3. 50% increasing to 75% Renewables
4. MCE-like Portfolio

[12] The reserves were set to equal approximately 4% of retail revenue. They were set to a fixed total dollar amount so that the rates calculated for each scenario could be compared.

[13] Bucket 1 renewables are generated in-state or directly transmitted into the state. Bucket 2 renewables combines generation from a renewable resource with generation from a non-renewable resource such that the seller delivers the energy and the associated RECs to the buyer but the energy may be delivered at a different time and from a different source from where and when it is generated. This may be the case with a wind generator in the northwest for example which is "shaped" by storing some of the output using hydro generation and then delivering it at a later time. Bucket 3 RECs are the environmental attributes not associated with energy. Bucket 3 RECs are not used in any of the Davis/Yolo portfolios in this analysis.

5.1.2.1 Least Cost

The least cost portfolio is comprised of system power along with Bucket 1 and Bucket 2 RECs to meet the 50% RPS objective. The amount of Bucket 1 RECs in this scenario is based on the minimum amount required to satisfy the state's RPS guidelines. The remainder of the RECs used in this scenario are Bucket 2 RECs.

5.1.2.2 Resource-specific supply Portfolio

This portfolio consists of specific resource contracts to achieve the 50% RPS and system power for the balance of the portfolio needs.

For the Davis-only, stand-alone CCE option, the resources include:

- A 20 MW Solar Contract beginning in 2017
- 20 MW of Local Solar Contracts beginning in 2018
- A 15 MW Wind Contract beginning in 2019

For the Davis + Yolo, stand-alone CCE option, the resources include:

- A 33 MW Solar Contract in 2017,
- 45 MW of Local Solar Contracts in 2018,
- A 35 MW Wind Contract in 2019

Additional Bucket 1 and Bucket 2 RECs are procured to meet the balance of Davis/Yolo's RPS objective prior to achieving 50% from the procured renewable generators in 2019. There is also a small incremental amount of Bucket 2 RECs procured post-2019 as CCE load grows.

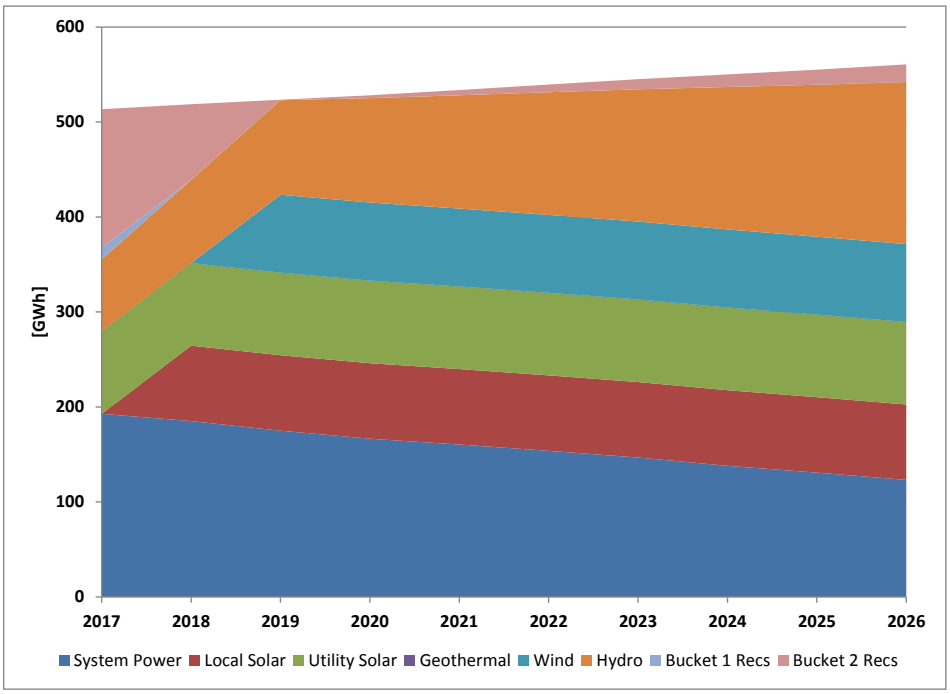

Figure 16: The Supply Mix for the Davis plus Yolo Resource-specific portfolio

5.1.2.3 Increasing Renewable Supply Portfolio (50% → 75%)

This portfolio grows the amount of renewable energy procured to serve CCE loads from 50% in 2017 to 75% by 2021. In addition to the resources included in the previous scenario, the following resources are added:

For the Davis-only, stand-alone CCE option, the additional resources are:

- 20 MW of Local Solar Contracts in 2020,
- A 15 MW Wind Contract in 2021.

For the Davis + Yolo, stand-alone CCE option, the following resources are added to the above portfolio:

- 35 MW of Local Solar Contracts in 2020,
- A 33 MW Wind Contract in 2021.

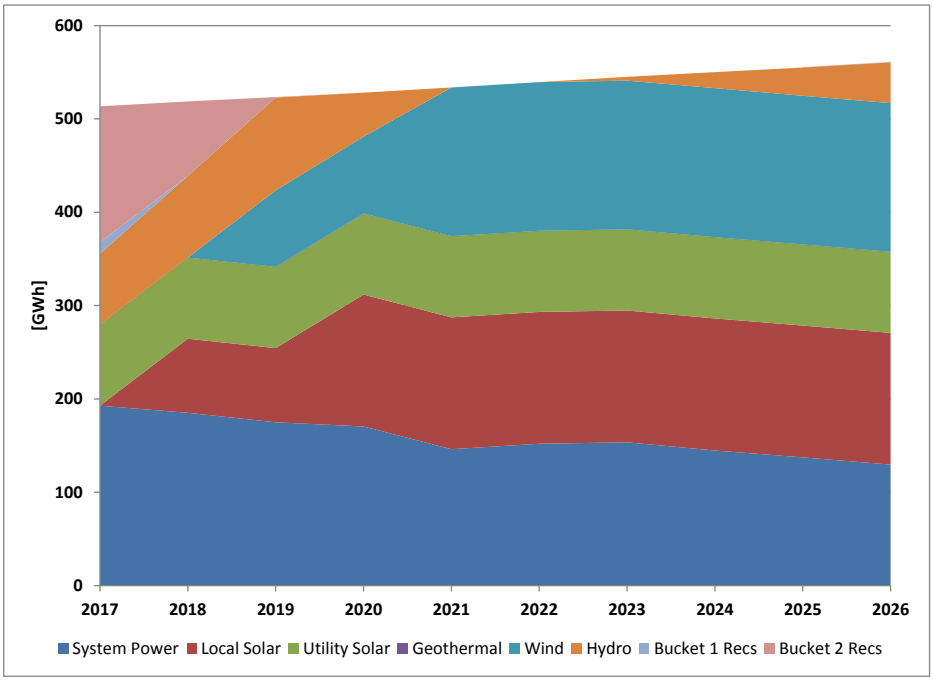

Figure 17: The Supply Mix for the Davis plus Yolo Increasing Renewable Supply Portfolio

5.1.2.4 MCE-like Portfolio

This portfolio attempts to mimic the MCE portfolio as it currently exists and as it is expected to evolve based upon MCE's 2015 Integrated Resource Plan (Figure 19). The replication is not exact because the mix of resources in this analysis does not include some of the smaller contributions in the MCE mix. It is also not exact because the timeline and resources are only approximately known based on the charts available in the resource plan. MCE also currently has 15% of their renewables supplied from Bucket 3 RECs, which Davis/Yolo has ruled out.

The MCE portfolios are constructed from utility-scale solar, local solar, wind, geothermal and large hydro. The initial contracted capacity is added for 2017, and then augmented in 2022. Figure 18 shows the annual energy by resource type for Davis plus Yolo.

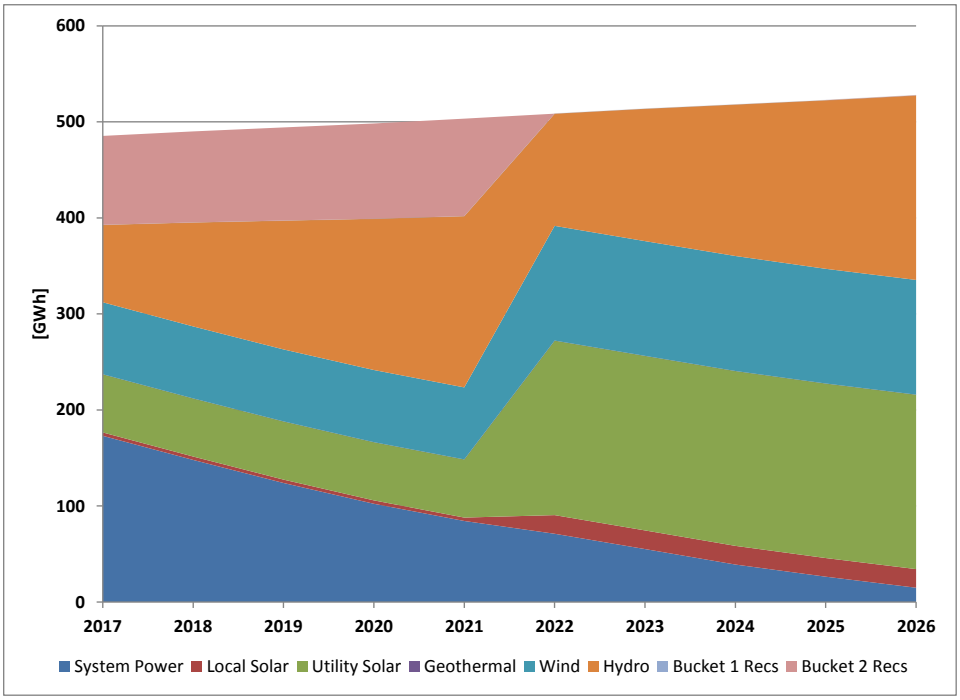

Figure 18: Supply Mix for the MCE-like Portfolio for Davis plus Yolo

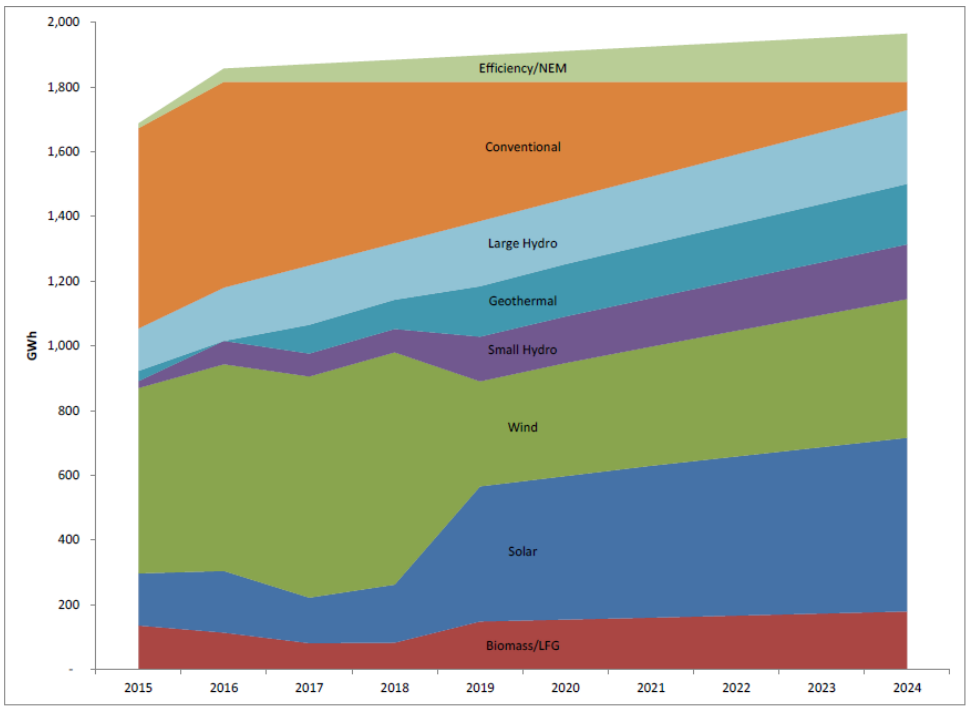

Figure 19: MCE's planned portfolio from the MCE 2015 Integrated Resource Plan

5.1.3 Financial Results

The results for each portfolio are summarized in Table 2. The table provides a variety of rate information for load-averaged rates for the CCEs, compared to the load-averaged PG&E rates. The following conclusions can be drawn from the results.

- All of the scenarios are competitive with PG&E's rates over the 10 year time horizon while allowing the CCE to accumulate significant reserves over the time period.
- All of the portfolios show rate discounts to PG&E in the first year of operation.
- All of the Davis plus Yolo scenarios show 10-year average rates that are at least 7% lower than PG&E

Table 2: Rate Comparisons for a Number of Supply Portfolios and CCE Footprints shown in $/MWh

Rates in $/MWh	PG&E	Least Cost	Resource Specific	50% -> 75% RPS	MCE-like
			Davis-only		
2017 Rates					
Total Rate	**$ 205.62**	**$ 192.74**	**$ 197.26**	**$ 200.57**	**$ 199.43**
Reserves	N/A	**$ 5.69**	**$ 8.55**	**$ 11.86**	**$ 7.40**
Total Cost	N/A	**$ 187.04**	**$ 188.70**	**$ 188.70**	**$ 192.03**
Gen	***$ 101.57***	***$ 63.36***	***$ 65.02***	***$ 65.02***	***$ 69.46***
T&D	$ 86.48	$ 86.48	$ 86.48	$ 86.48	$ 85.38
Other	$ 17.57	$ 17.57	$ 17.57	$ 17.57	$ 17.70
PCIA	N/A	$ 19.64	$ 19.64	$ 19.64	$ 19.49
Rates Relative to PG&E		**-6.3%**	**-4.1%**	**-2.5%**	**-2.6%**
10 Year Rates					
Average Rate Relative to PG&E		**-8.1%**	**-5.9%**	**-4.3%**	**-4.4%**
Reserves [$mm]					
2026 Reserves		**$ 7.5**	**$ 7.5**	**$ 7.5**	**$ 7.5**
			Davis & Yolo		
2017 Rates					
Total Rate	**$ 191.74**	**$ 174.47**	**$ 178.88**	**$ 181.33**	**$ 179.88**
Reserves	N/A	**$ 5.92**	**$ 9.15**	**$ 11.59**	**$ 8.03**
Total Cost	N/A	**$ 168.56**	**$ 169.73**	**$ 169.73**	**$ 171.85**
Gen	***$ 96.49***	***$ 54.51***	***$ 55.69***	***$ 55.69***	***$ 59.37***
T&D	$ 76.89	$ 76.89	$ 76.89	$ 76.89	$ 75.34
Other	$ 18.35	$ 18.35	$ 18.35	$ 18.35	$ 18.51
PCIA	N/A	$ 18.80	$ 18.80	$ 18.80	$ 18.62
Rates Relative to PG&E		**-9.0%**	**-6.7%**	**-5.4%**	**-5.4%**
10 Year Rates					
Average Rate Relative to PG&E		**-11.0%**	**-8.7%**	**-7.4%**	**-7.3%**
Reserves [$mm]					
2026 Reserves		**$ 15.0**	**$ 15.0**	**$ 15.0**	**$ 15.0**

The rate differences in Gen costs between the Davis-only and corresponding Davis-Yolo scenarios are due to spreading the overhead costs over greater load in the Davis-Yolo cases. The differences in the PG&E charges between Davis and Davis-Yolo scenarios result from having different proportions of the various rate classes in the two scenarios. Each rate class has unique T&D, Other and PCIA charges.

The Pro Forma for the Resource-specific supply Portfolio for Davis plus Yolo is shown in Figure 20.

	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Customer Accounts										
Residential	29,089	29,380	29,674	29,970	30,270	30,573	30,878	31,187	31,499	31,814
Low Income Residential	5,586	5,642	5,699	5,756	5,813	5,871	5,930	5,989	6,049	6,110
Agriculture	1,937	1,956	1,976	1,996	2,016	2,036	2,056	2,077	2,098	2,119
Small Commercial	2,958	2,987	3,017	3,048	3,078	3,109	3,140	3,171	3,203	3,235
Medium Commercial	253	256	258	261	264	266	269	271	274	277
Large Commercial	127	129	130	131	133	134	135	137	138	139
Industrial	4	4	4	4	4	4	4	4	4	4
Street Lightting	431	436	440	445	449	453	458	463	467	472
Total	40,386	40,790	41,198	41,610	42,026	42,446	42,871	43,300	43,733	44,170
Customer Load (MWh)										
Residential	162,666	164,292	165,935	167,595	169,271	170,963	172,673	174,400	176,144	177,905
Low Income Residential	33,170	33,502	33,837	34,175	34,517	34,862	35,211	35,563	35,918	36,278
Agriculture	103,871	104,910	105,959	107,018	108,088	109,169	110,261	111,364	112,477	113,602
Small Commercial	50,768	51,276	51,788	52,306	52,829	53,358	53,891	54,430	54,974	55,524
Medium Commercial	51,370	51,883	52,402	52,926	53,456	53,990	54,530	55,075	55,626	56,182
Large Commercial	45,596	46,052	46,513	46,978	47,448	47,922	48,401	48,885	49,374	49,868
Industrial	39,545	39,941	40,340	40,744	41,151	41,563	41,978	42,398	42,822	43,250
Street Lightting	2,664	2,691	2,718	2,745	2,773	2,800	2,828	2,857	2,885	2,914
Total Retail Load	489,651	494,547	499,493	504,487	509,532	514,628	519,774	524,972	530,221	535,524
Distribution Losses	23,014	23,244	23,476	23,711	23,948	24,187	24,429	24,674	24,920	25,170
Total Wholesale Load	512,664	517,791	522,969	528,198	533,480	538,815	544,203	549,645	555,142	560,693
Power Supply Costs										
Market Purchases	$ 17,489,777	$ 18,546,998	$ 19,618,070	$ 20,509,089	$ 21,695,314	$ 22,621,154	$ 23,871,379	$ 25,254,783	$ 27,934,646	$ 30,357,811
Net Renewable Energy	$ 2,682,939	$ 4,822,736	$ 6,319,022	$ 6,258,017	$ 6,090,233	$ 6,053,381	$ 5,868,037	$ 5,739,356	$ 5,014,048	$ 6,398,388
Retail Programs	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Resource Adequacy	$ 1,887,398	$ 1,939,878	$ 1,997,044	$ 2,050,365	$ 2,119,210	$ 2,183,926	$ 2,256,279	$ 2,310,503	$ 2,386,970	$ 2,458,384
RPS	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
CAISO Charges	$ 614,530	$ 625,316	$ 636,396	$ 647,781	$ 659,483	$ 671,512	$ 683,880	$ 696,600	$ 709,684	$ 723,146
Staff and Other Operational	$ 2,856,975	$ 2,914,115	$ 3,570,635	$ 3,642,047	$ 3,714,888	$ 3,789,186	$ 3,864,970	$ 3,942,269	$ 4,021,114	$ 4,101,537
Startup Financing	$ 646,873	$ 646,873	$ 646,873	$ 646,873	$ 646,873	$ -	$ -	$ -	$ -	$ -
Performance Bond	$ 10,000	$ 10,000	$ 10,000	$ 10,000	$ 10,000	$ 10,000	$ 10,000	$ 10,000	$ 10,000	$ 10,000
Cost of Credit for Procurement	$ 512,664	$ 517,791	$ 522,969	$ 528,198	$ 533,480	$ -	$ -	$ -	$ -	$ -
Total	$ 26,701,157	$ 30,023,705	$ 33,321,007	$ 34,292,371	$ 35,469,480	$ 35,329,159	$ 36,554,544	$ 37,953,512	$ 40,076,462	$ 44,049,265
PG&E Non Bypassable Charges										
PCIA	$ 9,206,027	$ 9,048,451	$ 8,753,424	$ 8,820,261	$ 8,700,724	$ 8,747,717	$ 8,738,945	$ 8,774,797	$ 8,245,378	$ 8,075,655
T&D	$ 37,650,779	$ 39,841,275	$ 41,907,534	$ 43,439,593	$ 44,751,469	$ 46,102,963	$ 47,495,273	$ 48,929,630	$ 50,407,305	$ 51,929,606
Regulatory/Other	$ 8,985,403	$ 9,047,595	$ 9,142,727	$ 9,060,139	$ 8,079,097	$ 8,159,410	$ 8,816,417	$ 8,902,963	$ 9,286,300	$ 9,377,160
Franchise Fee	$ 359,621	$ 363,217	$ 366,849	$ 370,517	$ 374,223	$ 377,965	$ 381,744	$ 385,562	$ 389,417	$ 393,312
PG&E Billing Services	$ 233,779	$ 242,531	$ 251,612	$ 261,033	$ 270,806	$ 280,946	$ 291,465	$ 302,378	$ 313,699	$ 325,445
Total	$ 56,435,609	$ 58,543,068	$ 60,422,145	$ 61,951,543	$ 62,176,319	$ 63,669,001	$ 65,723,844	$ 67,295,330	$ 68,642,099	$ 70,101,178
Reserves										
Annual Contribution	$ 4,360,226	$ 2,643,991	$ 387,142	$ (1,531)	$ 355,006	$ 1,660,651	$ 1,771,858	$ 1,915,735	$ 2,098,442	$ (191,520)
Cumulative Reserve Fund	$ 4,360,226	$ 7,004,217	$ 7,391,358	$ 7,389,827	$ 7,744,833	$ 9,405,484	$ 11,177,343	$ 13,093,078	$ 15,191,520	$ 15,000,000
Average Energy Costs										
Generation	$ 55.74	$ 61.93	$ 67.95	$ 69.23	$ 70.88	$ 69.93	$ 71.62	$ 73.61	$ 76.91	$ 83.60
PG&E Non Bypassable Charges	$ 114.05	$ 117.15	$ 119.73	$ 121.55	$ 120.76	$ 122.44	$ 125.15	$ 126.88	$ 128.13	$ 129.56
Reserves Contribution	$ 8.90	$ 5.35	$ 0.78	$ (0.00)	$ 0.70	$ 3.23	$ 3.41	$ 3.65	$ 3.96	$ (0.36)
Average Retail Rate	$ 178.69	$ 184.43	$ 188.45	$ 190.77	$ 192.33	$ 195.60	$ 200.18	$ 204.13	$ 209.00	$ 212.80
CCA Rate Benefit vs. PG&E	-6.8%	-7.5%	-8.0%	-8.0%	-8.6%	-8.9%	-9.1%	-9.5%	-10.4%	-10.9%
Renewable Attributes										
CO2 Emissions [lbs/MWh]	314	262	215	174	137	103	73	45	21	0
Renewable Percentage	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%

Figure 20: Pro Forma for Davis plus Yolo with Resourced 50% RPS Portfolio

5.1.4 Environmental Results

Table 3 shows the environmental performance for each of the supply portfolios. They were all constructed to be at least 50% RPS-eligible renewable supply, without using Bucket 3 RECs. In addition, hydro generation was added to each portfolio to achieve an overall 5% reduction in CO2 emissions as compared to the PG&E forecast. The MCE-like portfolio is considerably lower carbon content, due to additional renewable supply and hydro generation as compared to the other portfolios.

Table 3: Environmental Performance for Different CCE supply portfolios

	PG&E	Least Cost	Resource Specific	50% -> 75% RPS	MCE-like
	Davis-only				
Renewables Percent					
In 2017	**27%**	**50%**	**50%**	**50%**	**50%**
In 2026	**43%**	**50%**	**50%**	**76%**	**77%**
GHG Emissions					
Zero Emissions Percent - 2017	**59%**	**65%**	**65%**	**65%**	**67%**
Zero Emissions Percent - 2026	**75%**	**80%**	**80%**	**80%**	**98%**
10 Yr Total Emissions [mm lbs]	**685**	**651**	**651**	**651**	**317**
	Davis & Yolo				
Renewables Percent					
In 2017	**27%**	**50%**	**50%**	**50%**	**50%**
In 2026	**43%**	**50%**	**50%**	**73%**	**71%**
GHG Emissions					
Zero Emissions Percent - 2017	**59%**	**65%**	**65%**	**65%**	**67%**
Zero Emissions Percent - 2026	**75%**	**80%**	**80%**	**80%**	**98%**
10 Yr Total Emissions [mm lbs]	**1429**	**1357**	**1357**	**1357**	**666**

5.2 Rates and Costs for Other Options

Estimates of the rates for MCE and California Clean Power are necessarily more approximate than the estimates for the stand-alone option. The report uses the information which is available to make rough estimates of first-year rates for MCE and then an estimate of MCE's generation costs over the time horizon of their IRP. The cost of CCP is estimated as a differential compared to the stand-alone option without CCP, based on the estimated difference in overhead costs – assuming that the supply costs would be the same.

5.2.1 MCE

5.2.1.1 2017 Rate Estimate

The MCE rate estimate uses the publically available information about MCE's current rates. It holds the MCE (generation) component of those rates constant over the next two years, combines them with TEA's forecasted PG&E rates, and calculates the same load-weighted average 2017 rate as used in the stand-alone CCE analysis. MCE has indicated they do not expect any significant changes to their rates over the next several years. The estimated 2017 rates are shown in Table 4.

Table 4: Stand-alone vs MCE Rate Comparison. Stand-alone is for Resource Specific Portfolio

Rates in $/MWh	PG&E	Resource Specific	MCE Light Green	MCE Deep Green
	Davis-only			
2017 Rates				
Total Rate	**$ 205.62**	**$ 197.26**	**$ 206.52**	**$ 215.41**
Reserves	N/A	**$ 8.55**		
Total Cost	N/A	**$ 188.70**	**$ 206.52**	**$ 215.41**
Gen	***$ 101.57***	***$ 65.02***	***$ 82.83***	***$ 92.83***
T&D	$ 86.48	$ 86.48	$ 86.48	$ 85.38
Other	$ 17.57	$ 17.57	$ 17.57	$ 17.70
PCIA	N/A	$ 19.64	$ 19.64	$ 19.49
Rates Relative to PG&E		**-4.1%**	**0.4%**	**4.8%**
10 Year Rates				
Average Rate Relative to PG&E		**-5.9%**		
Reserves [$mm]				
2026 Reserves		**$ 7.5**		
	Davis & Yolo			
2017 Rates				
Total Rate	**$ 191.74**	**$ 178.88**	**$ 193.21**	**$ 201.65**
Reserves	N/A	**$ 9.15**		
Total Cost	N/A	**$ 169.73**	**$ 193.21**	**$ 201.65**
Gen	***$ 96.49***	***$ 55.69***	***$ 79.17***	***$ 89.17***
T&D	$ 76.89	$ 76.89	$ 76.89	$ 75.34
Other	$ 18.35	$ 18.35	$ 18.35	$ 18.51
PCIA	N/A	$ 18.80	$ 18.80	$ 18.62
Rates Relative to PG&E		**-6.7%**	**0.8%**	**5.2%**
10 Year Rates				
Average Rate Relative to PG&E		**-8.7%**		
Reserves [$mm]				
2026 Reserves		**$ 15.0**		

5.2.1.2 Estimated Generation Costs from MCE's Integrated Resource Plan

It requires even more assumptions to make MCE rate projections over a longer time horizon. Rather than try to forecast rates, the approach here is to estimate costs by calculating what would happen if MCE replaced its expiring power contracts with new ones. The costs of the new ones are assumed to be the same generation costs as the "MCE-like" portfolio that was calculated for the stand-alone CCE.

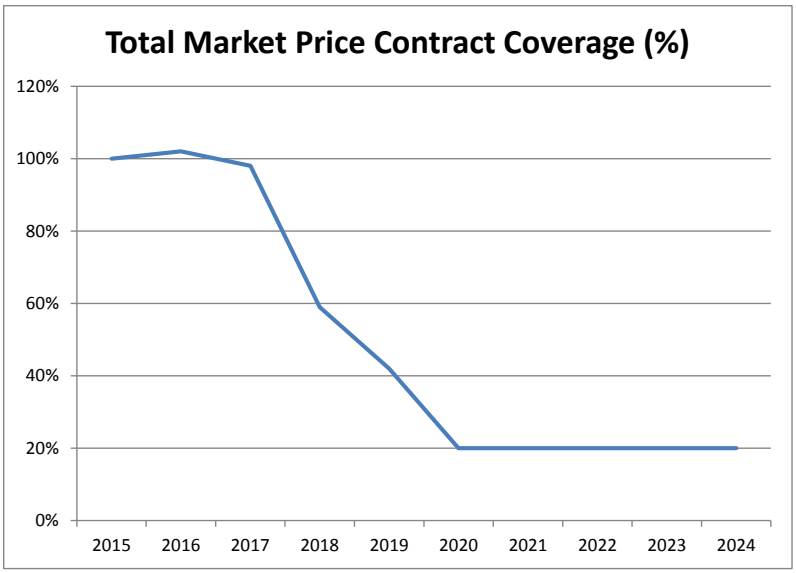

Figure 21: MCE financial hedge percentage.

MCE's Integrated Resource Plan[14] provides MCE's hedge percentage over time. This is shown in Figure 21. MCE's remaining hedged positions are assumed to be a proportionate share of their overall portfolio. The CCE costs, not including reserves, as compared to PG&E rates are shown for a number of different scenarios in **Error! Not a valid bookmark self-reference.**. The first three rows show the forecasted cost comparisons for MCE alone, MCE with Davis and MCE with Davis plus Yolo. The next two rows show the comparable cost-rate comparisons for Davis and Davis plus Yolo under the MCE-like scenario. The last two rows show the cost comparison for the Resourced 50% RPS portfolio.

Table 5: Total CCE costs (including customers' PCIA charges), not including reserves, relative to PG&E's rates for MCE alone, MCE with just Davis, MCE with Davis and Yolo, and for various stand-alone CCE scenarios.

Delta to PG&E	2017	2018	2019	2020	2021	2022	2023	2024	Average
MCE Clean Energy with the "MCE-like" portfolio supply costs									
MCE	$ (1.22)	$ (13.94)	$ (17.61)	$ (21.57)	$ (23.85)	$ (21.73)	$ (23.34)	$ (25.15)	$ (18.55)
MCE + Davis	$ (4.00)	$ (15.61)	$ (18.65)	$ (22.08)	$ (24.35)	$ (22.15)	$ (23.77)	$ (25.59)	$ (19.52)
MCE + Davis + Yolo	$ (5.45)	$ (16.06)	$ (18.37)	$ (21.32)	$ (23.53)	$ (21.31)	$ (22.88)	$ (24.64)	$ (19.19)
Stand-Alone CCE with the "MCE-like" Supply Portfolio									
Davis-only (MCE-like)	$ (13.76)	$ (16.60)	$ (12.10)	$ (11.31)	$ (13.49)	$ (13.19)	$ (14.79)	$ (16.52)	$ (13.97)
Davis + Yolo (MCE-like)	$ (18.78)	$ (21.43)	$ (17.45)	$ (16.69)	$ (18.70)	$ (17.41)	$ (18.83)	$ (20.45)	$ (18.72)
Stand-Alone CCE with the Resourced 50% RPS Supply Portfolio									
Davis-only (Resourced 50% RPS)	$ (17.09)	$ (15.71)	$ (11.83)	$ (11.36)	$ (13.78)	$ (17.54)	$ (18.93)	$ (20.42)	$ (15.83)
Davis + Yolo (Resourced 50% RPS)	$ (21.96)	$ (20.27)	$ (17.25)	$ (16.83)	$ (19.13)	$ (21.51)	$ (22.83)	$ (24.31)	$ (20.51)

[14] http://www.mcecleanenergy.org/wp-content/uploads/2016/01/Marin-Clean-Energy-2015-Integrated-Resource-Plan_FINAL-BOARD-APPROVED.pdf

The costs relative to PG&E represent the potential available funds to MCE or to a stand-alone CCE. These funds may be used to lower customer rates, accumulate reserves, invest in local energy programs, or some combination.

5.2.2 California Clean Power

The California Clean Power model in this analysis is somewhat different from the "turnkey" model that CCP has marketed. In this analysis, the CCP model consists of the Davis or Davis plus Yolo stand-alone models with the wholesale and back-office services outsourced to CCP rather than other providers. The reason for this model is that the Davis/Yolo CCE vision is highly focused on local programs and local supply and these would not be consistent with the CCP turnkey solution. Therefore, whereas the CCP turnkey model does not require any up-front investment from the customer, in this version it is assumed that the CCE would invest in the same staffing as in the stand-alone model.

The indicative pricing which CCP provided for this analysis was based upon the turnkey approach. Therefore, it may be less for the model envisioned here. CCP has also indicated, subsequent to release of the initial draft of this report, that their pricing has been reduced since that time. Therefore, the CCP analysis here may be overly conservative. The study ultimately concludes that, should Davis/Yolo decide to proceed with a stand-alone CCE, Davis/Yolo should consider including CCP when looking for outsourced service providers for wholesale and back-office services.

In order to estimate the costs of a CCP-outsourced CCE, given the considerations above, CCP's originally quoted $/MWh price is compared to the estimated back-office and wholesale services outsourcing costs within the stand-alone CCE model. The results are shown in Table 6.

Table 6: Estimated CCP Rate Premium to stand-alone Models. The Davis & Yolo stand-alone option benefits from spreading the same costs over approximately twice the load.

	Davis-only	*Davis & Yolo*
CCP – Wholesale Services Cost per MWh	**$6.75 / MWh**	**$6.75 / MWh**
Stand-alone Wholesale Services Cost per MWh	**$5.53 / MWh**	**$2.45 / MWh**
Estimated Incremental Cost for CCP Over stand-alone	**$1.22/MWh**	**$4.30/MWh**

To reiterate, the CCP incremental cost would seem to make CCP less competitive than a stand-alone model, especially for a combined Davis/Yolo CCE. However if the decision is made to proceed with a new CCE to open up an RFP for outsourced services to CCP (and others) as they may offer more competitive rates at that time and/or may have more customers to spread their fixed costs over.

5.3 Sensitivities

The impact of changes to various assumptions on CCE rates are considered in this section. The variables that were tested and how are described, and the results are provided. The base case used for the sensitivity analysis is the Resource-specific 50% RPS Portfolio from the Results section.

5.3.1 Direct Access load

There are significant amounts of Direct Access load in the Davis and Yolo footprints. In the base case assumptions it was assumed that the Direct Access load would not participate in the CCE. In this sensitivity analysis, the entire Direct Access load is included in the CCE load. Since this spreads fixed costs across more MWh the effect is to lower CCE rates given the same reserve accumulation targets.

5.3.2 PCIA charges

Increases (or decreases) to PCIA charges will flow directly to customers' rates. However, changes to PCIA will only occur in conjunction with market price changes. Therefore, tests of CCE rate sensitivity to PCIA changes is performed in conjunction with the tests of sensitivities to market price changes. The market price sensitivity tests described below include the corresponding PCIA (and PG&E generation) rate changes.

5.3.3 Supply Mix

The sensitivities to supply mixes are examined in the main report section based on four different supply mixes. There are of course an infinite set of combinations of supply – however, the cases that were modeled were chosen to represent a range of outcomes within a realistic set of alternatives. In actuality the supply mix could be varied and the impacts will depend on how they are changed. Costs of renewable supply are declining in the model, the further out supply is procured the more economic the outcome. Figure 22 shows the cost and price curves for utility-scale solar and Northern California electricity prices[15]. They cross in 2023. It should be understood that these are forecasts and actual prices may vary considerably. This study does not advocate delaying any resource procurements based solely on these price forecasts.

[15] For details on the sources and how these forecasts were calculated, see Section 12.3

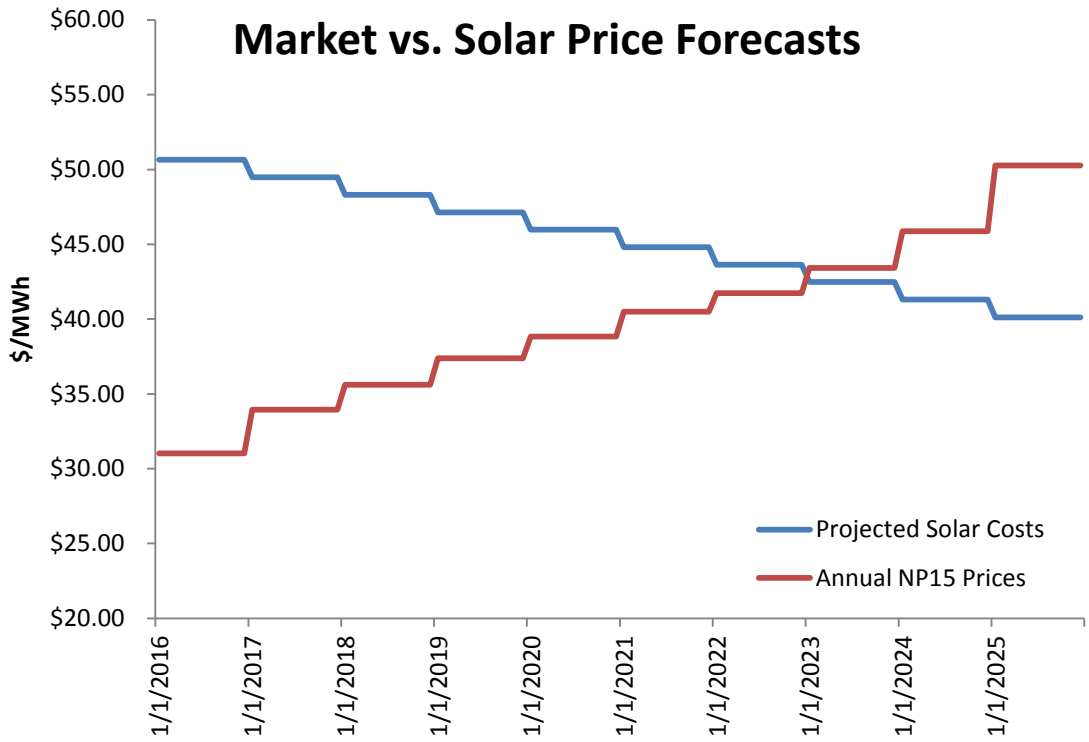

Figure 22: Utility-scale solar supply cost forecast compared to NP15 price forecast

5.3.4 Opt-out Rates

Since a CCE operation will entail some fixed costs, the more load there is to spread those costs across the lower those costs will be on a percentage or per customer basis. An opt-out rate of 10% across the board was used in the main rate analysis. This is based on recent CCE experiences as well as the impact of lower energy costs and greater rate benefit as compared to PG&E. However, it is also true that at least initially MCE experienced significantly higher opt-out rates (due in part to an advertising campaign that is now prohibited under state law). Therefore, sensitivity to opt-out rates is assessed for an opt-out rate of 20% across-the-board in the below results. For completeness, a 5% opt-out scenario is also performed

5.3.5 Market Prices

Market price scenarios were part of comprehensive market price, renewables costs and PG&E rates scenarios in order to simplify the sensitivity analysis. Two scenarios were constructed – one termed "High Price", and one "Low Price". The high price scenario consisted of higher gas prices, carbon allowance prices, and solar and wind generation costs. These inputs were run through the Aurora model to generate higher power prices. They were also run through the PG&E rates model to generate corresponding PG&E rates – including PCIA rates. Likewise, lower price and cost scenarios were also simulated. The assumptions are discussed in detail in the Appendix in Section 12.

5.3.6 Retail Program Impacts (Rooftop Solar, EV's, DR, EE)

The sensitivity of rates to retail programs is fairly limited overall. The largest impact would be expected to come from the continued expansion of rooftop solar within the CCE service territory. This will lead both to a reduction in CCE-served load as well as a shift in which hours load is served. To estimate the impact of increased rooftop solar on CCE rates the rooftop solar assumptions form the Integrated Energy Analysis for Davis, California report was used.

The impact of growing Electric Vehicle penetration in Davis/Yolo will lead to growth in CCE-served load which will be net positive for CCE rates. The impact of Energy Efficiency and Demand Response programs will also lead to potential load decline, but on a modest scale. The impacts are likely to be significantly less than the impact of increasing opt-out rates to 20%.

5.3.7 Results

The results of the sensitivity tests appear in Table 7. All of the scenarios still lead to average rates over the 10 year study period which are below PG&E's. Higher prices and costs for renewables have a larger adverse impact on PG&E's rates than they do on the CCE's. Lower prices and costs, which correspond to higher PCIA charges are on balance slightly unfavorable to the CCE. Lower load – due to higher opt-out rates, increases to rooftop solar, or other retail programs which reduce load are slightly detrimental to CCE rates. Conversely, greater load due to lower opt-out rates, inclusion of Direct Access accounts, or increased customer load from electric vehicle adoption or for other reasons is beneficial.

Table 7: Rate analysis under sensitivity cases. The base case is the Resource-specific 50% RPS supply portfolio. The percentage change in average rates is how much the CCE stand-alone rate would change relative to PG&E rates in the same scenario as compared to the base case.

Change in Average Rates in $/MWh	High Price Scenario	Low Price Scenario	20% Opt-Out	5% Opt-Out	Including Direct Access Load	Rooftop Solar (IEA Analysis)
Davis-Only	-6.8%	2.8%	1.4%	-0.6%	-1.5%	1.6%
Davis & Yolo	-6.5%	2.7%	1.0%	-0.4%	-0.8%	1.1%

6 Options for CCE Implementation

The City of Davis and Yolo County are fortunate in having a number of CCE options CCE. They may choose to set up their own CCE, either individually or combined; they may choose to join an existing CCE – MCE or possibly SCP; or, they may choose to use a private company such as California Clean Power to implement and run a CCE on their behalf. In this section we describe each model and lay out the process for implementing and operating each one.

6.1 Stand-alone Model

A stand-alone CCE may be implemented in a number of ways depending on which and how many entities elect to join, what sort of structure they wish to set up, and how much they wish to rely on outside service providers. The scenario laid out in this study is a particular approach, which has advantages and disadvantages, but which follows an overall model that TEA has found to be extremely successful in the industry. At a high level, the approach is to establish a relatively small staff of highly capable individuals. That staff would then be augmented through reliance on outside service providers

and consultants. These resources will have specialized knowledge and systems in areas of the business where significant economies of scale are present and where sharing knowledge and skills across multiple companies is possible.

This approach attempts to balance the competing desires of high capability and low cost. Staff hires are focused on areas that don't scale well and are dedicated to achieving the CCE vision. Those areas that are more generic and common across the industry are outsourced to firms with expertise in those areas, and where their actions can be aligned with the CCE's vision. These are grouped roughly into Back-office/Data Management services and Wholesale Market services.

6.1.1 Implementation

In order to implement a stand-alone CCE a number of steps will need to be followed. They can be grouped into Initial Steps, Build-Out, and Execution phases. The plan contemplates a 6-9 month timeline between when the City and/or County pass resolutions to start a CCE to beginning service for the first customers.

6.1.1.1 Initial Steps

The initial phase of the implementation is intended to lay the groundwork for the staffing and build-out of the new CCE. The first step is for the sponsoring jurisdictions to pass resolutions establishing a CCE. Then, a team would be tasked with planning and finding financing to complete the implementation. The team would likely consist of key staffers from each jurisdiction as well as outside consultants and local energy experts. The team would be tasked with the following items:

- JPA or Enterprise Model
  - Conduct due diligence and make a determination on whether to pursue an Enterprise or JPA model, and then execute steps to implement the preferred model
- Budget and Rate Estimate
  - Develop an initial budget, Pro Forma and rates estimate (may use the Pro Forma from this study as starting point)
- Financing
  - Find source(s) for start-up financing – likely from sponsoring agencies
- Staffing
  - Develop a staffing plan
- Credit
  - Develop a credit strategy for procuring power, meeting other obligations. Will likely include a line of credit, working capital, and a plan (lock-box or otherwise) for back-stopping power procurement.
- Outreach and Notification
  - Develop plans based upon successful launches of other CCEs to market the CCE, notify and educate customers, and send out Opt-Out Notifications
- Load Migration
  - Develop a plan for migrating load (likely phased, with city/county accounts migrating first)

- Implementation Plan
    - Assemble an Implementation Plan that will guide the implementation and be submitted to the PUC
    - Submit plan to the PUC

6.1.1.2 Build Out

The build-out phase of the implementation is devoted to putting in the people, policies and third-party contracts required for the operational CCE. It contemplates continued involvement of the implementation team, but gradual transference of responsibilities to newly hired staff and third-party contractors. After the build out phase, the newly formed CCE should be set to start executing its business of providing retail electricity service to the citizens of Davis and/or Yolo County. The following steps are part of this phase:

- Staffing
    - Hire staff and consultants according to staffing plan
- Back-Office Services
    - Contract for (combined) Back-Office, Meter Data Management, and Customer Relationship Management services
- Wholesale Services
    - Recommended but not required
    - Contract for wholesale services including procurement planning and execution, risk management assistance, credit management, load forecasting, etc.
- Load Forecast
    - Develop load forecast to submit to the CEC and CPUC, and to use in procurement planning, budgeting, etc
- Retail Products
    - Develop retail tariff / product[16] options
- Load Phase-In
    - Develop load phase in plan
    - Can begin with city accounts, then be expanded to commercial and finally residential
- Procurement Plan
    - Develop initial procurement plan based on assumptions about product uptake
    - Procurement can be adjusted through time as customer participation and product adoption becomes better known
- Rates
    - Use information from products, load forecast & procurement plan to develop rates for different tariffs and rate classes

[16] I.e. basic service, green service, 100% renewable service, etc.

- Policies & Procedures
    - Develop risk and operation policies and procedures
    - Develop and implement governance structures

6.1.1.3 Execution

The execution phase will bring the CCE into operation and flow into the continuing business. This phase is structured so as to let the CCE gradually ramp up their efforts and be able to adjust and update the approach as needed. To that end, service is ramped up over time through a phased transfer of meters from bundled IOU service to CCE service.

- Outreach
    - Execute the marketing, outreach and customer notification plans developed in the Initial Steps phase
- Procurement
    - Procure Resource Adequacy capacity, RPS-qualified RECs and any energy supply hedges
- Begin Service
    - Migrate initial set of meters based upon load phase-in plan
- Settle
    - Settle with CAISO and other suppliers for initial supply
- Bill
    - Bill initial (small) set of customers
    - Process cash flows
- Tranches
    - Initiate service for 2nd and subsequent tranches of customers

6.1.2 Organizational Structure

As mentioned previously, the recommended organization remains relatively small, although grows over time as it gains experience and as the financial situation permits. The initial staffing consists of five full-time positions, with additional assistance through part-time or shared resources. It is expected, as with any start-up organization, that especially initially, staff will wear many hats and provide back-up to one another.

The positions to be hired initially are described below. The CCE may also choose to fill some of these roles in whole or in part with consultants initially to smooth the ramp-up efforts and allow for time to find the right individuals.

6.1.2.1 CEO/General Manager

The CEO will be responsible for guiding the CCE program including ensuring that the CCE is achieving the vision laid out for it by its founding entities. The CEO will also maintain overall oversight of the program and the finances, guide budget making, communicate on a regular basis with the governing bodies, make key procurement decisions, and be the public face of the organization with key stakeholders and outside parties. The individual in this role should have strong operational and financial skills and

experience, as well as experience and skill in working with municipal organizations and decision makers and the public at large.

6.1.2.2 Assistant GM / Wholesale Specialist

The Assistant GM / Wholesale Specialist is responsible for day-to-day management of the wholesale needs of the operation, including directing the work of the outside wholesale services entity. They will help develop the budget, assist with hedging and procurement analysis, resource planning, and rate setting. They will also communicate with governing bodies, oversee CAISO settlement analysis and perform contract management. This position should be filled by someone with strong industry experience – in particular in terms of operational, hands-on wholesale analysis and procurement.

6.1.2.3 Key Account Manager

The Key Accounts Manager is responsible for the relationship with strategic and large accounts, including marketing the CCE, negotiating contracts and on-going communication. This person will also be involved in rate setting, general marketing, and account management and systems. Initially, they may be the point person for the customer relationship side of the outsourced back-office services described below.

6.1.2.4 Power Analyst

This is a lower level position that does not require a large amount of industry experience, but does require strong technical and financial skills. This person would work on developing rates, analyzing hedges, and performing other ad-hoc financial and system analysis. They would also be on point, along with the wholesale specialist, to understand, track and ensure that regulatory filings are made and key potential regulations and regulatory decisions are known about and understood.

6.1.2.5 Support Roles

In addition to the full-time energy staff, the proposed model includes a full-time admin assistant, and part-time help for legal, finance, IT and HR. These resources may be contracted for from the City or County, or hired on a part-time basis.

6.1.2.6 Future Staff

As the CCE establishes itself and attains more financial security it is anticipated that the CCE will add staff in order to help achieve the Davis/Yolo long-term vision. These staff will be focused on the retail side of the business, and on the regulatory needs of the CCE.

On the retail side the CCE would add a Communications Specialist to help develop the CCE brand and add to the customer communications capability. They would also add an Energy Efficiency / Demand Response / Retail Program specialist to enable the CCE to more aggressively pursue these programs. Lastly, a Regulatory Manager would come on-board to take regulatory tracking and compliance off the plates of the other staff members.

6.1.3 Outsourced Services

The stand-alone model, in balancing cost with expertise, relies on outsourcing functions where there exists significant expertise and economies of scale within the energy business. There are two broad

areas where this is the case. The first are focused more on the retail side of the business. The second are focused on the wholesale side of the business.

Both areas have a heavy reliance on expensive IT systems and infrastructure which companies are able to leverage over multiple customers. They have also invested in people and expertise in specific, generally-applicable areas of the business. Both of these attributes drive the economics of outsourcing for smaller energy-industry participants, and even some large participants.

6.1.3.1 Back-Office or Data Management Services

Back-office services would be prohibitively expensive for the stand-alone CCE to stand-up on its own. There is also little need for customized or specialized solutions, and so the economies of scale are high. Fortunately, this is a business with ample competition and these services are priced attractively.

These services include:

- Meter services
    - Includes meter data collection, cleaning, reporting
    - EDI – data communications services
- Customer management
    - Customer information system and Customer relationship management system – data and views available for CCE staff and call-center representatives
    - Customer call centers
- Billing and Reporting
    - Billing administration
    - Account reporting

6.1.3.2 Wholesale Energy Services

Wholesale energy services include all the functions that involve the wholesale-side of the business – from energy and capacity procurement to planning, risk management and other analytical services. Some of these services are required for a CCE, while others are recommended but not strictly required. There is also a range in the levels of service in particular areas.

In addition to contracting with a single entity for these services, there are alternative ways to procure them. Some may be supplied as part of a wholesale supply contract for example. They may also be supplied a la carte, or, some may be done in house, or may start as an outsourced service but eventually brought in-house. All possible combinations are represented in the industry.

The services that fall in this category include:

- Load Forecasting
    - Long-term load forecasting for regulatory filings and resource planning
    - Short-term load forecasting for submittal to CAISO and short-term portfolio management
    - *Required – can potentially be done in-house or contracted separately*

- Procurement
    - Execution of procurement transactions in the marketplace from variety of counterparties
    - Valuation analysis of procurement decisions
    - Assistance with contracting
    - *Required – can potentially be covered by a long-term supply arrangement with a single counterparty*
- Scheduling Coordinator Services
    - Interacting with the CAISO
    - Uploading demand and supply bids
    - Downloading, collecting and reporting awards, settlement data and market info
    - *Required – can potentially be covered as part of long-term supply arrangement*
- Risk Management
    - Analyzing financial exposure to changing market prices and other factors
    - Analyzing opportunities to hedge those exposures
    - Executing hedging transactions
    - *Recommended – can potentially be done in-house or contracted separately*
- Market Intelligence and Education
    - Tracking developments in the energy markets, conveying that information to staff, and using that information to inform portfolio management decisions, energy market training and tutorials to new staff, board members, council members and the public
    - *Recommended – can potentially rely on supplier to make decisions on one's behalf based on their knowledge*
- Planning
    - Analyzing, developing, and reporting on long-term resource plans
    - Incorporate trends in energy efficiency, rooftop solar and other programs
    - *Required – can perform in-house or contract separately*
- Regulatory
    - Assistance following and complying with key wholesale-side regulatory requirements
    - *Required – can perform in-house or contract separately*
- Enabling Agreements
    - Legal and negotiating assistance in arranging enabling agreements with suppliers
    - *Recommended – can instead rely on RFP-only procurement*[17]

[17] Rather than procuring energy in the more liquid and standardized electricity markets (which is primarily conducted on the Inter-continental Exchange ("ICE")), a CCE can issue Requests for Proposals for specific energy needs and agree to a contract for that specific purchase. Procuring on the exchange or in the standard bi-lateral markets requires having standardized contracts in place with a number of *(footnote continued)*

- Settlement
    - Settling with counterparties and CAISO
    - Validating settlements
    - *Required – can instead rely on single supplier contract to perform*
- Credit
    - (Potentially) assistance securing credit and /or providing credit
    - Credit monitoring and credit-exposure management to counterparties
    - Credit analysis and reporting
    - *Required – can instead rely on single supplier contract*

6.1.3.3 Single-source Supplier Alternative

An alternative approach to acquiring wholesale services by contracting with a wholesale services provider is to rely on a single supplier contract. As can be seen in the listing above, many of the services that a wholesale services provider provides can alternatively be folded in to a single source supplier contract. The single-source supplier approach has been taken by the three existing CCEs as well as the prospective Clean Power San Francisco CCE.

There are a number of benefits to this approach. The key benefits to a single source are:

- Simplicity of supply procurement,
- Pre-negotiated credit support, and
- Potentially greater rate certainty.

The key benefits for outsourced wholesale are:

- The potential for lower supply costs through competitive pricing for each purchase,
- Alignment with the CCE's interests on each service,
- Simplicity of services provision,
- Flexibility of supply sourcing and planning, and
- Knowledge sharing and knowledge transfer to CCE staff.

TEA recommends the outsourced wholesale services approach as the benefits of that approach are greater in our experience than the benefits of the single-source supplier approach. However, it should be noted, TEA is a (not-for-profit) wholesale services provider and so may have an inherent bias in favor of that approach. Ultimately, either approach will follow a very similar plan and lead to broadly consistent results in the short-term.

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entities (typically this is either an ISDA (International Swaps and Derivatives Association), WSPP (Western States Power Pool) and/or EEI (Edision Electric Institute) agreement).

6.1.4 Governance

The legislative provisions related to setting up a Community Choice Aggregation (CCE) program are outlined in California Assembly Bill 117 as further delineated and regulated by the CPUC. Article 11 of the California Constitution relates to local government with Section 9 specific to the provision of utilities services, including electricity. The single largest budget item for any CCE entity will be the purchase of wholesale power supply to serve its customer base.

6.1.4.1 Background

Public power organizations such as CCEs shoulder the responsibility of making multi-million dollar power purchase and sale decisions, often on abbreviated timelines. This is the case whether such decisions are on behalf of a single entity, two entities or a conglomeration of entities. A CCE serving about 100,000 residents, for example, will procure in the range of $50 million worth of wholesale power each year. Entities and staff responsible for making such power purchase decisions must establish clear authorities to do so.

6.1.4.2 Enterprise Model

A single entity CCE (a city or county, for example) may have an advantage in that overall decision authority generally resides at the "top of the pyramid" to a corresponding city council or board which may then act to approve and delegate specific CCE functions and authorities to a city manager, county manager, the CCE CEO or other staff positions. Some cities in California which provide electric power service to their communities have established separate utility boards or commissions to specifically address utility business management in order to assure appropriate attention to this task, and to avoid diluting such business or enterprise control with other levels of city government oversight. Multiple public agencies may join together to establish a CCE and contractually cede decision authority to a single entity (likely the largest member) to make requisite business decisions.

Forming a CCE as a municipal enterprise under the aegis of an existing city or county governmental body may avoid the need to create a new organization, such as a joint powers agency. A municipal enterprise could contractually agree to provide services to another public agency. Yolo County, for example, could set up a CCE program within its existing county government structure, and execute a contract with the City of Davis to include Davis residents in the County's CCE program (given the Davis City Council has also taken action to established a CCE program for the City). Each CCE program would be subject to decisions and authorities made and granted by the respective city council or county board of supervisors. Generally, the entity receiving services contractually is more amenable to having somewhat less control over the near-term decision processes and day to day operating procedures. Although additional participation opportunity could be attained, for example, by establishing a joint city / county advisory committee to report on and make recommendations regarding CCE management and operating practices. Ultimate control, however, resides with the respective city or county elected council or board staffing and operating the lead municipal enterprise.

6.1.4.3 Credit Considerations

One of the chief challenges facing a "start-up" electricity company, which is essentially what a new CCE is, is procuring sufficient credit to be able to acquire electricity supply on the most favorable terms.

Having to procure credit can be costly in-and-of itself, and, to the extent that it does not set the CCE on the best footing within the industry marketplace, can lead to mark-ups on procurement costs and other less than optimal financial management practices.

All of the existing California CCE's have resorted to some form of a lock-box concept to manage credit deficiencies. These structures have the advantage of allowing an organization which does not have any credit history or financial reserves to participate in wholesale electric markets. On the downside, however, the prices CCE's have had to pay are likely higher than they might otherwise have paid in more liquid forward markets. This is because with only a single counterparty to transact with there is a greater ability for that counterparty to ask for a premium to the price paid in the broader market. A lockbox will also limit the capability of the CCE's to manage their own finances in the initial stages of operations. It may be worth exploring whether a CCE (likely an Enterprise model) could lean on the founding municipality(s) credit to achieve lower transaction costs and greater financial flexibility. While such an arrangement will result in a higher risk exposure of the sponsoring entity compared to that of the sponsoring entities for existing CCEs, TEA believes that the risk/reward tradeoff warrants further investigation.

6.1.4.4 Joint Powers Agency Model

If multiple public entities want to achieve a common purpose and desire equally or proportionately to share business decision and operational control, this may be attained by establishing a joint powers agency (JPA), a common organizational structure within California which provides for two or more public organizations to form a new "joint" organization to pursue a common effort. A JPA's formative documents generally provide detailed guidelines with regard to participant entry/exit, decision making, cost sharing, staffing, and the like. And the JPA's board or commission further establishes by-laws which outline the protocols and procedures for administering the JPA.

6.1.4.5 Outsourcing

Several newer organizations have been established in California which purportedly allow for outsourcing needed CCE operational functions including advance funding and bonding needs, filing associated CPUC documentation, performing customer contact and opt-out activities, power procurement, meeting RPS, RA and other regulatory mandates, performing power scheduling, schedule coordination, and CAISO interface services, power settlements and validation, and the like. Two such entities offering such outsourcing arrangements are California Clean Power and Community Choice Partners, although at the time of this writing neither organization has yet established a formal community relationship to provide such services. Either separate or combined Davis / Yolo enterprise organizations or a newly established JPA may consider some form of partial or full outsourcing arrangement to assist with establishing and operating a CCE program.

6.1.4.6 Enterprise Structure and Implementation

To structure a CCE based upon an existing Single Public Entity – say, City of Davis or Yolo County – the following process could be followed.

- Davis and or Yolo County take requisite actions to establish a CCE in the applicable municipality.
- County Board of Supervisors or City Council has decision authority.
- Yolo County contracts with Davis, or vice versa, for CCE services.
- County or City may establish one or more committees (say, Community Choice Energy Committee) of CCE participants to advise and recommend actions for Board or Council consideration.
- Lead County or City provides necessary office space, administrative, finance, HR and other available services and allocates associated costs to the CCE enterprise.
- The lead County or City will be the responsible counter-party in all CCE related power purchase and sale transactions.
- The lead County or City may want to establish a separate Commission or Board (In Alameda, for example, Alameda Municipal Power (AMP) is a municipal enterprise. The City Council established the Public Utility Board (PUB) to oversee and approve utility actions, including power procurement decisions. The Mayor appoints 4 members of the 5 member PUB and the City Manager acts as the 5th member. Each member may cast one vote for decision purposes). A benefit of this approach is the ability of the PUB to focus solely on electric utility matters.

6.1.4.7 Joint Powers Agency Structure and Implementation

- Create New Joint Action Agency – say, Davis-Yolo Community Energy Agency (DYCEA)
- Structure the JPA to provide for dedicated CCE management and operational responsibility.
- Davis and Yolo County form and join DYCEA.
- The Davis City Council and Yolo County Board each appoint DYCEA commissioners (perhaps 2 from each organization, and alternates).
- DYCEA may establish several subcommittees, say:
  - Long Term Planning
  - Power Supply
  - Energy efficiency and customer programs
  - Finance and Rates
  - Environmental
- DYCEA provides (or contracts for) administrative and operational services and allocates associated costs to DYCEA members.
- DYCEA will be the responsible counter-party in all CCE related power purchase and sale transactions.
- DYCEA could actively seek other communities to join and thus share CCE benefits and operating costs.

6.1.4.8 Suggested Considerations

The current CCE investigation involves two entities: the City of Davis and unincorporated Yolo County. If a new CCE and JPA are established it will require substantial time, effort and directed staff focus to assure organizational success and meet the power needs and goals of local electric power customers

and potential renewable energy producers. It may be more efficient to establish a municipal enterprise dedicated only to the CCE venture, and possibly establish a separate Board or Commission to solely manage and oversee CCE activities. It seems likely at present that Davis and Yolo will choose to work together. However, if it is decided at some point in the future, each entity could separately pursue CCE (or not) by way of establishing a municipal enterprise or joining, independently, an existing CCE like MCE.

Another likely fruitful endeavor would be to assemble publically available contracts and documents for existing similar joint action energy organizations such as MCE, Sonoma Clean Power, Northern California Power Agency, Alameda Municipal Power, and the like, to benefit from the substantial documentation that exists regarding managing and operating public power systems. There is likely little demonstrable benefit from starting from square one given the volume of material available. A DYCEA, for example, could assemble documentation, contracts, by-laws and protocols already put in place by others, and then tailor appropriately to meet DYCEA needs and objectives. Key sample documents would likely include:

- Joint Powers Agreement
- Organizational By-Laws
- Risk Management Policy
- Template Power Purchase and Sale Contracts
- Committee structures
- Organization Charts

Meeting scheduling, key staffing, cost allocation, quorum determination and voting/decision making rules and responsibilities will likely be outlined within the above documents, along with how participating organizations are to appoint representatives to the Board of the new JPA organization, if one is developed. Some JPA models allow for both elected and staff positions to be appointed to the Board or Commission. MCE currently has only elected officials appointed to its Board.

If either the City of Davis or Yolo County opts to establish a CCE unilaterally, decision and quorum rules will have already been established by respective council or board. Similarly, if Davis and or Yolo County were to join MCE, decision and quorum rules are already prescribed. (Interestingly, Davis and Yolo County could form a JPA which could join MCE on behalf of the two jurisdictions. However, if Davis and Yolo County opt to join with MCE to provide local CCE efforts, it may be worth considering having each entity join MCE independently to attain “2” local votes instead of “1”.) If Davis and Yolo County do form a JPA, decision protocols will need to be established. Given the proximity of the two organizations, scheduling meetings and attaining a quorum should not be problematic but occasionally decisions will require timely action and rules should be established accordingly.

Possible DYCEA quorum and voting options:

- Establish a four member Board where each entity has two representatives (and two alternates) and thus two votes.
- A quorum is attained when >= 50% of representatives are present (3 or more).

- A vote is affirmed when >50% of representatives present vote yes. (If 4 representatives are present, 3 votes carry; if 3 representatives are present, 2 votes carry)

This or similar voting approach reinforces the importance of board meeting attendance. Another possible consideration with a four member board is how to address possible split votes, and whether, say, the JPA GM or CEO may vote to break a tie if necessary

6.1.5 Power Supply

In the Single-Source Supplier Alternative discussed above, power supply procurement is simple. An RFP is issued with a request for a certain supply mix over a particular period of time, probably for a fixed price, and likely also including requests for credit, SC services, and possibly some other wholesale functions. The winning bidder will then essentially take care of all the power supply needs over the course of the contract.

A contract with a wholesale services provider generally follows a different model – although it may be possible to structure it somewhat similarly to the single-source alternative above if desired for some reason. A wholesale services provider typically participates in the market on-behalf of its customers.

A standard approach is taken towards common electricity-related transactions such as electricity futures and options, resource-adequacy capacity and renewable energy credits. An entity (CCE, utility) will go to market for the specific products, find the provider or providers who best meet those needs at the lowest prices, and transact based on provisions in standard enabling agreements.

This standardized approach ensures that each counterparty knows exactly what product it is transacting. It also means the deal may be completed through the exchange and signing of a standardized "confirmation" – typically a one-page sheet specifying the enabling agreement, the standard product, quantity, time-period and price – which is faxed to the counterparty for their signature. This makes transacting a quick and easy process with no ambiguities.

The enabling agreements used in these transactions may be directly between the CCE and the counterparties (known as the agent model because the wholesale services entity is acting as "agent" in transacting on behalf of the CCE). Or, the enabling agreement may belong to the wholesale services provider (principal model) in which case there is also an agreement between the wholesale services provider and the CCE.

6.2 Join Existing JPA

6.2.1 Governance

6.2.1.1 JPA Structure and Implementation

- Existing Joint Action Entity – say, MCE (or there may be another existing joint action agency that already exists which includes Davis and Yolo County as members which is willing and able to perform CCE related business functions).
    - Modify JPA structure, if necessary, to provide for Davis and Yolo to integrate CCE program activities.

- Davis, Yolo County and MCE each take appropriate administrative actions for Davis and Yolo County to "join" and participate in the MCE CCE program.
- Alternatively, perhaps a contract (non JPA membership) relationship could be established if all parties preferred this approach, such a contract approach would likely result in commensurately reduced participation and influence in CCE business activities.
- Davis and Yolo County would each appoint an elected official (and alternates) to represent respective interests on the MCE Board (assuming both Davis and Yolo join separately).
- Perhaps establish a joint (Davis and Yolo County) or two separate CCE advisory committees to advise appointed representatives from Davis and Yolo County to the MCE Board.
- MCE provides necessary CCE administrative services and allocates associated costs to all MCE CCE participants, now including Davis and Yolo County.
- MCE will be the responsible counter-party in all CCE related power purchase and sale transactions (unless exceptions to this are mutually agreed, possibly for local Davis and or Yolo County power opportunities, for example).
- Davis and or Yolo County may want to establish a local MCE satellite office or offices to address local customer service, energy efficiency and renewable power development programs and opportunities.
- MCE, to date, establishes uniform power supply rates applicable to each class of service for all MCE participating communities.

6.3 Private Service Provider

6.3.1 Governance

- Outsource CCE Administration and Operation
  - Davis and or Yolo County establish CCE programs as municipal enterprises and then together or separately contract for requisite CCE implementation and operational management services from one of several entities capable of performing these services (say, California Clean Power or Community Choice Power).

Davis and Yolo County form a new JPA and then the JPA contracts for requisite CCE implementation and operational management services from one of several entities capable of performing these services.

7 Local Programs and Resource Development

A primary attraction and motivation for starting CCE programs in California is the opportunity to implement innovative local programs aimed at reduced energy usage and alternative, environmentally-friendly supply development. Existing CCE programs are at various levels of service in these areas with MCE being the most advanced and Lancaster not seeming to have undertaken any efforts to-date. It should be expected, and is assumed in the staffing plan laid out earlier, that a stand-alone CCE would only gradually ramp up retail programs as finances, staffing and experience allowed.

A Davis or Davis/Yolo CCE will also have the opportunity to develop local resources. This can take the form of utility-scale projects, distributed resources, or encouraging rooftop solar through a generous net-metering program. The development of local utility-scale projects is addressed in the portfolio discussion (Section 5.1.2).

In this section we briefly describe some of the possible retail programs that Davis/Yolo might consider including the status of such programs at existing CCEs, and the ability and timing to implement them under the different CCE options.

7.1 Energy Efficiency

7.1.1 MCE

There are a range of approaches to developing energy efficiency programs within a CCE. The most comprehensive and aggressive approach is that pioneered by MCE of becoming an EE program administrator with funding provided by the CPUC. This has seemingly been a very successful approach for MCE. Their *2014 MCE Energy Efficiency Annual Report*[18] lists their accomplishments as of the end of 2014. This includes almost 2 GWh of cumulative energy savings, as well as a number of other statistics on customer outreach, assessments, action plans, and completed projects.

MCE has been able to accomplish this by becoming a CPUC approved program administrator and applying for funds from the CPUC based on the entirety of the load within their footprint, whether served by MCE or PG&E. For the 2013-2014 budget allocation MCE received $4mm[19] to implement their Energy Efficiency objectives. They were able to gain approval for those efforts in spite of overlapping with PG&E's own Energy Efficiency service territory. They did so in part by proposing innovative programs that the CPUC cited for testing new approaches that could potentially be rolled out more broadly.

Davis/Yolo might aspire to replicating an MCE-like program eventually. However, the effort and expertise required to do so are considerable. Should Davis and/or Yolo choose to join MCE then MCE has indicated that they would extend their EE programs into the new service territories and may establish local offices to facilitate that extension. Should Davis/Yolo choose to proceed on their own, either as a stand-alone or with CCP, they may explore an outsource relationship with MCE to apply MCE's expertise and investments already made to Davis/Yolo's service territory. As a Program Administrator it should be feasible for MCE to offer that service. Whether they are open to that option is unknown at this time.

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[18] http://www.mcecleanenergy.org/wp-content/uploads/MCE-2014-Energy-Efficiency-Annual-Report-FINAL.pdf

[19] http://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M034/K299/34299795.PDF (p 51)

7.1.2 SCP

Sonoma Clean Power has taken a less ambitious approach to Energy Efficiency. In their implementation plan[20] they suggest that they may take a similar approach to MCE, but to date have not done so. Rather, as of January, 2016 they are proposing a "Behavioral Energy Efficiency" pilot program[21] which is a combination of energy efficiency and demand response efforts on a small scale. It would certainly be feasible for a Davis/Yolo CCE program to pursue a similar approach to SCP which would still leave open the option to eventually expand into an MCE-type program over time.

7.2 Demand Response

The Demand Response efforts of the existing CCE's have so far been at the pilot level. MCE has engaged with technology providers for pilots of home energy usage monitoring tools[22], and the infrastructure for an automated demand response program[23]. As mentioned under the Energy Efficiency section, SCP is also looking into a non-automated demand response pilot program that uses points and rewards to encourage changes in customer usage[24].

Aggregated Demand Response programs tend to be difficult to implement due to the technological investment needed to automate responses and the lack of economic benefits that accrue. This is true especially in today's low energy price environment as the potential cost savings are reduced relative to higher price periods historically. However, the CAISO has indicated a strong desire to increase the amount of Demand Response available on the grid[25] and there may be opportunity for future growth depending upon what sort of compensation mechanisms are developed. Davis/Yolo would also likely be

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[20] https://sonomacleanpower.org/wp-content/uploads/2013/12/Sonoma-Clean-Power-CCE-Implementation-Plan-2013-08-20.pdf

[21] http://sonomacleanpower.org/wp-content/uploads/2014/12/SCP-Program-Drafts_2015-01-05.pdf

[22] http://www.cpuc.ca.gov/NR/rdonlyres/EC7F7147-816A-49C1-B8CB-E887B4DA1BF6/0/090514MCERulemakingResponse.pdf

[23] Private communication from MCE – "In December 2014, MCE partnered with Schneider Electric, Planet Ecosystems and AutoGrid to provide residential customers with remotely programmable thermostats and load control devices (for pool pumps, electric hot water and EVs). Through this pilot, MCE hopes to glean lessons learned regarding the marketing of an automated DR program, and to prepare for bidding into CAISO by using pre-determined price thresholds to remotely trigger automated DR events. The pilot will conclude in Q4 2016."

[24] http://sonomacleanpower.org/wp-content/uploads/2014/12/SCP-Program-Drafts_2015-01-05.pdf

[25] https://www.caiso.com/Documents/DR-EERoadmap.pdf

in a pilot program mode if and until more robust markets and tools are developed for aggregated demand response.

7.3 Rooftop Solar – Net Energy Metering

All of the existing CCEs are committed to increasing the amount of renewable generation on the grid including renewables generated by their customers. To that end they've developed Net Energy Metering ("NEM") tariffs that allow customers with rooftop solar panels to net their solar generation against their usage and to pay for any incremental surplus at rates that are equal to or greater than their cost of service.

MCE's NEM tariff compensates surplus supply on a monthly basis at their premium "Deep Green" rate[26]. SCP's NEM program is similar, although it pays a flat $0.01/kWh premium over the retail generation rate for any monthly surplus generation. Lancaster's program is also based on monthly usage/generation and pays a flat $0.06/kWh for any surplus. All of these programs provide greater incentives than the IOU's programs which compensate surplus generation at a wholesale rate (~$0.03/kWh). Davis/Yolo could choose to implement a program similar to the other CCEs with relatively little effort.

7.4 Feed-In Tariffs

The other principal method to incentivize local renewable construction is via a Feed-In-Tariff ("FIT") that pays local resources below a certain size limit a fixed price which is at a premium to overall market prices. The existing CCEs have a range of FITs. MCE is the most aggressive in providing incentives and procuring supply. They are currently offering up to $137.66/MWh for FIT peak supply as part of a goal to procure 15 MW of FIT capacity[27].

SCP's FIT program offers less compensation and is less expansive in the amount of capacity to acquire[28] compared to MCE. The base rate is $95/MWh. However, incentives for various criteria can raise that to as high as $130/MWh. The total program cap for FY 2014-2015 is $600k. The City of Lancaster does not seem to have a FIT in place as yet. Both MCE's and SCP's programs offer compensation at a premium to PG&E's FIT rate[29]. PG&E's 2016 rates range between $61.23/MWh and $89.23/MWh. Davis/Yolo, should it desire to start its own CCE, should be able to relatively easily adopt a FIT program that reflects its own priorities and budgetary capabilities.

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[26] http://www.mcecleanenergy.org/wp-content/uploads/NEM_Tariff.12.11.13.pdf

[27] http://www.mcecleanenergy.org/wp-content/uploads/FIT_Tariff_5.15_FINAL.pdf

[28] https://sonomacleanpower.org/profit/

[29] http://www.pge.com/en/b2b/energysupply/wholesaleelectricsuppliersolicitation/ReMAT/index.page

7.5 Community Solar and Local Solar Tariffs

Community Solar projects often refer to relatively small solar generation projects, developed locally by the local utility, but financed through the sale of shares to a group of ratepayers. Closely related to this concept is the Local Sol product developed by MCE[30]. The difference is that in the first instance the customer is actually purchasing, or committing to purchase a specific fraction of off-take of a specific plant. The Local Sol option, on the other hand, can be discontinued at any time. The rate however remains fixed over the term of the contract, and the participation is limited by the amount of capacity available. SCP has proposed a pilot program for customers to sponsor the development of solar projects at community sites, such as schools or other non-profit entities[31].

Each of these programs is intended as a way for people who are not in a position to install their own rooftop solar to have an option for becoming solar generation "owners" and know that they are directly contributing to new, local supply being developed. Davis/Yolo as a stand-alone entity would likely need to invest time and develop expertise to facilitate a version of Community Solar or a local solar tariff.

7.6 Electric Vehicle Charging

Another area that CCEs have been active is in promoting electric vehicle charging infrastructure. SCP has proposed a pilot program for promoting and incentivizing charging station installation[31]. MCE has taken a more hands-on approach to EV charging by getting involved and subsidizing specific projects.

7.7 Electricity Storage

Small-scale, battery-based electricity storage is just beginning to become a potentially viable investment for utilities and CCEs. The implementation of storage systems has been mandated in AB 2514 for load-serving entities in California. There are also subsidies for storage development through the CPUC-administered Self-Generation Incentive Program[32] ("SGIP"). MCE has undertaken a small-scale storage development effort in partnership with Tesla Motors and a local community college.

8 Risks

Risk is omnipresent in the establishment and ongoing operation of any enterprise and a CCE is no exception. Most business risks for CCEs fall within three general categories:

1) Financial;
2) Regulatory and Political; and
3) Operational.

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[30] http://www.mcecleanenergy.org/wp-content/uploads/LocalSolTerms.pdf

[31] http://sonomacleanpower.org/wp-content/uploads/2014/12/SCP-Program-Drafts_2015-01-05.pdf

[32] http://www.cpuc.ca.gov/PUC/energy/DistGen/sgip/

Unforeseen, unplanned for, and or unpreventable events in these areas could have significant impacts on CCE viability, and at the extreme could result in cessation of CCE activities, with CCE customers then compelled to return to the host investor owned utility (PG&E). Thus awareness of potential CCE business vulnerabilities and taking prudent and reasonable actions to mitigate possible injurious consequences must become integral to management policy as implemented through the day to day mission and conduct of all CCE employees. Given adoption of appropriate risk management policies, practices and procedures, a CCE will likely continue to well serve the interests of its customers and communities.

Characteristic CCE risks associated with procuring wholesale power supplies to meet retail electricity loads are discussed below. Risk areas more intrinsic to business operations may be more readily identified and mitigated; risk areas and events largely external to CCE business operations are more difficult to anticipate and control, but may be attenuated with nimble management and staff actions on a case-by-case basis. And any assessment of risk should also at least acknowledge our collective significant uncertainty about future events.

Known risk power industry exposure areas and possible mitigating strategies are outlined below:

8.1 Financial Risk

There are at least four periods of financial need and activities related to establishing a CCE:

1) Investigation – Feasibility study, decision on whether to proceed;
2) Implementation – City/county vote to establish CCE but prior to serving customers;
3) Launch – Commencement of customer service but prior to receiving revenues; and
4) Ongoing – Customers being served, and regular and routine service/revenue cycle established.

8.1.1 Risks during Investigation Phase

Period 1) generally involves the discretionary expenditure of $50,000 to $200,000 or more of city and or county funds (and public employee staff time) to initially investigate CCE and, if no fatal flaw is found and community interest remains, the incipient CCE may further conduct a more formal feasibility study to present to the public and city/county decision makers for possible council/board action to create a CCE. If no CCE is created, the city/county risks no additional public funds and likely concludes the expenditure of such investigatory funds was justified and warranted to allow for informed decision making.

If a feasibility study or other further analysis of CCE is decided upon, the city / county may expend addition public monies for such purposes, say, another $50,000 to $250,000, for associated consulting activities. No funds beyond those amounts authorized by the city / county for such activities are at risk, and the activities may cease any time at city / county direction. This is where the process currently stands.

8.1.2 Risks related to Start-Up Funding and Working Capital

If, after investigation and feasibility studies, the city / county approve the creation of a CCE, there will be a period of time between this initiating action and the actual setting up of the CCE business “storefront,”

hiring staff, procuring power supply, interfacing with the incumbent PG&E, noticing power customers, and the final objective: physically serving CCE customer electric loads. This will likely be a 6-12 month period and the city / county will need to direct fund, loan or guarantee a loan from a financial institution in the range of $2.5 - $3.5 million (including $100,000 start-up bond) to cover business start-up costs, filing fees and bond, and CCE staff salaries and office infrastructure prior to service commencement.

If the CCE fails for any reason during this period, the city / county may forfeit such monies directly or, by guarantee, will be responsible for repayment to the lending institution. If the CCE launches successfully, the CCE may repay borrowed funds to the city/county and or financial institution per some predetermined schedule, or the city/county may consider such funds a community "gift" toward the establishment of a local alternative power supply option. Also during this period the CCE must take steps to establish commercial banking and credit relationships to manage its anticipated working capital requirements (for Period 3 and beyond) and to establish accounts for revenue receipts and vendor and counterparty payments.

An associated risk is that established commercial banking institutions may not want to establish a business relationship with a new CCE with an unproven track record. This risk is likely mitigated by both timely seeking to arrange such banking relationship and current successful operations of the state's three operating CCEs (MCE, LCE, and SCP).

Given establishing a successful commercial banking relationship, such relationship will include provision for a working capital loan sufficient to cover 60-75 days of CCE operating costs and charges which may be due and payable prior to receipt of a steady and predictable customer revenue streams. In MCE's case, it received a working capital loan from River City Bank (guaranteed in part by Marin County to attain a more favorable borrowing rate) repayable over a five year period. If Davis and or Yolo were to guarantee such a loan for their new CCE, the city / county would be exposed in the event of CCE failure.

After MCE had been successfully operating for 12 months, the Marin County guarantee was released by River City Bank and it is expected that a similar Davis / Yolo guarantee release could be attained after some period of successful Davis / Yolo CCE operations, thus reducing or eliminating any residual financial risk to the city / county. Once Period 4 commences, the new CCE will be establishing its own business track record and creditworthiness, which should continue to improve over time.

8.1.3 Risks under different models

Associated city / county financial risk is mitigated for Periods 2, 3 and 4 if is pursued under a fully outsourced or joining MCE business model, or if the city / county establish a JPA model and do not provide credit guarantees or funding beyond Period 2. If an enterprise model is adopted, the city / county will likely continue to be involved in providing the CCE with needed credit support, to be repaid over time from CCE power sales revenue streams. Whatever business model is decided upon, a disciplined approach to budgeting, building cash reserves and early payment of any outstanding start-up debt will enhance the CCE's credit rating and provide funds on hand to help address unexpected business situations, all of which will help to mitigate business risk.

8.1.4 Risks due to Over-procurement

CCEs have customer opt-out risk and must formally notice customers of this option two times prior to commencement of service and two times in during the 60 day interlude immediately following commencement of service. Some customers will exercise this option and the consequence to the CCE is a reduced revenue stream and a consequential reduction in the amount of wholesale power procurement needed (or the need to liquidate some supply commodity if a commitment to purchase has already been made).

Based on existing CCE experiences, about a 10% +/- opt-out rate assumption is not unreasonable. The risk of over procurement can be mitigated by reducing electricity procurement amounts accordingly, at least during initial commencement of CCE service until its customer base has stabilized. This approach should be addressed as part of initial CCE procurement strategy which will take into account the variability of loads and the nearer and longer-term impacts of firm procurement commitments versus reliance on the short term power and CAISO balancing markets.

8.1.5 PG&E-related Risks

Opt-out rates will also likely be affected by the alternatively available PG&E retail rates for particular customer classes. All else equal, as PG&E rates increase or decrease relative to CCE rates, there will be an inverse impact on the CCE's opt-out rate. Historically, PG&E rates have increased overall in the 4-6% range annually for the total of cost of service components (see Section 14). In the last 5 years, the increase has been in the 2-4% per year range, depending on the rate class.

Under a CCE approach, PG&E continues to provide billing, most customer service, and complete power delivery (poles and wires) service; the generation / power supply portion which otherwise would have been provided by PG&E is replaced with the CCE's power supply cost and other CCE related staff and operating costs. Thus an increase or decrease in non-generation related PG&E costs should not have any significant impact on CCE opt-out rates as price increases or decreases in this area are directly passed through to CCE customers. The most important PG&E cost component from a CCE perspective is the generation charge (along with the PCIA charge which will be discussed in the Regulatory and Political section below).

8.1.6 Customer loyalty as Risk Mitigation

PG&E's generation charge, and the commensurate credit applicable to a CCE, could decrease over time even as other non-generation PG&E costs increase, creating additional pressure on the CCE's ability to price-compete with PG&E. Actions a CCE can take to mitigate a situation in which PG&E's pricing is falling relative to the CCE, or possibly somewhat lower than the CCE's rates, are promoting local brand and local control, along with the ability to develop a more environmentally responsible power resource portfolio and the corresponding reduction in GHG emissions.

Other locally beneficial actions could include more environmentally friendly power supply, energy efficiency and renewable resource development programs tailored to local customer needs and wants. These types of actions will help to mitigate opt-out risk and the potential for customers which do not initially opt-out to return to PG&E over time.

Establishing sound and supportive customer relationships will advance CCE viability and help to stabilize revenues and customer loyalty. The longer-term predictability and durability of the CCE's customer base will help assure access to credit markets to meet working capital, efficiency programs, new resource investments, debt repayment, and other CCE financial needs. Financial risks always involve dollars and almost every activity a CCE undertakes involves either the receipt or expenditure of dollars. Thus all CCE risks have potential financial ramifications and there will be inevitable overlap with CCE operations and regulatory requirements. The most effective "risk absorbers" over time are management preparedness and the availability of sufficient reserve funds which may be used to mitigate business uncertainty events.

Table 8: Financial and Related Risks

Risk Description	*Likely Risk Level*	*Mitigations*
Supply Imbalance, over or under-procurement	Low	Can be mitigated with prudent hedging and forward procurement activities
Customer Opt-Out	Low	Opt-out risk is most substantial during program commencement and can be mitigated with careful procurement planning allowing for initial supply flexibility
Current Power Market	Low	Current market prices are below historic averages. Risk of future price increases can be mitigated through hedging.
Future Power Market	Moderate	Many factors influence such as overall economy, continuation of fracking, natural gas prices, etc.
City/County Exposure	Low	May lose seed monies if CCE not established, may provide credit support if enterprise model, virtually no risk if join MCE
Financial	Low	Prudent planning and operation, current market prices, coupled with existing CCE track records have help to ameliorate financial risks

8.2 Regulatory and Political Risk

8.2.1 Legislative Risk

CCEs were created by California's Assembly Bill 117 legislation which was passed in 2002. Ultimately, and however unlikely, any organization legislatively "created" can be legislatively weakened or "eliminated." To the extent the incumbent electric utility perceives CCEs to be a threat or an encumbrance on its business model, they can use their influence to impair or possibly abolish CCE development. PG&E has and will use its weight at legislative and CPUC levels to assure its business viability is not challenged by the growth and success of existing and new CCEs.

8.2.2 Regulatory Risk

As alluded to above, PG&E will also attempt to shift cost of service charges to areas of its bill not avoidable by CCE customers, further reducing the ability of CCEs to be cost competitive with PG&E. This is especially observable in PG&E's Power Charge Indifference Adjustment (PCIA, sometimes called exit fee). This charge, which is applicable to all CCE customers, is intended to protect non-CCE PG&E customers from any economic consequences associated with "departing" CCE customers. But if PCIA charges are increased significantly, the economic incentives to establish a local CCE program can be eroded. The likely most effective manner to abate these types of incumbent utility fee increases and cost shifts is to actively monitor and participate in relevant legislative and CPUC proceedings to advance and protect CCE interests and benefits. This type of effort is most effective when CCE's join with other similarly situated CCEs to improve effectiveness and share costs.

8.2.3 Public Perceptions

Local citizen perception and support for CCE activities will also contribute to CCE durability. For example, there are few viable opportunities other than establishing a CCE for a community to strive for electricity related GHG neutrality. If local populations support this objective, this may engender CCE support and establishment at the legislative level, and also help mitigate additional barriers (such as significantly increasing the bonding requirements) at the legislature or CPUC. The activities and performance results of other CCEs may also impact CCE rules and regulations. Successful and locally acclaimed CCEs tend to caste all CCEs in a positive light and thus improve general legislative and public support. On the other hand, if a CCE were to fail, become financially distressed, operationally or in some other manner, consequences detrimental to all CCEs could occur. Thus each CCE must be tuned to, and meet the needs and pursue the objectives of its local constituency as well as monitor and acknowledge the happenings of other CCEs.

Other political and regulatory risks revolve around RPS and GHG requirements, and the availability of sufficient power resources to simultaneous meet these regulatory requirements and serve customer electrical loads. The potential availability and cost impacts of physical and market power supplies under various sensitivities are addressed separately in this report.

Table 9: Regulatory and Related Risks and Mitigations

Risk Description	*Likely Risk Level*	*Mitigations*

Risk Description	Likely Risk Level	Mitigations
Regulatory & Legislative	Moderate	An area to be carefully monitored and likely participate with other CCE to influence and preserve a viable CCE alternative
Renewables availability	Low	Declining pricing and increased availability, Davis/Yolo well situated for solar

8.3 Operational Risks

Operational risks fall into multiple categories including:

1) Performance of counterparties to CCE contracts,
2) Balancing power load with power supply,
3) CCE staffing,
4) Market price volatility and
5) CAISO related requirements, settlements and interactions.

As previously mentioned, virtually all operational issues may result in financial consequences for the CCE. CCE operational success depends on many of the prior discussed activities including:

- Implementing a robust governance and management structure;
- Power supplier/marketer relationships;
- Power project availability;
- Load forecasting;
- Power planning;
- Internal staff capability and retention;
- Attaining quality consulting services;
- Contracting with a dependable scheduling coordinator and validating CAISO settlements;
- Accurate and timely invoicing and revenue receipts;
- Accurate and timely payments to vendors.

8.3.1 Load Uncertainty and Procurement

TEA has performed sensitivity assessments to evaluate power market price volatility risk as well as overall portfolio cost, in part, as a function of renewable resources availability and pricing. Once in operation, TEA would recommend the CCE develop a stochastic model to evaluate the impacts of load as well as price and supply uncertainty on costs and revenues.

All wholesale power procurement strategies should take into account the cost consequences of over- and under-procurement relative to loads being served. Near- and longer-term customer loads are not known with certainty and are generally modeled based on historic load usage, expected load growth, weather, energy efficiency programs, and the like. Unusual weather such as excessive heat or cold can

result in substantial deviations during any given time in the planned supply to meet actual power demand. This "real-time" deviation will be settled in the CAISO imbalance market at prices which are not known in advance. All utilities procuring supply to meet demand face these imbalance uncertainties.

Because power can generally not be stored, real-time imbalance pricing is generally based on the incremental/decremental production cost of the then on line "swing resources" (typically the added or subtracted fuel plus variable O&M cost of resources available and on-line capable of increasing or decreasing electrical output to match actual supply with actual demand – and in California, typically natural gas fired generation). Thus a utility scheduling delivery of more power to the grid than its load is consuming, will automatically liquidate its excess supply at CAISO imbalance prices which are uncertain and can change quickly. Forward purchases provide greater certainty over overall supply costs, improve the ability to plan and meet a budget, and reduce uncertainty associated with what can be a volatile real-time market. (There are other factors such as power system congestion and loss conditions which can affect real-time prices as well).

8.3.2 Risk Management

Although uncertainty and risk have always been integral to utility planning and performance, the last two decades have witnessed utility deregulation, extreme market price volatility, bankruptcies, complete business failures, revamped CAISO policies and procedures, non-performance of contract counter-parties, nearly endless lawsuits and legal proceedings, and the like. All outcomes of which have engendered implementation of more formal and extensive risk management practices in most utility organizations.

Such risk management practices are commonly labeled the "3Ps" which is short for risk management policies, practices, and procedures, approved and implemented by the governing body. These "3Ps" are intended to specify the ranges of staff position authorities and actions associated with the full scope of utility decision making. Further, some form of risk oversight committee (ROC – which may meet monthly or more frequently if necessary) is generally established to formally track and report staff/utility performance with the approved 3Ps.

Any events which deviate from the prescribed 3Ps are reported to the ROC for corrective action and/or to make recommendations to the governing body to revise the 3Ps as warranted. In the current power world, for example, most power suppliers will want to be assured that the person signing a contract and the person making day-to-day procurement decision are duly authorized to make such decisions and expenditures; and such counter-parties may ask to review a company's 3Ps before commencing any business activities.

In short, the development, implementation, monitoring and maintenance of a formal enterprise risk management program can significantly contribute to the ongoing success of an organization and reduce the likelihood of debilitating consequences from unlikely or unforeseen events. Such program, along with monitoring and feedback actions, provides performance expectations and parameters to all staff

and management levels under the aegis of the governing body, and provides a formal mechanism prepare for, track and respond to business challenges and risks.

Table 10: Operational Risks and Mitigations

Risk Description	*Likely Risk Level*	*Comments*
Attracting Staff	Low	Market salaries should attract available and needed staff and consultants
CCE "Failure"	Low	Established working model, careful planning and oversight will mitigate,

8.4 Locational and Time-of-Day Mismatch Risks

Within the California ISO, load is required to pay one price for energy provided directly from the ISO and supply is paid another, different price for energy supplied directly to the ISO. These prices may diverge substantially. Therefore, it may come to pass that load is paying a price higher than what it costs a generator to produce, but, at the same time the generator is selling energy for much lower prices on the generation it provides.

The principal risk mitigation tool available to manage the risk of price differences due to location differences are Congestion Revenue Rights ("CRRs"). Any Load-Serving Entity in California is entitled to a certain amount of CRRs which can be used to offset price differences between supply price and load prices.

There is a similar and related risk that arises if the supply generates at different hours of the day and/or different months of the year than the demand arises. This is the case with renewable supply. Again, the supply will be paid different prices than the load has to pay for energy which leads to the risk that the cost paid for supply to meet load is higher than anticipated based on the price of contracted renewable generation. The notion that a CCA can "lock-in" its costs and rates based upon buying or building a long-term supply portfolio is not the case. This reinforces the need to follow sound active risk management policies and strategies as discussed above.

9 General Conclusions from Analysis

The results of this analysis point towards some general conclusions. These conclusions will inform the comparative analysis discussed in the next section.

9.1 Rate Competitiveness

9.1.1 Stand-alone Model

A stand-alone model is rate competitive given current market prices under a wide variety of assumptions. The larger the footprint, the more economical it is. The base-case portfolio of 50% RPS

which ramps up from using Bucket 1 and 2 RECs while renewable supply is procured to displace the RECs over the first three years of operation has an approximately 6% average discount to PG&E over the ten years for the smallest, Davis-only, no Direct Access CCE. It also grows reserves $7.5mm over the ten year horizon.

The similar portfolio for a Davis/Yolo combined stand-alone model shows an approximately 9% average discount over the 10 year time horizon. Under a Davis/Yolo model it is even possible to achieve long term rate savings relative to PG&E while assembling a supply portfolio similar to MCE's.

9.1.2 MCE

The MCE model at this point, factoring in the increase in PCIA charges, and assuming no growth in generation costs between 2015 and 2017, looks like it will have rates roughly comparable to PG&E in 2017. Over the longer-term, based upon much of MCE's current contracted portfolio rolling off over the next several years, MCE should be in a position to lower its supply costs if current supply cost trends continue.

9.1.3 California Clean Power

The California Clean Power model given currently known pricing would appear to add between $1.20/MWh (for a Davis-only CCE) and $4.30/MWh (for a Davis plus Yolo CCE) in costs relative to a stand-alone model. This would still lead-to lower rates compared to PG&E in 2017 for all Davis plus Yolo portfolios examined, but only for the lowest cost Davis-only portfolio. It might be possible to lower this rate by hiring fewer internal staff than is contemplated for in the stand-alone model, and there would be some cost savings in initial implementation. However, power supply might be more expensive given the sole-sourcing model which CCP has adopted[33].

9.2 Implementation

9.2.1 Stand-alone Model

The stand-alone model is the most complex to implement. It requires standing up an organization – either as an Enterprise or a JPA – including hiring staff, developing process and procedures, finding funding, and contracting for services among other significant efforts. This report lays out a potential implementation path and timeline, and several other CCEs have been stood up or are being stood up currently which can provide further guidance on the process.

[33] CCP has an arrangement with Macquarie Energy to provide power for its customers. See CCP's Service Offering in Section 10 for more detail. CCP has indicated, subsequent to the issuing of the draft study, that they are offering more flexibility in power supply arrangements than is described here. However, details of that arrangement were not available.

9.2.2 MCE

MCE would be the easiest option to implement. By signing on to the MCE JPA and agreeing to the JPA terms, the MCE team would be expected to take care of the entire roll-out process and the operation of the CCE.

9.2.3 CCP

California Clean Power has offered implementation services as part of the package of services they are providing. They have already identified and contracted for back-office, wholesale services, and procurement services providers. They also have a bank available to set up the credit mechanisms for procurement, and have an implementation plan and some branding and marketing assistance that they will provide. It is anticipated that the CCE would still hire internal staff to manage the contract with CCP as well as provide local support to the CCE, the same as would be the case for the stand-alone model.

9.3 Portfolio

9.3.1 Stand-alone Model

A Davis-Yolo CCE appears as if it would be financially capable of assembling a supply portfolio consistent with Davis's CCE vision including substantial amounts of local renewable supply. A Davis-only CCE would be more constrained in building a portfolio, but would still be capable of developing a 50% renewable supply mix with a significant proportion of local renewable.

9.3.2 MCE

MCE has already built a very green, 50% renewable portfolio. They have plans to grow that to 100% renewable by 2025 or so (Figure 23). By joining MCE Davis and/or Yolo would partake of the same portfolio, including additional procurement to meet the incremental load. MCE indicated that they would be amenable to developing resources within Davis/Yolo's footprint as well if the economics were favorable.

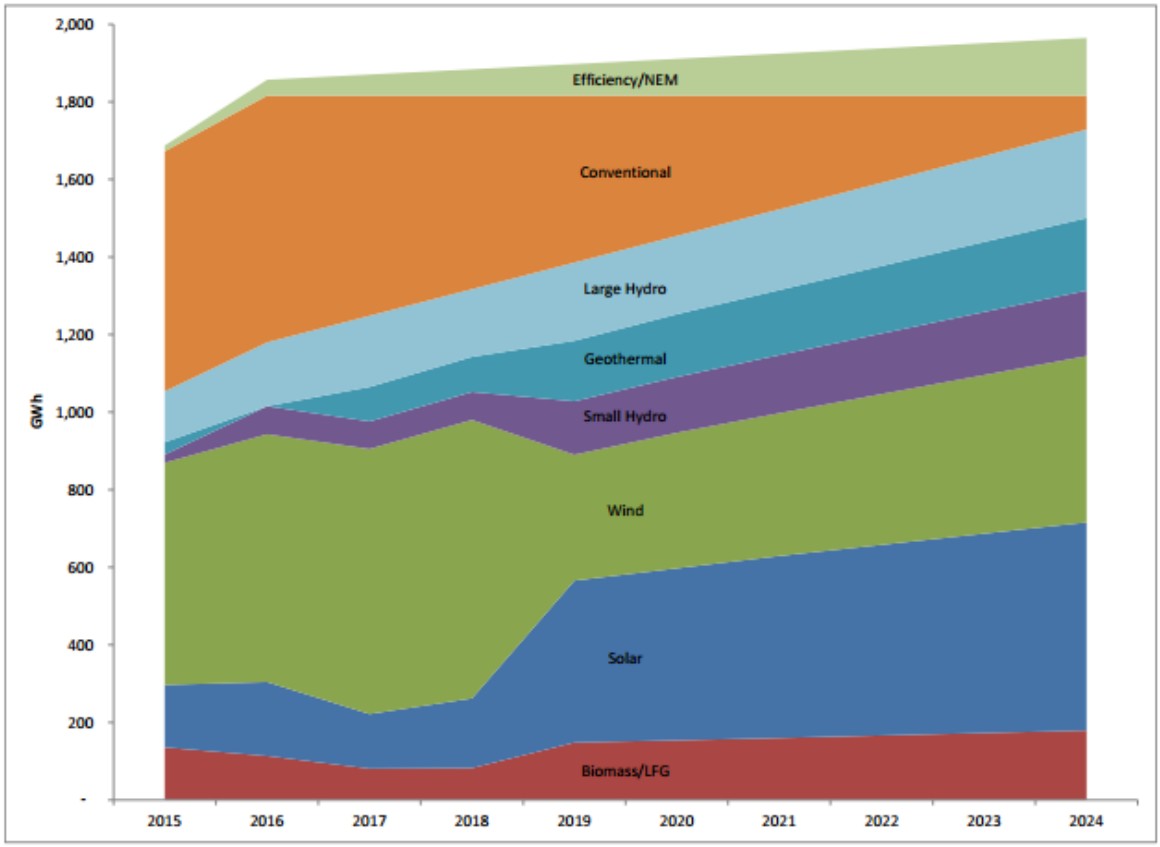

Figure 23: MCE long-term portfolio plan resource mix

9.3.3 CCP

What a CCP portfolio would look like is not entirely clear since it's anticipated to be a shared portfolio amongst all of CCP's (future) customers. While it is expected that a CCE would be able to specify what percentage of the supply would be renewable, it would seem unlikely that the CCE could request that projects be built in specific locations given the sole-source nature of the CCP supply agreement.

9.4 Local Control

9.4.1 Stand-alone

A stand-alone CCE would afford the greatest degree of local control. This would be true not only for portfolio selection, but also in terms of developing the CCE vision and brand, being able to develop rate structures which meet local needs, hiring decisions, and retail program development. It would also lead to local control of whatever reserves were accumulated, which could then be devoted towards whichever purposes local decision makers deem most important.

9.4.2 MCE

MCE has indicated openness to developing some CCE presence in the Davis area given the relative distance between the current MCE footprint and offices and the City of Davis and Yolo County. As previously mentioned, it has also indicated willingness to consider supply development within the Davis

/ Yolo footprint. Additionally, MCE is the furthest along of CCE's in terms of retail program development, and those efforts would presumably be extended into Davis/Yolo.

9.4.3 CCP

The CCP option considered here should offer some of the same opportunities as the stand-alone model in the areas of rate structures, CCE branding, hiring and retail program development. The caveat is that there will be less funding for these efforts given the higher cost of this option relative to the stand-alone model. In addition, the opportunities for local resource development are likely small as mentioned above.

9.5 Risks

9.5.1 Financial and Opt-Out Risk

The greatest threat to a CCE of any stripe is becoming uneconomic relative to PG&E and so losing a significant portion of its customer base through opting out of the CCE. This risk will be greatest where the costs are highest. However, it will be a risk for all options as market prices and regulatory-determined costs can change dramatically – as has been recently demonstrated with the 2016 PCIA rates. From that perspective, the lowest cost option currently appears to be the stand-alone option with Davis and Yolo combined, which would therefore offer the greatest buffer against future price and cost increases.

9.5.2 Stand-alone

The stand-alone model presents some risks in implementation due to the effort involved in standing up a new organization. Given the assistance of the people who have been involved in the CCE effort up to this point in time, and the ability to tap into resources and expertise with significant experience with CCEs and the electricity industry generally, those risks seem manageable.

The CCE also faces risks due to potential opposition both native to the community as well as instigated by other parties that may have a vested interest in a CCE not being formed. Recent experience of other CCEs in the latter case would point towards reduced risk in that area.

9.5.3 MCE

The greatest risk for joining MCE at the present time would likely be to have Davis/Yolo joining at a moment when MCE's rates are higher than PG&E's. This could lead to higher than expected opt-out rates from Davis customers at initial launch[34]. That being said, the risk of low participation does not necessarily mean any worse outcome than just a smaller than desired impact on Davis/Yolo's efforts to reduce carbon emissions and develop greener supply in California. Since there are no specific start-up

[34] MCE has indicated that they expect their rates to remain fairly steady over the next several years as discussed in the Rates section of this report. Currently, their rates, including 2016 PCIA rates, are slightly above PG&E's.

costs for Davis/Yolo joining MCE, any incremental load that MCE receives from Davis/Yolo will contribute towards spreading MCE's fixed costs over a wider customer base and will likely also allow MCE to procure lower cost supply to add to their portfolio and so further reduce MCE's costs per customer.

9.5.4 CCP

The greatest risks in pursuing a CCP model are the unproven nature of that model, the relatively high costs for that model, and the requirement to commit to a multi-year contract. Any of those risks has the potential to undermine the viability of a new Davis/Yolo CCE.

10 Comparative Results of Alternative Implementation Models

TEA developed a comparative analysis of alternative implementation models for establishing and operating Davis-only and Davis/Yolo CCEs. The alternative models evaluated in the analysis include:

- Stand-alone (Enterprise or Joint Powers Authority ("JPA")
- Join an existing CCE
- Contract with a for-profit entity to provide comprehensive services

Except for the JPA model, all cases evaluated both Davis only and Davis/Yolo scenarios. The JPA scenario considered only Davis and Yolo working together to form the JPA. Additional background materials informing the analysis described in this section may be found in the Governance, Risk and Pro forma Analysis sections of this study. This section presents the quantitative and qualitative evaluation of alternatives to document the comparative analysis and help inform a "best fit" recommendation for Davis and Yolo County.

For further comparison, maintaining the status quo (i.e., remaining bundled service customers of PG&E) was also evaluated against the same criteria.

10.1 Evaluation Criteria

Each implementation option, as well as maintaining status quo, was evaluated against three main or primary criteria:

- Rate Competitiveness
- Governance and Local Control
- Risks and Mitigation

Within each of the primary criteria, several sub-criterions were evaluated and scored. The simple average of scores for each sub-criterion was calculated to arrive at a score for each of the three main criteria, which scores were then weighted and summed to derive an overall total score for each implementation option.

All criteria were scored on a scale of '+2' to '-2' where a score of:

- +2 is considered highly favorable
- +1 is considered moderately favorable
- 0 is considered neutral
- -1 is considered moderately unfavorable
- -2 is considered highly unfavorable

To help inform the analysis, TEA interviewed representatives from the three operating CCEs (LCE, MCE and SCP), as well as representatives of California Clean Power and Community Choice Partners. Insights from these interviews, in combination with input from LEAN Energy, the City of Davis Vision Statements, and extensive conversation with, and input from, the Community Choice Energy Advisory Committee ("CCEAC") formed the basis for the analysis described herein. A summary of TEA's discussions with the three operating CCEs, Community Choice Partners and California Clean Power is provided later in this section.

10.1.1 Rate Competitiveness

Rate Competitiveness is a quantitative evaluation based on results from the Pro forma analysis and evaluates each implementation alternative against three sub-criterions.

- The first sub-criterion answers the threshold question of whether the particular implementation option is expected to result in a savings on rate-payer energy bills. The answer to this question is 'yes', 'no' or 'uncertain'. An answer of 'no' automatically disqualifies the option from further consideration.
- The second sub-criterion evaluates the potential of the CCE under each implementation option to generate savings on rate-payer energy bills under a range of future scenarios in addition to the base case or expected scenario.
- The final sub-criterion evaluates the ability of the CCE to accumulate financial reserves for the purpose of making future resources investments, as well as a tool for financial and risk management.

The Rate Competitiveness criteria are designed to assess the following considerations highlighted in Davis' Startup and Long Term Vision Statements:

- Startup - Offering basic electricity service with higher renewable electricity content at a rate competitive with current utility service;
- Startup - Offering other low carbon or local options at modest price premiums;
- Startup - Accomplishing the above while accumulating reserve funds for future Davis energy programs and to manage energy costs and risks.
- Long Term - Saving Davis ratepayers money on their energy bills.

Recognizing the importance of rate competitiveness to early and long-term success of the CCE, the rate competitiveness assessment served as a threshold for consideration as a viable CCE option for Davis/Yolo. All of the alternatives to the status quo passed this threshold.

10.1.2 Governance and Local Control

Assessing issues related to governance and local control of different implementation options is a subjective evaluation where the sub-criterions within this category reflect the efficiency and effectiveness of Davis or Davis/Yolo to create policies, establish goals, adopt and implement business practices and direct long-term resource investments that meet the unique requirements of Davis and Yolo rate payers. Although subjective, the analysis is very intuitive.

Under stand-alone implementation options that have only Davis or Davis/Yolo controlling the CCE, the city and county have a high degree of autonomy to make decisions. Conversely, if Davis and/or Yolo were to join an existing CCE, the vote of Davis and/or Yolo is diluted. For example, if Davis and Yolo joined MCE, they would be joining a board that already has 17 votes making them $1/18^{th}$ or $2/19^{th}$ of the total vote. If there is strong alignment on issues and practices among different members, a diluted vote should not be much of a concern. The opposite is also true. This evaluation needs to consider operations at the outset but also consider how personalities, objectives of different individuals and communities, and governing board dynamics may evolve over time.

The ability to influence and implement outcomes needs to also be weighed against the need and ability to make decisions. Not every governing body is capable of efficiently and effectively making timely decisions, including one that is focused only on Davis or Davis/Yolo.

There are six sub-criterions within the Governance and Local Control criteria that have been considered and scored.

- The first sub-criterion considers the percentage of total CCE vote that is controlled by Davis or Davis/Yolo.

- The second sub-criterion considers the complexity of the decision process and seeks to consider factors such as whether or not the governance structure lends itself to efficiently and effectively establishing clear policy objectives, setting strategic direction and making required decisions for the CCE. This is also the criterion where the alignment of governing members may be considered, as well as if the given implementation option provides Davis and Yolo with the appropriate and necessary level of engagement with policy makers and the decision-making process.

- The third sub-criterion evaluates if there are clear and effective opportunities and methods for community members to express their views and opinions to the CCE governing body.

- The fourth sub-criterion evaluates if Davis or Davis/Yolo has the ability to design and execute a power supply procurement strategy (e.g., resource types, local versus utility scale, use of renewable energy credits, etc.) that meets the wants, needs and expectations of Davis and Yolo residents and rate payers.

- The fifth sub-criterion evaluates if Davis or Davis/Yolo has the ability to implement operational and management practices consistent with electric utility best practices.

- The sixth and final sub-criterion evaluates if the governance structure lends itself to responding to a changing industry landscape. In addition to autonomy of decision making, this is also a criterion in which the ability to make a timely decision to respond to change needs to be considered.

The criterion contained in the Governance and Local Control section seeks to capture the following considerations articulated in Davis' Startup and Long Term Vision Statements:

- Startup - Establishing an energy planning framework for developing local energy efficiency programs and local resources in the near future;
- Long Term - Evaluating and adopting the best planning and operational management practices in the electricity services industry;
- Long Term - Substantially increasing the renewable electricity content of basic electricity service over time;
- Long Term - Developing and managing customized programs for energy efficiency and on-site electricity production and storage;
- Long Term - Accelerating deployment of local energy resources to increase local investment, employment, innovation and resilience;
- Long Term - Working together with other Davis and Yolo County efforts and in alignment with city goals, to achieve climate action goals and shape a sustainable energy future.

10.1.3 Risks and Mitigation

The final primary evaluation criteria considered in the comparative analysis is Risks and Mitigation. The sub-criterion in this section evaluates the relative riskiness of each implementation option, as well as the ability to manage and mitigate the identified risks. An identified risk may be material or immaterial. Further, a relatively high (material) risk item that is easily mitigated with prudent management and the implementation of well-established practices should be evaluated differently than a relatively high risk item for which there is little ability to mitigate. In short, the criteria included in this section of the comparative analysis attempts to assess the likelihood of Davis and/or Davis/Yolo being successful in meeting their stated goals and objectives.

This criterion includes the nine sub-criteria that are described below. It is important to remember that the score assigned to each risk reflects the likelihood of occurrence, if the risk is material, and finally, the ability to mitigate the risk.

- The first sub-criterion in this section is a measure of startup risk. This is a measure of whether or not the CCE alternative is a going concern (e.g., joining MCE) or a new business enterprise. This criterion also considers that if the CCE is a new business enterprise, is there is any material difference in the proposed structure compared to those which have already been implemented successfully three times in California. Replicating the practices of MCE, SCP and LCE should be assessed differently than implementing a Davis or Davis/Yolo CCE with unique or unproven attributes.

- The second sub-criterion is an assessment of whether there is reason to believe that opt out risk under each implementation alternative may be greater or lesser than other alternatives.
- The third sub-criterion measures operating risk. This is an area to assess the durability of the different implementation options, which includes factors such as managing cash flow, the ability to hire and retain competent staff and the ability to design and implement the different business processes and practices that are required to successfully run a CCE. While there are well established industry best practices that can be modeled, a new CCE needs to be able and willing to take the actions and make the decisions needed to run a successful business.
- The fourth sub-criterion measures the ability to measure and manage market and counterparty risk. Like operating risk, this is another area where there are well established practices, but the tools and processes need to be put in place to successfully manage associated risk. This is also an area where a third party may provide expertise and systems.
- The fifth criterion is intended to measure the potential for incumbent utility opposition risk to differ between implementation options.
- The sixth criterion is a measure of whether legislative and/or regulatory risks will be greater or lesser under a particular CCE alternative. In addition to risk, this criterion is also the area to assess the ability to actively monitor and manage regulatory risk under different implementation options.
- The seventh criterion is a measure of the risk to the host entity (i.e., the City of Davis and Yolo County).
- The eighth criterion is a measure of the ability to unwind partnership, if needed.
- The ninth and final criterion is a measure of the ability to shut down the CCE, if needed.

10.2 Summary of Discussions with Operating CCEs / California Clean Power / Community Choice Partners

TEA met separately with representatives of the three operating CCEs – LCE, MCE and SCP, as well as with representatives of California Clean Power and Community Choice Partners. The purpose of these discussions was two-fold. The first objective was to glean any lessons-learned from the operating CCEs that may benefit and inform Davis' and Yolo's investigation of CCE. The second objective was to gain information regarding potential opportunities for Davis and Yolo to partner with an existing CCE or one of the two organizations offering a turn-key CCE solution.

10.2.1 Experience of Operating CCEs

As demonstrated by the successful launch and operations of three CCEs in California since 2010, the CCE business model has been proven feasible. While each operating CCE has implemented a different governance structure, each has demonstrated that it is possible to offer electricity service to retail customers with higher renewable electricity content at a rate competitive with the utility service

provided by the incumbent utility. Further, each CCE has been able to accumulate (or begin accumulating in the case of LCE that launched in 2015) financial reserves that may be directed toward investment in local resource programs. These proven successes achieved by the three operating CCEs manifest key elements of Davis' Vision Statement for CCE, and there is no reason to believe that this element of the Vision Statement could not be achieved by Davis and Yolo.

Each CCE has its own business culture and philosophy, but there are several common attributes and experiences worth noting as Davis and Yolo investigate how to implement CCE.

- Each operating CCE obtained its initial pre-operational financing ("seed capital") from non-commercial sources. SCP and LCE obtained financing from a sponsoring government entity, while MCE received financing from three local individuals.

  Representatives of River City Bank, headquartered in Sacramento, CA, confirmed during a separate conversation that Davis/Yolo should anticipate not receiving a commercial bank credit facility prior to the CCE becoming operational. If Davis and/or Yolo elect to implement a stand-alone CCE, a source of pre-operational financing (anticipated to equal approximately $2.5 million) will be required. TEA presumes that the City and/or County will provide this financing, but discussion of the availability, terms and conditions of such financing will need to occur if it has not already.

  Once operational, each operating CCE has successfully obtained commercial banking facilities (e.g., lines and letters of credit) sufficient to support ongoing operations. Representatives of River City Bank also indicated a willingness to provide commercial banking facilities once a Davis/Yolo CCE is operational, even before revenue is received.

  Clearly, a benefit to joining an existing CCE, or moving forward with an outsourced solution, is the ability to avoid the need for pre-operational financing and/or the need to arrange for a credit facility when operations commence. Presuming the City and/or County is willing to provide financing, however, avoiding the need to establish credit facilities is largely one of administrative convenience rather than a material factor in the decision of how to implement CCE. The economic feasibility outlined in this study, and the experiences of the currently operating CCEs, indicates that Davis and Yolo should be able to obtain the necessary financing if they elect to move forward with CCE. If there is concern about the availability of pre-operational financing from the City and/or County, then there is a bias toward implementing CCE either by joining an existing CCE or moving forward with an out-sourced solution.

- Each CCE, including LCE that implemented an Enterprise Model, have structured their CCE to insulate the sponsoring government agency (or agencies) from the risks of operating a CCE. If Davis and Yolo desire to create a similar separation, the existing CCEs have established models that can be followed.

- Each CCE has elected to outsource key staffing elements where specialized knowledge or systems are required, and/or significant economies of scale exist. Examples include skills and

services required for successful wholesale market operations such as power planning and procurement, load forecasting, risk management, CAISO Scheduling Coordinator services, billing/back-office, call center and specialized regulatory/legal services. There are entities willing and available to provide such specialized expertise to CCEs. Davis and Yolo do not need to develop a plan for hiring staff to perform these activities. There are also well established processes for hiring such individuals, consultants and firms that Davis and Yolo can follow.

- The single most important staffing decision that Davis and Yolo will face is the selection of a CEO/GM for the CCE. While the personalities are different at each of the operating CCEs, each has a strong leader and "champion" for its CCE program. During the course of conversations with River City Bank, representatives of the bank emphasized the importance of this issue as a critical criterion in the course of their credit assessment of a CCE. Strong leadership should not be interpreted as requiring a specific personality type, but rather a strong leader is someone that can perform the following:

    - articulate and champion the vision of the CCE to stakeholders;
    - effectively and efficiently work with the CCE governing board to develop strategic direction, goals, policies and make decisions;
    - has the business acumen to lead and motivate the CCE organization; and
    - is passionate about the mission of the CCE.

  Expectations about the ability to find a strong, capable leader for the CCE should not be overlooked in the course of a decision about whether to establish a stand-alone CCE versus join an existing CCE. Concerns about finding a strong leader may bias the decision toward joining an existing CCE. As will be discussed later in this section, moving forward with an outsourced solution does not negate the need to hire a strong leader for the CCE. Given Davis' proximity to Sacramento and the number of energy industry professionals based there, and provided Davis is willing to pay a market competitive salary, TEA anticipates that a Davis/Yolo CCE should be able to find strong candidates for this position.

- Each CCE has setup a "lock-box" facility with a commercial bank to augment counterparty credit support and provide assurances to wholesale counterparties. This approach is a proven model that can be followed and with which potential power suppliers are familiar and find acceptable.

- The Enterprise Model approach implemented by LCE has enabled it, uniquely, to rely on City of Lancaster staff to perform certain administrative functions, as well as to utilize City facilities.

10.2.1.1 Potential for Davis/Yolo to Join Existing CCE

All three operating CCEs expressed a strong willingness to share their experiences with Davis and Yolo County as investigation and implementation of CCE moves forward. It was clear from the discussions, however, that MCE presents the only viable alternative for Davis and/or Yolo to join an existing CCE as a new member, at least at the present time.

MCE is actively seeking new members and has expressed serious interest in Davis and/or Yolo County joining MCE. Further, the MCE Board has developed a growth policy, has directed management to actively implement this policy, and has modified its operating agreement to accommodate new members. MCE has successfully commenced serving 4 new member communities during the past approximately 24 months.

SCP, conversely, is in the early stages of developing its growth policy. While SCP acknowledges the potential for adding more participants in the future, growth to date has been limited to cities within Sonoma County and staff anticipates that additional growth will be limited to counties contiguous with Sonoma County. SCP has a very clear focus on GHG reduction as core to its successful operation. Consistent with this focused vision, economic savings versus PG&E is an important but secondary concern, as is development of local resources. There is also a strong belief that maintaining a strong sense of community and local control is critically important to its long-term success. As such, SCP is focused on maintaining a reasonably narrow geographic footprint for its CCE.

LCE indicated that it does not offer a viable alternative at the present time to Davis and Yolo for two main reasons. First, it operates entirely within Southern California Edison's territory rather than Pacific Gas & Electric's. The need for a fluid business relationship with the incumbent IOU to facilitate the requirements related to unique business practices, rate making, data exchange and billing requirements of each IOU, make it impractical for Davis/Yolo to partner with LCE. The second factor cited by LCE is the geographic distance separating LCE from Davis/Yolo.

10.2.2 Outsourced CCE Alternative

TEA spoke with representatives of the two entities – Community Choice Partners and California Clean Power – both offering outsourced CCE solutions. At a high level, both purport to offer a turnkey solution for new CCEs including a variety of necessary services ranging from preparation of a technical study, implementation plan and posting of bond with the CPUC, making requisite regulatory filings, community notices, assistance with ordinances, pre-operational financing, power procurement, load forecasting, back-office and billing, call center, customer communications, etc. Only California Clean Power, however, expressed strong interest in working with Davis and Yolo County. Community Choice Partners, on the other hand, indicated that its business model is to focus on larger prospective CCEs.

10.2.2.1 California Clean Power

California Clean Power is principally focused on smaller CCEs such as Davis and Yolo. A complete description of its service offering is provided in Section 13. In summary, California Clean Power provides the following services:

- Load data collection from the incumbent utility
- Feasibility analysis (technical study)
- Draft ordinance to establish a CCE under California Public Utilities Code
- Pre-operational financing
- Implementation Plan
- Posting required $100,000 bond with the CPUC

- CAISO Scheduling Coordinator Services, including collateral posting with CAISO
- Establish Meter Data Management Agreement with incumbent utility
- Electronic Data Interchange exchange of data with incumbent utility for metering, billing and customer switch requests
- Call Center
- Program website
- Customer noticing
- Filing of required regulatory compliance filings
- Load forecasting, resource planning and procurement
- Market monitoring and market analysis
- Bidding strategy and scheduling
- Reporting of program performance (e.g., revenues and expenses, GHG emissions)
- Assistance with energy efficiency and local energy projects

Ultimately, California Clean Power offers a prospective CCE several advantages that Davis and Yolo should consider as they evaluate implementation alternatives. First, working in partnership with a commercial bank, California Clean Power has arranged a source of pre-operational financing for prospective CCEs that do not have a viable funding source during the startup phase. The second primary advantage is administrative ease. California Clean Power has developed relationships with entities capable of providing critical business services (e.g., legal/regulatory, customer messaging, power procurement, billing/back-office, call center, counterparty credit management, etc.) needed to successfully launch and operate a CCE. A large component of the services offered by California Clean Power are the services assumed and recommended to be outsourced to third parties in the stand-alone CCE scenarios evaluated in this Technical Study. California Clean Power is also offering to provide certain community outreach, reporting and regulatory filings; however, the comprehensiveness of these other services is unclear at present. These potential advantages need to be weighed against several offsetting risks.

The first key risk is that California Clean Power does not have an established client base at the present time, which calls into question the durability of its business model, particularly if Davis/Yolo were to launch as the only customer. A second key risk is that California Clean Power is seeking a 10-year commitment. While they expressed a potential willingness to shorten the minimum term to 5- to 7-years, this still represents a substantial commitment during which time a Davis or Davis/Yolo CCE would be locked-into a sole-source arrangement for critical functions, including a sole source arrangement with a single power supplier. It is also unclear how much flexibility Davis/Yolo would have in selecting a power supply portfolio to meet the unique requirements of their rate payers. Finally, an outsource CCE model does not negate the requirement to find a champion/local manager for the CCE program within Davis/Yolo.

10.3 Results

The comparison matrix template is shown in Table 11. The exercise of developing, refining and scoring the comparison matrix proved to be very helpful to the process of understanding the relevant and

important issues for a new CCE. It also provided clear guidance on the relative strengths and weaknesses of the different options available to Davis/Yolo. Lastly, the exercise helped clarify the relative importance that the CCEAC placed on the different criteria when considering a future Davis/Yolo CCE. Ultimately, it was decided to proceed with a recommendation based not upon a final, official scoring of the matrix, but rather to do so based upon the higher level strengths and weaknesses of each option and how those aligned with the Davis/Yolo CCE vision.

10.3.1 Rate Competitiveness

The rate competitiveness analysis, as mentioned earlier, was considered more as a threshold issue for whether options should or should not be considered viable. The finding that all the CCE options were in fact rate competitive implied that all passed the threshold. The sub-criterion related to accrual of financial reserves, while not determinative with respect to whether options were considered rate competitive, was a consideration relative to the ability to implement local programs in the Governance and Local Control section.

10.3.2 Governance and Local Control

While all the CCE options were scored positively under the Governance and Local Control criteria as compared with PG&E, the stand-alone options were preferred, with joining MCE next and the stand-alone with CCP option third. The key criteria in favor of the stand-alone options were the ability to direct energy investments to meet local objectives; the ability to adopt planning, management and business practices consistent with local objectives; and, the ability of the community to interact with the governing board. The flexibility to adapt to evolving market, regulatory and legislative conditions on the other hand was considered to weigh in favor of the join-MCE option.

10.3.3 Risks and Mitigation

The CCE options were considered as risky or more risky that the status quo according to the criteria in the Risks and Mitigation section. Of the three different CCE approaches, MCE was considered to have the lowest risk, while the stand-alone options were considered to be more risky but slightly less risky than the stand-alone with CCP options.

The risk sub-criterion considered most significant was the Market and Counterparty Risk. However, this risk was considered to affect all the CCE options equally. The risks which most distinguished MCE from the stand-alone options were: much less startup risk and operational risk; and slightly less opt-out risk and legislative and regulatory risk. The other risk sub-criteria were not considered to be very significant risks.

10.3.4 Overall

The comparative matrix evaluation led to three main conclusions:

1. All of the CCE options are financially viable
2. The stand-alone options are preferred under Governance and Local Control criteria
3. The join-MCE option is preferred under the Risk and Mitigation criteria

The overall preference then becomes a question of how much importance is ascribed to the Governance and Local Control criteria relative to the Risk and Mitigation criteria. It was the opinion of the CCEAC that the advantage of the stand-alone models in Local Control and Governance criteria was more important to achieving the Davis/Yolo CCE vision than the relatively better risk profile offered by the join-MCE options.

Table 11: Comparison Matrix

Table ___
Davis Technical Study
Comparative Analysis of Implementation Models

Score:		
	2	Highly Favorable
	1	Moderately Favorable
	0	Neutral
	-1	Moderately Unfavorable
	-2	Highly Unfavorable

Comparative Criteria	Considerations	Weight	Status Quo (PG&E)	Davis Only	Davis / Yolo JPA	Join Existing CCA	Outsourced CCA
1 Rate Competitiveness	Are rate payers expected to pay no worse than the same, and preferrably less than, the status quo?		Yes	Yes	Yes	Uncertain	Yes
	Level of anticipated rate payer savings under range of future scenarios		0.0	0.0	0.0	0.0	0.0
	Accretion of financial reserves for energy investment, financial and risk management		0.0	0.0	0.0	0.0	0.0
	Score - Rate Competitiveness	*50%*	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
2 Governance & Local Control	Weight of individual vote in governing board decisions		0.0	0.0	0.0	0.0	0.0
	Complexity of decision making process		0.0	0.0	0.0	0.0	0.0
	Ability of community to interact with govenering board		0.0	0.0	0.0	0.0	0.0
	Directing energy investments to meet local objectives		0.0	0.0	0.0	0.0	0.0
	Adoption of planning, management and business practices consistent with local objectives		0.0	0.0	0.0	0.0	0.0
	Flexibility to adopt to evolving market, regulatory, legislative conditions		0.0	0.0	0.0	0.0	0.0
	Score - Governance & Local Control	*15%*	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
3 Risks & Mitigation	Startup risk		0.0	0.0	0.0	0.0	0.0
	Customer opt out risk		0.0	0.0	0.0	0.0	0.0
	Operating risk (excluding market and counterparty risk)		0.0	0.0	0.0	0.0	0.0
	Market and counterparty risk		0.0	0.0	0.0	0.0	0.0
	Incumbent utility opposition risk		0.0	0.0	0.0	0.0	0.0
	Legislative and regulatory risk		0.0	0.0	0.0	0.0	0.0
	Host entity risk		0.0	0.0	0.0	0.0	0.0
	Management of unwinding partnerships		0.0	0.0	0.0	0.0	0.0
	Management of CCA shutdown		0.0	0.0	0.0	0.0	0.0
	Score - Risks & Mitigation	*35%*	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
4 Overall Rating	**Total Weighted Score where Max Score = 2**	*100%*	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**

11 Recommendations

Based on the results of the financial analysis and comparison matrix the following recommendations and next steps are provided.

11.1 Best Options

The CCEAC has determined that the stand-alone options offer the best opportunity to realize the Davis/Yolo CCE vision. In combination with the significant economies of scale, as well as the ability to achieve the vision on a greater scale, this study recommends the following as the best option for the City of Davis and Yolo County.

- The City of Davis and Yolo County should join together to establish a stand-alone CCE

This option offers the following, compelling benefits.

- ✓ The opportunity for significantly lower rates for customers as compared to PG&E
- ✓ The opportunity to build a power supply portfolio that's considerably more environmentally friendly and locally produced than PG&E
- ✓ The establishment of a locally controlled and governed CCE which is accountable and responsive to the citizens of the City of Davis and Yolo County
- ✓ The ability to innovate through piloting and establishment of local energy programs
- ✓ The option to expand to include other municipalities within Yolo County and/or nearby counties which may share a similar vision
- ✓ Flexibility to develop programs, services and rate structures which address the unique needs of the Davis and Yolo communities, including residential, commercial, industrial and agricultural interests

Should Yolo County decide not to join with the City of Davis in moving forward with a joint CCE, the choice then becomes one of whether the City of Davis should proceed on its own or if it would be better off joining MCE. This choice might potentially lead decision makers to assign different weights to the risks and benefits of the different options. The CCEAC recommends proceeding with a Davis-only CCE in this case based upon the following judgments.

- The Davis-only CCE, while somewhat less financially compelling than the Davis plus Yolo stand-alone, still offers opportunity for significant savings compared to PG&E
- The Davis-only option offers perhaps even more ability for local control and vision alignment than the Davis plus Yolo option and more so than MCE

However, a concern has been expressed by some City staff and decision makers that a Davis-only CCE might expose the City of Davis itself to higher risks than the Davis-Yolo combination. In particular there is concern the Davis-only option might leave the City of Davis' general fund liable for financial obligations incurred by the CCE in the event the CCE were to become financially impaired for some reason. This concern has been further evaluated by the Davis City Attorney. If the Davis City Council were to consider these risks excessive compared to attendant CCE benefits, then the join-MCE option is also a viable approach for proceeding with a CCE.

11.2 Model

Should the decision be made to proceed with either a Davis/Yolo or Davis-only stand-alone CCE the study recommends implementing a model based on traditional public utility best practices. This model includes the following elements:

- A small, but highly capable and experienced CCE staff with strong emphasis on wholesale oversight, customer service, and local investment and innovation
- Engagement of selected outsourced services (schedule coordination, wholesale trading, data management) which are readily and economically available in the market
- Separation of the power procurement process from power suppliers
- A robust risk management approach, including diversity of suppliers, sources, and time of procurement – as well as quantified, goal-driven financial management, and program oversight

CCE establishment may be undertaken with either an Enterprise or Joint-Powers Agency structure. Which structure to select will be a function of a number of factors outside the scope of this study, but will likely include number of participating entities; potential future expansion; funding sources; perceived business risk; management support and control; and other factors deemed important by decision makers.

The main hurdle to realizing the above model is that a new CCE enters the electricity business without significant financial resources or operating history and thus initially lacks sufficient credit to procure the power supply needed to operate. Historically this is what has led currently operating CCE's to pursue "sole supplier" approaches coupled with the "lockbox" concept described earlier. However, there are other avenues which may be pursued, separately or in combination to provide credit support to the new CCE.

- *Reduce the Need for Credit* – the largest credit requirement comes from procuring power for delivery in the future. This is a useful strategy as it results in more budget/cost certainty and can mitigate exposure to large and volatile price movements. However, the proportion of power procured for future delivery is a business choice and the desire for price stability should be balanced against the potential associated extra cost (either explicit or implicit) incurred as a result of insufficient established credit. Ultimately, the CAISO can and does supply power through its short-term markets, so there is no absolute need to procure power supply in advance.
- *Find Backstops or Credit Support* – The existing CCE's have all leaned on partner municipalities or other public sector institutions for credit support through their start-up phases. There are no legal barriers for a new CCE to look for credit support beyond the start-up phase. While municipalities may be somewhat reluctant to expose themselves to open-ended credit risk, there might be some willingness for more limited financing or backstop support which could enable some level of power procurement.
- *Buy Credit* – Rather than implicitly buying credit through agreeing to procure power through a sole supplier at a presumed premium to market prices, a CCE could buy access

to credit explicitly – disaggregated from a single supplier. There are entities in the market which will provide a credit backstop for a fee.

11.3 Next Steps

The Davis City Council and the Yolo County Board of Supervisors are considering whether and how to proceed with a CCE. Should the decision be to establish a stand-alone CCE, the City and or County would take the following steps.

1. Pass an ordinance establishing a CCE program
2. Establish a JPA (or Enterprise)
3. Empower/direct staff (with possible help of CCEAC) to run the formation process
4. Contract with consultants to advise on CCE formation
5. Develop CCE approach including
    a. CCE Staff positions/roles, use of city/county resources
    b. Outsource approach
    c. Governance / oversight
    d. Preliminary budget
    e. Implementation timeline, go-live target
    f. Financing needs / options
    g. Outreach strategy
6. Contract for preparation of, prepare and file Implementation Plan
7. Execute Implementation Plan

The Implementation Plan must address the following topics as laid out in Public Utilities Code 366.2[35].

> (3) A community choice aggregator establishing electrical load aggregation pursuant to this section shall develop an implementation plan detailing the process and consequences of aggregation. The implementation plan, and any subsequent changes to it, shall be considered and adopted at a duly noticed public hearing. The implementation plan shall contain all of the following:
> (A) An organizational structure of the program, its operations, and its funding.
> (B) Rate-setting and other costs to participants.
> (C) Provisions for disclosure and due process in setting rates and allocating costs among participants.
> (D) The methods for entering and terminating agreements with other entities.
> (E) The rights and responsibilities of program participants, including, but not limited to, consumer protection procedures, credit issues, and shutoff procedures.
> (F) Termination of the program.

[35] http://www.leginfo.ca.gov/cgi-bin/displaycode?section=puc&group=00001-01000&file=360-380.5

(G) 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.

(4) A community choice aggregator establishing electrical load aggregation shall prepare a statement of intent with the implementation plan. Any community choice load aggregation established pursuant to this section shall provide for the following:
(A) Universal access.
(B) Reliability.
(C) Equitable treatment of all classes of customers.
(D) Any requirements established by state law or by the commission concerning aggregated service, including those rules adopted by the commission pursuant to paragraph (3) of subdivision (b) of Section 8341 for the application of the greenhouse gases emission performance standard to community choice aggregators.

(5) In order to determine the cost-recovery mechanism to be imposed on the community choice aggregator pursuant to subdivisions (d), (e), and (f) that shall be paid by the customers of the community choice aggregator to prevent shifting of costs, the community choice aggregator shall file the implementation plan with the commission, and any other information requested by the commission that the commission determines is necessary to develop the cost-recovery mechanism in subdivisions (d), (e), and (f).

Should Davis and/or Yolo decide to proceed with MCE they would need to:

1. Pass ordinances authorizing MCE to serve as the Community Choice Aggregator for Davis/Yolo
2. Sign agreements (or negotiate a new agreement) with MCE
3. Designate representatives to MCE board
4. MCE would then implement the CCE program within Davis/Yolo

12 Appendix – Pro Forma Input Assumptions

12.1 Gas Price Assumptions

The input assumptions for PG&E Citygate gas prices were developed from a combination of sources. The price curves in nominal 2016 Dollars are shown in Figure 24. The base case and the initial prices for the high and low cases are based on futures traded on the InterContinental Exchange ("ICE") and current spot prices. The high price scenario is based on a model created by a member of a technical subcommittee of the CCEAC using historical price changes and mean reversion. The low price scenario is taken from a TEA proprietary stochastic volatility model.

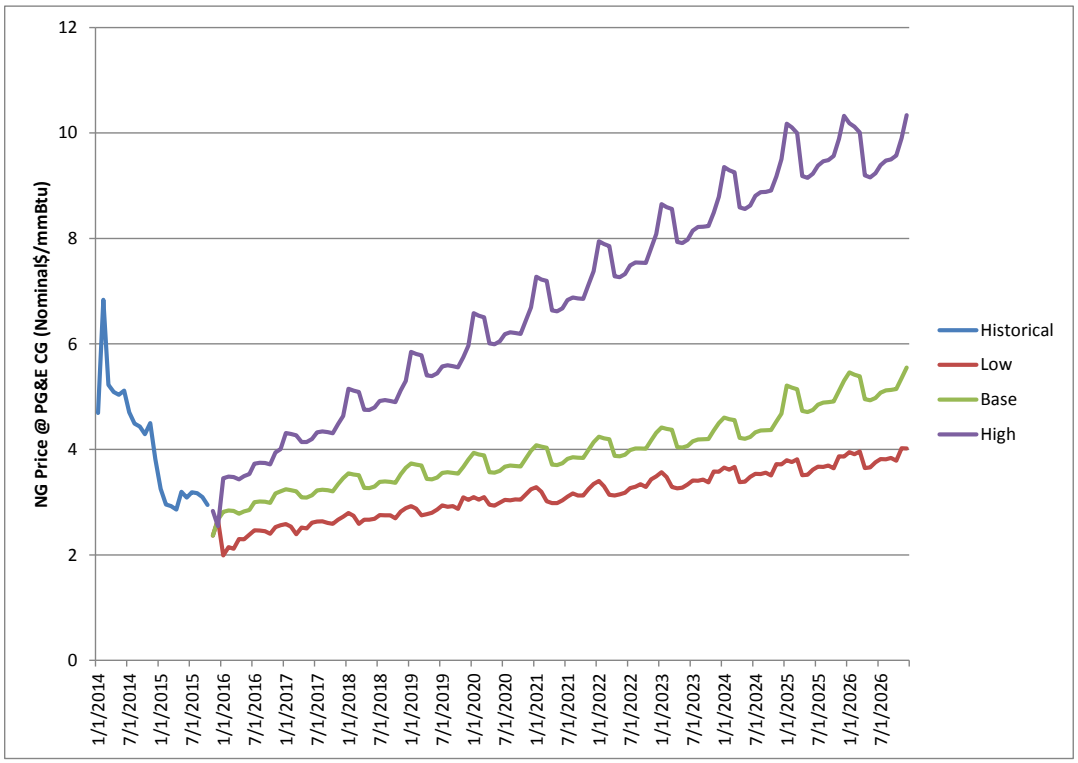

Figure 24: PG&E Citygate gas price assumptions for base case and scenarios

12.2 Clean Power Plan and Carbon Price Assumptions

The proposed Clean Power Plan (CPP) is implemented in Aurora through constraints on carbon emissions throughout WECC. However, the CPP is not the limiting constraint within California due to California's high RPS mandates and its own carbon regulations (AB32). Therefore, within California, carbon policy is simulated through the use of prices on carbon-emissions allowances, with base, high and low price scenarios. The price curves are shown in Figure 25.

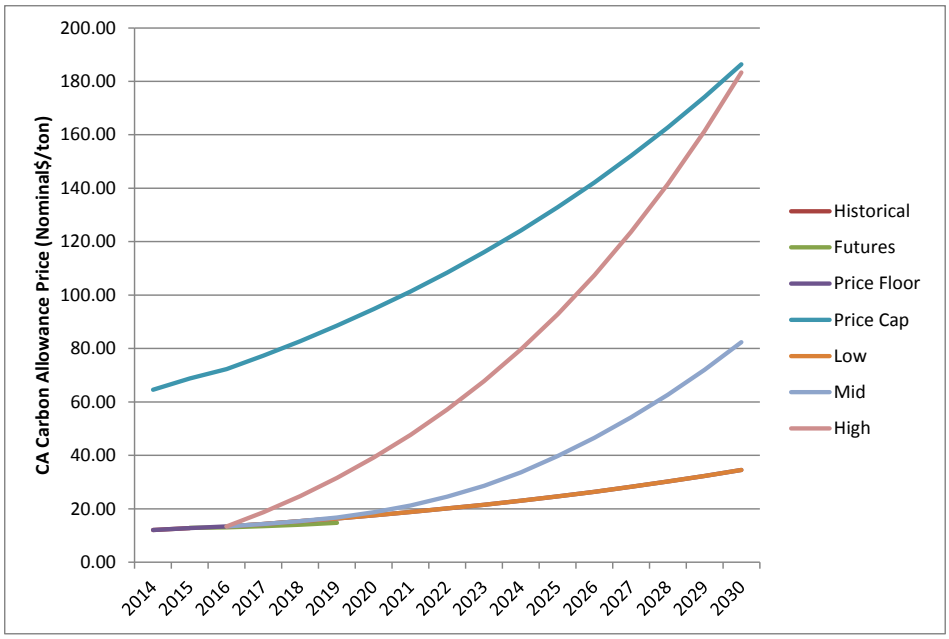

Figure 25: California carbon price assumptions for base case and scenarios

The base price assumption uses ICE futures prices for the current and subsequent reporting periods (through 2018). Subsequent to that, the base case price rises to a point, approximately a third of the way between the AB32 price floor and the max reserve price level. The rationale for using a rising carbon price is that in previous studies TEA has found that in order to achieve the stated policy goals for carbon reduction, a carbon price higher than the floor will be needed. However, given the history of carbon prices to present and the aggressive policy steps that are being undertaken separately from carbon reduction legislation, it was not deemed likely that carbon prices will rise much higher.

The low price scenario simply remains at the price floor throughout the study period. The high price scenario begins at current prices but rises more rapidly towards the reserve price level.

12.3 Renewable Generator Cost Assumptions

The cost of renewable generation is declining at a faster rate than most projections, with solar (Figure 26) and wind energy leading the charge. Launched in 2011, the original goal of the US Department of Energy's Sunshot Initiative was to reducing solar energy generation costs to roughly 6 cents/kWh, or 75 percent from 2010 to 2020. That goal was surpassed by mid-2015, as NV Energy signed a long term power purchase agreement ("PPA") at a cost of less than 4 cents/kWh, inclusive of Federal incentives..[36] It is likely that the PPA would still come in at under

[36] http://www.utilitydive.com/news/nv-energy-buys-utility-scale-solar-at-record-low-price-under-4-centskwh/401989/

6 cents/kWh even without subsidies. Wind energy follows a similar story, with utilities signing record low-priced PPAs in 2014, though most of those projects were located in the Midwest.[37]

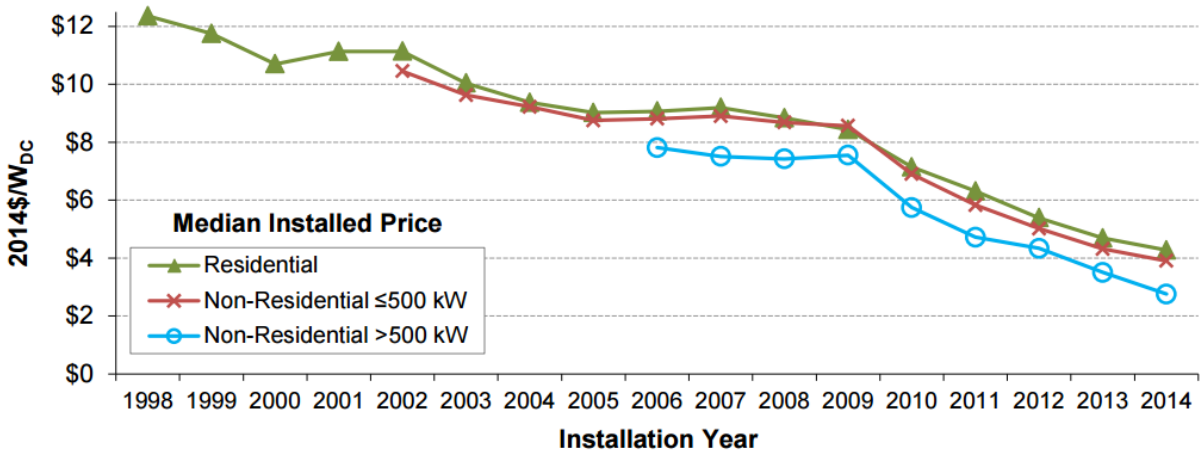

Figure 26: Historical solar generation capacity costs

The decline in solar and wind energy prices can be attributed to two main factors: the manufacturing experience curve and technological improvement. The experience curve suggests that a product becomes cheaper and faster to produce as more of it is manufactured. For solar panels, that meant more efficient use of raw materials and faster installation times. Global solar photovoltaic capacity in 2000 was roughly 1MW. It was nearly 180,000MW by the end of 2014. A lot has been learned about how to build solar panels since then. In that period, residential solar capacity costs have dropped from over $10,000/kW to about $4000/kW.

In addition to decreasing manufacturing and construction costs, the technology behind these resources improved as well. Newer solar panels are better at converting sunlight to energy than its previous generation counterparts. Wind turbines today can better harvest the energy with larger blades atop higher towers than before. Lower capacity costs in conjunction with higher capacity factors translate into more economically available renewable resources.

Solar energy capacity costs have declined by an average of 6 percent annually since the turn of the century. While it is unlikely that costs will continue to decline at breakneck pace, there are few headwinds preventing further development and increased renewable penetration. The 30 percent solar ITC, which was slated to ratchet down to 10 percent at the end of 2016 was recently extended by an additional 5 years. The expiration of the subsidy was expected to slow technological progress by several years, but that is no longer the case. Congress also agreed to bring back the wind production tax credit which previously expired at the end of 2014, thus improving economics of wind projects going forward.

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[37] http://newscenter.lbl.gov/2015/08/10/study-finds-that-the-price-of-wind-energy-in-the-united-states-is-at-an-all-time-low-averaging-under-2-5%C2%A2kwh/

The renewable energy cost forecasts in the study expects utility scale solar costs to drop to $1500/kW by 2025 and $1000/kW by 2030 (Figure 27). Wind energy costs are expected to drop to $1250/kW by 2030 (Figure 28).

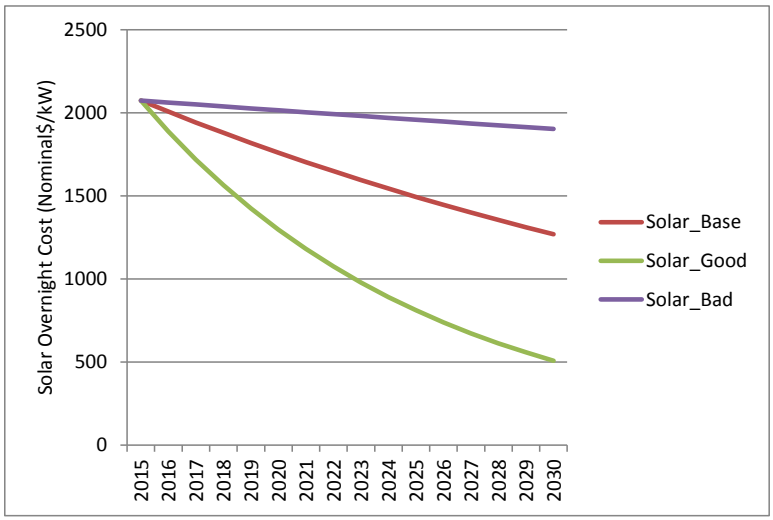

Figure 27: Solar capacity cost assumptions for base case and scenarios

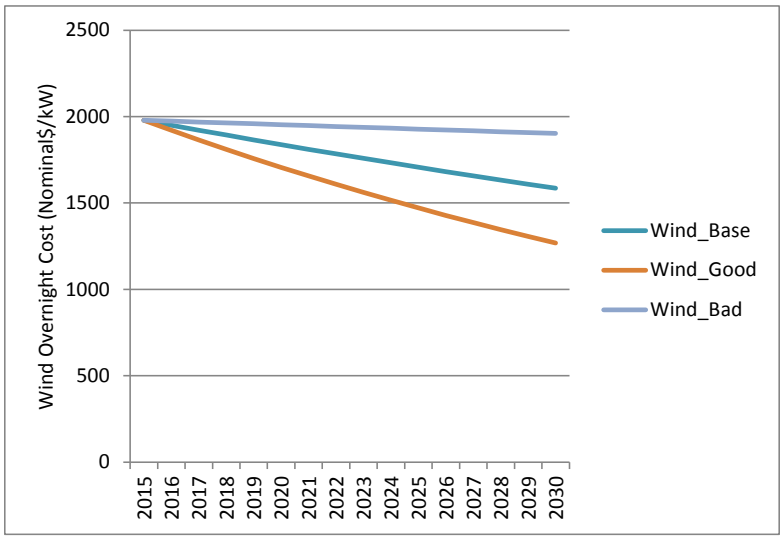

Figure 28: Wind capacity cost assumptions for base case and scenarios

12.4 Other Assumptions

Load in California and throughout WECC is assumed to grow in the 1-2% range per year over the ten year horizon. California hydro generation is assumed to be at the 20 year average in the base and low cases, and at the (lower) 10 year average in the high price scenario (lower hydro would tend to lead towards higher prices). Actual state-wide generation shapes for solar and wind generation are used for the study and scaled based upon future installed capacity. Generation units that are scheduled to be retired or repowered due to once-through-cooling policies are modeled as such. PG&E's Diablo Canyon nuclear generating plant is assumed to remain online throughout the low and base case scenarios, and to be retired in 2023 in the high price scenario.

12.5 Model Outputs

Example model results for the bas case for California generation capacity additions are shown in Figure 29. Results for market heat rate (power price / gas price) shapes by season for years 2016 and 2024 are shown in Figure 30 and Figure 31. Finally, monthly daytime or Heavy-Load Hour ("HLH") and nighttime and Sunday or Light-Load Hour ("LLH") power prices for NP15 are shown in Figure 32 and Figure 33.

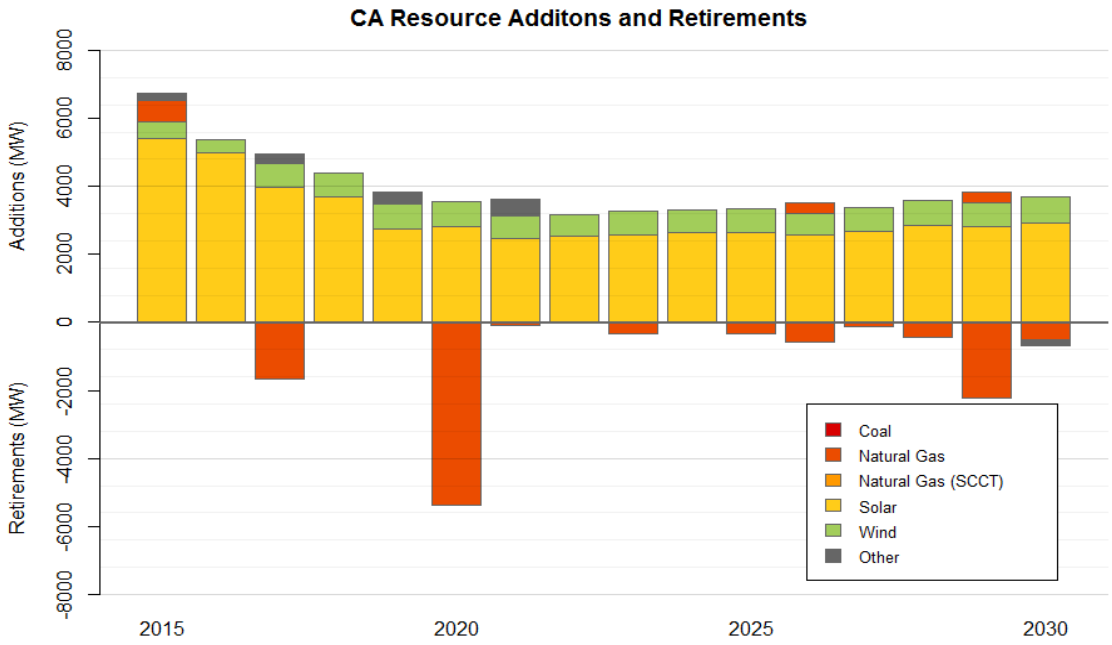

Figure 29: California resource additions and subtractions. Output from Aurora model for base case.

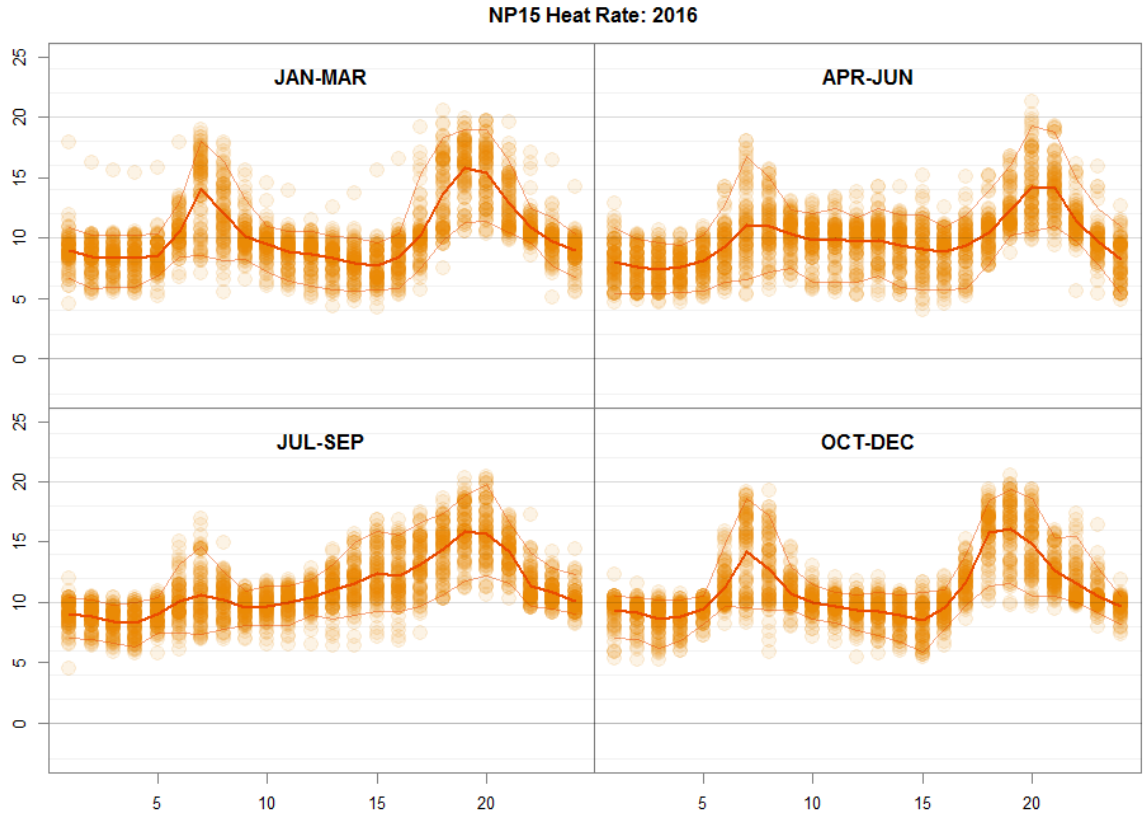

Figure 30: Hourly market heat rates (power prices / gas prices) for 2016 by season

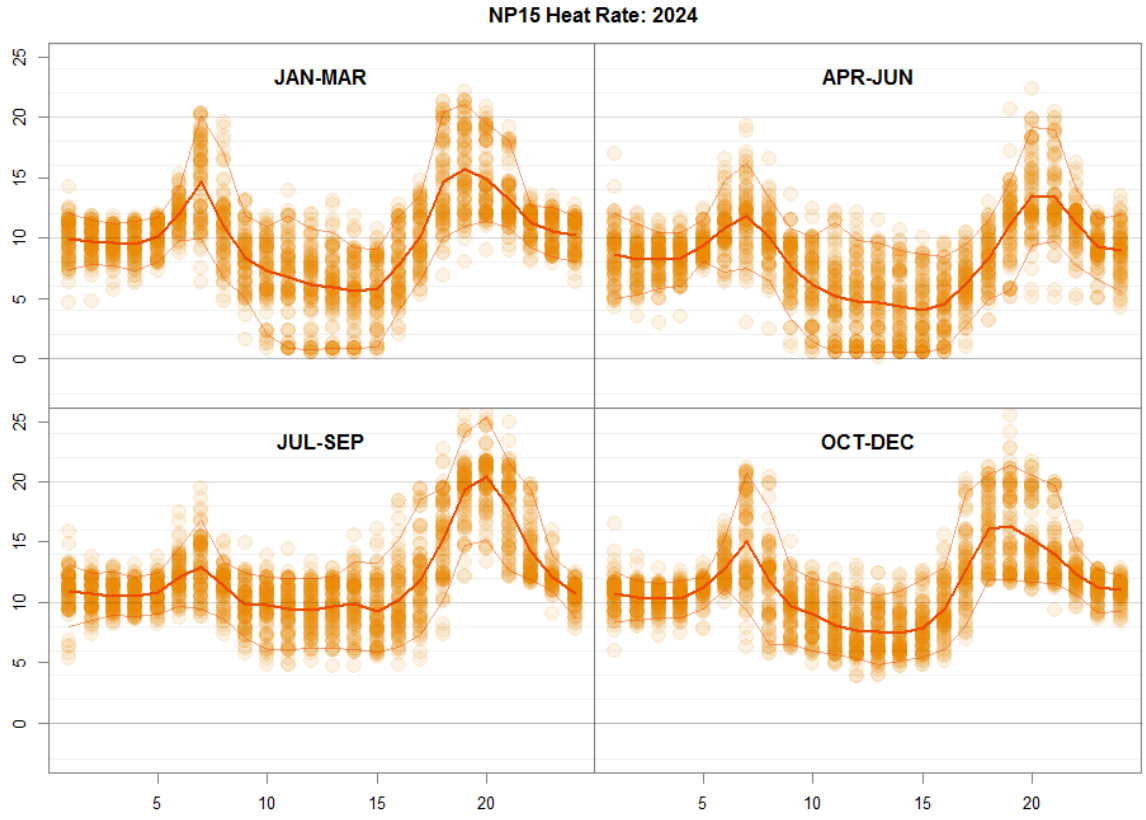

Figure 31: Hourly market heat rates (power prices / gas prices) for 2024 by season

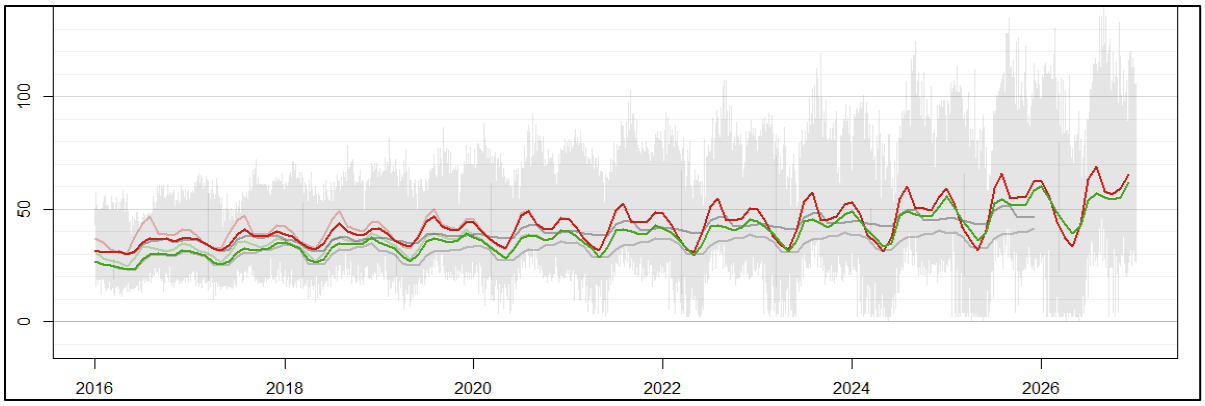

Figure 32: Base case monthly price forecasts for NP15 in $/MWh (red is HLH, green is LLH, dark gray are HLH & LLH forward prices and light gray are hourly prices)

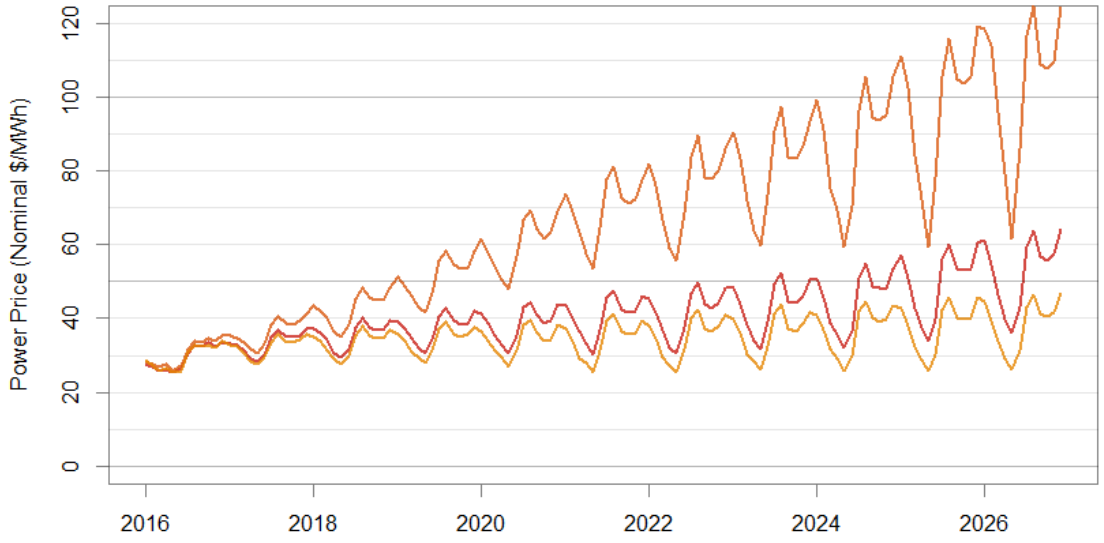

Figure 33: Average monthly PG&E power prices for high, base and low cases.

12.6 PPA Pricing

The solar, local solar and wind PPA prices are based upon the cost curves described earlier. When a contract for supply from one of those resources is added to the portfolio, the model determines the cost for that type of resource for the year the contract begins and then prices that supply at a fixed price through the remainder of the ten year time horizon.

12.7 Revenues

For any owned or contracted-for supply, the model calculates expected revenue. The revenue consists of two components – the flat block component and the hourly price shape component. The flat block component is just the expected HLH and LLH generation times the HLH and LLH

prices. The hourly price shape component captures the correlation between hourly generation output and hourly prices. As more and more solar supply comes online it affects prices by lowering them during periods of high solar generation. Therefore, we see that solar revenue declines relative to flat block supply through time.

12.8 Load Costs

In the model, load is treated similarly to supply in estimating the cost to serve. It is costed based both on HLH and LLH block prices and then an adjustment is applied based on hourly load shape correlations with hourly price shapes. This is significant as different rate classes have different load shapes. Overall, however, the load is more evenly distributed than renewable supply and the adjustments are smaller on a relative basis than for the solar generation for example.

12.9 PG&E Rates Forecast

The Pro Forma includes a forecast for PG&E rates for bundled customers and a forecast for charges that apply to CCE customers, including the Power Charge Indifference Adjustment (PCIA). The market inputs to the PG&E rates forecasts for base, high and low scenarios are the same as those used in the hourly price simulations used to determine prospective CCE rates. The rest of the inputs and methodology are described below.

12.9.1 Distribution

Beginning distribution rates for 2016 are based upon PG&E's 2016 ERRA Application. The short term forecast of PG&E distribution rates is based upon PG&E's 2017 General Rate Case (2017 GRC) Application. The 2017 GRC includes the rates that PG&E proposes for 2017 as well as attrition allotments for 2018, and 2019. The high and low case scenarios are based upon the likely range of CPUC action on these requests. From 2020 through 2026, distribution rates are projected to follow the inflation estimates used in the base, high, and low case analysis.

12.9.2 Regulatory

There are numerous regulatory requirements that are included in PG&E rates. Examples include:

- Renewable Portfolio Standards
- Public Purpose Programs
- Competition Transition Charge
- Department of Water Resources Bonds
- Nuclear Decommissioning
- Conservation Incentive Adjustment
- California Climate Credit

Forecasts of these rates are based upon CPUC decisions where applicable, and are consistent in both the PG&E Rate Forecast and PCIA analysis. The starting point in 2016 is based upon PG&E's November, 2016 ERRA Application.

12.9.3 Inflation/Interest

Assumptions with regard to inflation/interest that employed in the analysis are as follows:

Year	Base Case	Low Case	High Case
2016-2018	2%	1%	3%
2018-2026	2%	2%	4%

12.9.4 Power Charge Indifference Adjustment / Franchise Fees

A proposed decision for the Power Charge Indifference Adjustment (PCIA) for 2016 was published on November 13, 2015 by the Administrative Law Judge (ALJ). For purposes of this analysis this proposed PCIA is used as the starting point. Given the size of the increase in PCIA rates for 2016, it is likely that such charges will be challenged. Since the ALJ accepted PG&E's calculations in their entirety these amounts have been used in the base case. To the extent that they may possibly be modified in the future it could have a significant impact on the PCIA.

Future years are calculated comparing the PG&E costs to changes in natural gas, power market, and renewable resource prices as supplied and used in the TEA analysis. Generally, as the price of these resources increases PG&E's recovery amount through the PCIA is reduced. Conversely, if prices were to continue to decline as they have in recent years PG&E's recovery of above market cost would increase.

The Franchise Fee (FFE) is considered constant throughout the forecast period as PG&E's obligations are not likely to change over time. The FFE is almost negligible amount when compared to the PCIA.

13 Appendix – California Clean Power Service Offering

California Clean Power (CCP) formed to give communities their power back by helping virtually every jurisdiction in California secure their right to Community Choice Aggregation (CCE or Community Choice). We developed our services based on our experience in Community CCE operations and finance, paired with our deep and relevant energy, government, and legislative experience. While Community Choice provides clear and significant benefits, progress in establishing programs remains hampered by the difficulty of securing the significant funding required to launch and operate a program, as well as the ability to recruit staff and build the contractual partners needed to establish a new government agency to administer the program. Compounding the difficulty in securing financing is the lack of proven desire on the part of banks to lend to jurisdictions for establishing CCE.

Until now, Community Choice has been out of reach for smaller communities because the amount of revenue generated by the program can't fully support the required staffing and infrastructure needed to operate the program. Even the smallest community faces costs that can reach into the millions of dollars prior to launching, while larger communities may need even more. Due to these limitations, smaller communities have essentially been limited to joining an existing, multi-jurisdictional CCE. In choosing this approach, an individual community reaps the undeniable benefits of the CCE that it joins while circumventing the burden of acquiring funding and expertise. In exchange, the community cedes individual control as well as revenue to a much larger, and sometimes geographically remote, government agency.

A growing market of vendors provides consulting and some of the required services needed to smoothly and reliably run a CCE program. To date, however, these resources have been offered in a piecemeal fashion, requiring CCE programs to hire additional layers of in house staff and/or additional outside consultants to manage and oversee the multitude of individual contracts needed to run the CCE program. These increased operational costs necessarily consume a larger portion of the program's revenue, which could otherwise be used to decrease rates or invest in local priorities.

California Clean Power offers full and complete services to help communities launch and operate their own CCE that delivers community control to even the smallest of jurisdictions, including shouldering all of the financial costs of the program's start-up and launch. Our services not only open the door for virtually every community in California to enjoy the benefits of CCE, our services provide a significant value by eliminating the difficulty of recruiting expertise to staff the program and to manage the tangle of contracts for providers and consultants.

We established California Clean Power as a Benefit Corporation and have Pending Status as a certified B Corporation. The ethos expressed by the B Corporation movement, that: business, the most powerful man-made force on the planet, must create value for society not just shareholders, and offer a concrete, market-based and scalable solution is one that resonates with us. We hope to be your jurisdiction's partner and help create that value in your community.

How We Deliver A Successful CCE

We are not just a service provider, we are your partner assisting you every step of the way. CCP helps jurisdictions establish their own successful CCE by leveraging our economics, expertise, and efficiency. By shouldering the burden of initial financing, we remove the greatest barrier to establishing a program; by delivering our in-house expertise, we make it possible for a program to launch smoothly without the need to recruit staff and establish contractual resources; by

combining our services and leveraging our industry knowledge, we can launch a program within a year.

While not an exhaustive list, California Clean Power provides the following services necessary for successful CCE operations:

• Data collection from the utility

• Feasibility analysis

• Draft ordinance necessary to establish a CCE under California Public Utilities Code

• Financing

• Implementation Plan

• Post the required bond with the CPUC necessary to establish a CCE

• Market Participant registration with the California Independent System Operator (CAISO)

• Post Credit/Collateral for participation in Day-Ahead and Real-Time markets

• Utility trading partner status

• Establish a Meter Data Management Agent agreement with Utility

• Electronic Data Interchange exchange of data on a daily basis for metering, billing, and customer switch requests

• Customer service call center

• Program website

• Customer noticing

• Create and deliver for review and approval by the jurisdiction: regulatory compliance filings needed before beginning electric services, including submissions required by the CPUC, CEC and CAISO, as well as ongoing program compliance and regulatory filings

• Resource planning including energy forecasting

• Market monitoring and market analysis

• Energy bid strategy and scheduling

• Auxiliary program support, provided in-house and through organizational partners

• Program reporting to the jurisdiction, including program revenue and expense, GHG emissions, and other items

• Assistance with programs such as energy efficiency and local energy projects

We emphasize three things when launching a program: community control, transparent finances, and demonstrated experience.

Community Control

Our driving passion is keeping the “Community” and “Choice” in CCE. While our services provide the day-to-day operations of your program, all decision making, control, oversight and net revenues remain in your community’s hands. Your jurisdiction’s existing governing body can oversee the program, or you can establish a new local body to serve as the CCE governing board. By keeping local control of your CCE, community members have direct input regarding key policy choices including rate discounts, the renewable and carbon free content of your energy, emphasizing local energy options, types of special programs such as energy efficiency and support of local energy build out, and how future net revenues will be invested. Our services provide for the same governmental oversight and direction as is in place for currently operating CCEs, while allowing communities to maintain direct control over their program.

Transparent Finances

To our knowledge, our services provide the only avenue for jurisdictions to launch a CCE without leveraging government finances or seeking third party financing. Much like starting a private business, securing initial capital is always a daunting undertaking. Indeed, this challenge has been cited as a primary reason for the limited growth of CCEs over the last decade. We bring immediate relief to this vexing issue by supplying all of the capital needed to start up and operate a successful CCE program. This is provided as one of our direct operational expenses, not a loan or deferred payment taken on by your community. Other than the staff time needed to conduct your jurisdiction’s due diligence and to take the official actions needed to step through the CCE launch process, we provide everything from consulting to funding to operations, all at no direct cost to your jurisdiction.

To uphold the strictest standards of transparency in setting the rates your CCE customers pay, we charge a flat per fee per MWh (or Mega Watt hour).1 Our fee is currently $6.75/MWh, or less than $4/month for the average California home. This fee covers all of the non-energy costs of operating your program. What is more, we receive this payment only with the successful launch and operation of your CCE program, paid through your program’s revenue. To support smaller communities, we have established our fee well below the amount needed to establish a new government agency like Sonoma Clean Power or Marin Clean Energy. This approach helps us achieve our Benefit Corporation status by supporting communities as much as – if not more than – generating our own revenue. For a graphical depiction of revenue flow with our services, please see the included “CCE Finances” chart.

Expertise

All services for your CCE are provided via a single contract with CCP. To deliver these services, we assembled an internal team of experts and formed a limited number of strategic partnerships. This structure allows us to provide personal and direct services where that is most effective and to leverage the value of established and specialized expertise in other criticalareas. Services delivered by our core team include:

Energy Procurement and Forecasting. Energy can represent about 90% of costs to CCE customers. Our team is directly accountable for ensuring that your CCE customers are reliably served and your expectations regarding rates and mix of power resources are met.

CCE Customer Service Call Center and Website Management. Your CCE customers deserve excellent customer service and information. By managing our own call center, with representatives on a career track earning a living wage, we can ensure that this is the case. We are creating sustainable California jobs, and are proud to be the first organization to offer an in

house CCE Call Center. We also develop, maintain, and deploy a website unique to your program, providing information and resources specific to your community.

CCE Client Services. We see ourselves as an extension of your staff, and a direct resource for your community. We want to make sure all of your CCE program needs are met, and will assign a representative to work directly with your program. We are always only a phone call or visit away, and if needed, we can assign staff to work directly out of your community.

Legal, Regulatory and Compliance. Working directly with your staff, we will maintain strict compliance with all laws and regulations. Much of this staff work will require approval and public vetting through the program's governing board.

CCE Accounting and Finance. The cornerstone of our model is transparency. We provide your jurisdiction with financial and program information such as financial and market status, operational performance, projections and forecasts, both on a scheduled basis and on demand at your request. This also includes an accurate, transparent, accounting of your program's environmental benefits.

In addition to services provided with in-house staff, we leverage the benefits of scale and specialized expertise through strategic partnerships with the following three companies:

Macquarie Energy, LLC3[38] is a multi-national energy scheduling and trading desk, which provides us with cutting edge access to all energy products available in California and the Western United States, on a 24 hour/7 days a week basis. Our partnership with Macquarie Energy ensures that your CCE will have the same access and advantages of even the largest, for profit electric companies. Through Macquarie Energy, we can be certain that we are procuring the best-priced power possible. For more information on Macquarie Energy, please see http://www.macquarie.com/mgl/com/energy/energy-services/trading.

EDMS, LLC, is a Southern California headquartered back office data provider who ensures proper linkage between the investor owned utility (PG&E, SCE or SDG&E) and the CCE. EDMS has over a decade of experience serving the data and back office needs of California retail electric customers, and helps us keep your CCE information secure, processed properly and accurate. EDMS is also the sister organization of, and closely linked with, the Pilot Power Group, a California retail electric service provider with 15 years of experience and an impeCCEble reputation. For more information, please see http://pilotpowergroup.com/business/products-and-services/account-meter-management/

Shaw Yoder Antwih, is a Sacramento-based firm providing legislative advocacy, association management and consulting services on a broad range of government programs, and specializing in local government issues. Shaw Yoder Antwih has record of achievement and significant successes in the enactment, defeat, or amendment of legislation for our clients.

These services ensure that we – and your community – stay abreast of legislative and regulatory issues that could impact your program. For more information, please see http://www.shawyoderantwih.com/

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[38] CCP has closed a Letter of Intent with Macquarie Energy and will be quickly moving to execute a final agreement.

How We Provide Our Services

While our relationship with your community is a priority for us from our first contact with your jurisdiction, our direct services are initiated through a services contract (10 years preferred), which includes an estimated launch date, and initial rates and energy mix. Under our agreement, we cover all costs of launching your CCE, including preparation and submission of required filings and submissions, a four part notification process to your CCE customers, posting of bonds and other deposits, arrangements and communications with the investor owned utility (PG&E, SCE or SDG&E), and dozens of other necessary pre launch preparations.

On a daily basis, our team delivers a host of services that can be categorized in the following way:

Energy Services

The heart of any CCE program is power procurement. For this reason, CCP has in house staff with 65 years of combined electric industry experience, including procurement for state agencies, retail customers and utility customers. Our staff ensures that your CCE receives the right power mix of fossil, renewable and carbon free power, and at a price that meets forecasted rates and net revenue expectations. They also use their deep industry expertise to ensure, on a daily basis, that your CCE power is scheduled, delivered and settled properly. Equally important is our partnership with Macquarie Energy, which, when paired with our in house expertise and our access to state of the art market monitoring such as Bloomberg Energy Terminal, opens a wealth of power procurement options at a level of transparency unheard of in the fledgling CCE market. Because power can represent up to 90% or more of your CCE rates, our expert ability to monitor, understand and adjust your CCE power procurement, supported by a world leader in energy trading, means that your CCE will be able to maximize its possible program benefits.

Customer Service

Our Customer Service is structured and run to treat your CCE customers the way we would like to be treated as customers ourselves. The key component of our Customer Service is our in house Call Center that includes:

• A dedicated “800” phone number

• Staffing by CCP employees on a customer services career track, earning living wages and employee benefits

• Located in CCP’s California headquarters and managed by CCP executive staff

• Operation Monday through Friday, 9am to 5pm, except holidays

• On-demand accommodation of hearing impaired and alternative language interpreters

• Opt-Out processing, billing review, information on Community CCE, referrals to the utility where appropriate, and other as needed assistance

• Customized CCE website that provides program information including online Opt-Out processing

Client Services

Client Services at CCP means your CCE will have a dedicated representative that your staff and officials can call on at any time. Our Client Services Representatives will answer your questions, respond to your inquiries, provide you with follow up, and assist you in overseeing, managing, and growing your CCE choices. Your representative is also available to attend in person meetings, public or private, whenever possible. To the extent we can, we will hire people with connections in your community and your region to serve as your representative.

Legal, Regulatory and Compliance

Our team ensures that your CCE is, at all times, compliant with and responsive to all applicable laws and regulations. CCP also prepares and submits, after review by your CCE staff or officials, all required regulatory filings including but not limited to:

1. CPUC Resource Adequacy

2. CPUC RPS

3. CPUC Emission Performance Standard

4. CPUC Storage

5. CEC Power Source Disclosure

6. CEC Integrated Energy Policy Report

7. CAISO Audit

To help your community stay abreast of statewide activity that could impact your local program, we also monitor CPUC, CEC and CAISO regulatory proceedings, reporting back to your CCE on issues that may be of concern to you, and, if approved by your staff, CCP may participate in such proceedings as a representative of your CCE.

Data Management

Data in the hundreds of thousands, sometimes millions, must be processed by a CCE on daily, monthly and annual time lines. These data touch every aspect of CCE operations, from providing information for our Call Center Representatives, to meeting strict regulatory standards set by state and federal agencies. With our partner EDMS, we make sure that all of your data is stored, processed and protected with the utmost care, and is always available to provide your CCE with up to date metrics and reporting.

Accounting and Finance

We track, record and report all of your CCE's revenues and expenses, which is completely open and transparent for your program's governing board, your jurisdiction's staff, and for your community members. On as frequently as a monthly basis, we can provide you with a financial update and can provide staff to support public meetings. Beginning the first full year following launch, the CCE governing board will need to hold at least an annual meeting to review and set rates, receive progress reports, and add or make changes to other programming. In between annual meetings, at the CCE's direction, we will provide up to monthly reports detailing CCE progress, forecasts and projections – among other program details. And, on an annual basis, we transfer your program's net revenues to your jurisdiction for investment in local priorities.

How We Start Our Work With Your Jurisdiction

To help build our partnership with your community and plan for launching your CCE program, we have developed the step-by-step path described below, grouped in four major phases: Defining Your CCE Priorities; Initial Implementation; Program Launch; Ongoing Service Partnership.

Phase 1: Defining Your CCE Priorities

Meeting with Government Officials and Community Stakeholders

Initial meetings are with government officials or key community stakeholders interested in Community Choice. During these first meetings, our main objective is to introduce ourselves and the benefits of our services, and to determine what the community's priorities are. These priorities can be specific to Community Choice, or as broad as funding infrastructure, public services, and job-creation. Whatever a community's priorities are, we will take this information into account when determining various implementation options for the jurisdiction.

If energy load data is available already, we can provide initial estimates of program benefits so your community has a reference point for continuing conversations. During this time, we will also start to explore possible additional services that your community may want to incorporate into the CCE to enhance environmental benefits and maximize potential savings.

Obtain Load Data & Create Feasibility Study/Technical Analysis

With the authorization of the community, we will request detailed energy load data from the appropriate utility (PG&E, SCE or SDG&E). These data can take up to several months to obtain. However, during the interim, we can continue our support of your community's exploration of CCE informed by estimated energy data. In many cases, these estimates can be useful for elected and community leaders, wishing to continue the CCE discussion with their colleagues and constituents, so building momentum is not lost.

Once we receive load data from the utility, we will prepare a feasibility analysis consisting of a technical load analysis, a current market analysis, a financial analysis, and a qualitative overview of Community Choice in California. At the direction of your jurisdictions leadership, we will present this report to the City Council or Board of Supervisors, and their respective staff. We will always be available to address any follow up questions, and to produce additional information as needed.

Continued Community Outreach

Both prior to and after the presentation of the feasibility report to your jurisdiction, it is important to keep community stakeholders informed and engaged. During this time, we will actively reach out to community groups, provide information, and respond to questions about Community Choice, our technical analysis, and our services. We respect deeply the relationship between the community and elected officials, as well as professional staff leadership. Accordingly, we always encourage constituents to provide direct input to their government leaders.

This process can move at a pace the jurisdiction is comfortable with to ensure that the community's objectives are met, and the program reflects the community's priorities to the fullest extent. Our field representatives are always available to meet with your community's advocacy groups, service organizations, political organizations and community leaders; we can participate in town halls, provide presentations and meet one-on-one with individuals and small groups.

Adopt a CCE Ordinance

During this time, we recommend that your jurisdiction concurrently pursue the necessary steps to adopt a CCE Ordinance. Adoption of a CCE Ordinance does not mandate establishment of a CCE program, but rather provides the fundamental enabling step should your community ultimately decide to implement a CCE program. Likewise, adoption of a CCE Ordinance does not in any way bind your community to working with California Clean Power. The process of adopting a CCE Ordinance provides an excellent opportunity to directly engage the public and receive invaluable feedback regarding CCE for your community. Our legal team is available to help draft this Ordinance for your jurisdiction's counsel to review, modify, and bring forward for consideration.

Phase 2: Initial Implementation

Establish a Services Partnership With California Clean Power

California Clean Power is the only organization offering full and complete CCE services, including shouldering the burden of direct start up and launch costs. Our approach not only clears the most significant challenge facing CCE formation today, the high financial challenge, it also protects your community from the related financial risks should your community decide to not move forward with implementation.

Your community also avoids the costly and time-consuming efforts to staff and maintain a CCE program. At the same time, your community retains all of the control, decision-making, oversight and potential net revenues from the CCE. All of these key issues are addressed in our standard services agreement, which can be modified to some extent to ensure your community is completely comfortable with, and enthusiastic about, formalizing our partnership.

Should you ever request changes to the agreement after execution, we will always try to accommodate the changes so long as the operations of your CCE aren't disrupted or hampered in some way. What's more, should your community wish to engage in new, innovative energy programs to further support your renewable energy goals, we will strive to implement those programs for local residents, or introduce your jurisdiction to other providers with greater expertise or specialization.

Approve Implementation Plan and Statement of Intent

Following the approval of the services agreement, our team will begin working on a comprehensive implementation plan in partnership with your jurisdiction's staff and, if desired, any community stakeholders. This plan will address program details ranging from program revenue, rate savings, allocation of revenue, special programs such as distributed generation, bright green options (100% renewable), etc. This plan will also incorporate the use of any existing, available power generation sources within the jurisdiction to further support the community's local economy and drive job-creation.

Once the Implementation Plan is vetted and approved by the jurisdiction, we will submit the plan to the CPUC along with a Statement of Intent, signed by the jurisdiction. These documents provide the CPUC with the information needed to begin your CCE program.

Post Bonds and File Appropriate Regulatory Paperwork

Part of the costs associated with starting a CCE include posting a $100,000 bond with the CPUC, making as much as a $500,000 deposit with the California Independent System Operator (CAISO)

and providing sufficient collateral for the investor owned utility service deposit. We cover all of these costs and ensure the flings are properly processed.

Phase 3: Program Launch

Risk Management

A key function to the success of a CCE is in the understanding of the risks associated with energy and having solid risk management policies in place. We will work with you to determine the level of risk desired and put the procedures in place to measure, monitor and manage the risk, and we will ensure those policies are in sync with California Clean Power's internal Risk Management Policies.

Although very simple, a critical component of this process is to maintain strong and frequent communication, along with operational reporting. We are your Community Choice partner and, in every regard, we are here to help you understand changes in the market, long-term energy options, and forecasted data to reduce surprises and prioritize advanced planning. The practice of this kind of discipline helps your program and your community stay up to date and make informed decisions regarding rates, operational policies, and program costs.

Power Procurement

Once the bonds and deposits have been submitted and the CPUC has certified the jurisdiction's implementation plan and statement of intent, our procurement team will begin procuring the first wave of energy on behalf of your community. Through our partnership with Macquarie Energy, a world leader in energy trading, state of the art tools, and our internal expertise, we have access to the absolute best energy pricing available, and are not beholden to any energy producer. At your program's policy direction, we will procure power using a balanced and prudent portfolio mix including long and short-term power purchase agreements, local generation, and market power. Our partnership with Macquarie Energy is discussed in more detail at p. 5.

Reporting

All CCEs must comply with a vast number of local, state and federal regulations and laws. Compliance frequently involves submission of reports requiring extensive technical processing, and the reports are due on varying intervals, ranging from monthly to multi-year. At this time, we will begin developing reports specific to your program, and work directly with your jurisdiction to make sure the information is clearly understood.

Local, if applicable, utility user taxes must be calculated, collected and remitted. Statewide, all CCEs are subject to an electric energy surcharge tax as well as a number of California state agency requirements regarding electric reliability, environmental policy, and data collection. The CPUC is the main source of regulations, but CCEs are also accountable to the California Energy Commission and the California Independent System Operator, amongst others. CCEs must also report data to the US Energy Information Agency.

Phase 4: Ongoing Service Partnership

Customer Noticing

Customer noticing is a requirement codified by Assembly Bill No. 117. The purpose of customer noticing is to ensure all ratepayers are given sufficient notice regarding the change in their

electric provider and to ensure they understand their right to opt out and continue receiving service from the utility (PG&E, SCE or SDG&E). During the launch of your CCE, four notices are issued by mail. We will design the mailings, consistent with CPUC laws and regulations, and cover all of the costs, including postage. The first wave of notices will go out to all ratepayers 60-days prior to the delivery of service, then the second wave will be mailed 30-days prior to service. Once service begins, two more rounds of noticing will be mailed, both 30 and 60-days following service delivery. Future new customers beginning service after the launch of your CCE also receive similar notices.

Customer Billing

Customers experience very minor changes to their current bills. Customer bills continue to be issued and collected by the utility (PG&E, SCE or SDG&E). However, launching Community Choice triggers highly specialized and technical change behind the standard utility bill.4 Data is transferred from individual meters, through the utility, to the CCE where the meter data is married to rate information, then transferred back to the utility for inclusion in the next bill. In California there are only a handful of California companies with proven experience providing this service, one of which, EDMS, is our exclusive partner. Our partnership with EDMS is discussed in more detail at page 6.

Rate and Revenue Setting

Rate setting is an annual, recurring process, conducted in much the same way as your annual budget cycle is. As noted above, in addition to ongoing technical assistance, we provide you with financial and program information to help your CCE prepare and set rates that reflect the program's and community's priorities.

Agreement Renewal

We will notify all of our partner CCE programs 2-years prior to contract expiration to begin planning for next steps. By building in a long, 2-year lead-time, the need for Community Choice programs to operate indefinitely is more than adequately addressed. We believe our partnership will be strong and successful and thus anticipate a desire by both CCP and your community to renew our agreement. However, should your community seek to change course, by running your CCE in house for example, we will utilize the two-year window to ensure a successful transition. We support your effort in making the choices that work for your community, even when that includes segueing to a different service model.

14 Appendix – PG&E Rate History

PG&E Historic Rates (obtained from http://www.pge.com/nots/rates/tariffs/electric.shtml)													
Average Cents / kWh							Average Annual Nominal Compound Escalation Rate (%)						
	Rate Class	Jan 2001	Jan 2006	Jan 2011	Jan 2015	Jan 2016	2001 - 2006	2001 - 2011	2001 - 2016	Last 5 Years	Last 10 Years	Last 1 Year
Residential	E-1	12.006	15.439	18.886	20.345	21.183	5.16%	4.63%	3.86%	2.32%	3.21%	4.12%
Commercial	A-1	13.110	15.845	17.952	21.152	22.123	3.86%	3.19%	3.55%	4.27%	3.39%	4.59%
	A-6	9.924	13.261	17.313	20.341	21.231	5.97%	5.72%	5.20%	4.16%	4.82%	4.51%
Agricultural	AG-RA	15.096	18.520	21.384	23.206	24.920	4.17%	3.54%	3.40%	3.11%	3.01%	7.39%
Industrial	E-20	9.334	12.819	13.253	15.216	15.582	6.55%	3.57%	2.36%	3.29%	1.97%	2.41%
Simple Averages		11.894	15.177	17.758	20.052	21.008	5.00%	4.09%	3.87%	3.42%	3.30%	4.77%
Simple Averages (Excl. Industrial)		12.534	15.766	18.884	21.261	22.364	4.70%	4.18%	3.94%	3.44%	3.56%	5.19%

Figure 34: PG&E's historic rates and annual average increases for specific rate classes.

15 Glossary

Buckets: Buckets 1-3 refer to different types of renewable energy contracts according to the Renewable Portfolio Standards requirements. Bucket 1 are traditional contracts for delivery of electricity directly from a generator within or immediately connected to California. These are the most valuable and make up the majority of the RECS that are required for LSEs to be RPS compliant. Buckets 2 and 3 have different levels of intermediation between the generation and delivery of the energy from the generating resources.

Bundled Customers: Electricity customers who receive all their services (transmission, distribution and supply) from the Investor-Owned Utility.

CAISO: The California Independent System Operator. The organization responsible for managing the electricity grid and system reliability within the former service territories of the three California IOUs.

California Clean Power (CCP): A private company providing wholesale supply and other services to CCEs.

California Energy Commission (CEC): The state regulatory agency with primary responsibility for enforcing the Renewable Portfolio Standards law as well as a number of other, electric-industry related rules and policies.

California Public Utilities Commission (CPUC): The state agency with primary responsibility for regulating IOUs, as well as Direct Access (ESP) and CCE entities.

CCEAC: Community Choice Energy Advisory Committee - a committee formed to advise the City of Davis on the best options for pursuing a CCE.

Community Choice Aggregation: Method available through California law to allow Cities and Counties to aggregate their citizens and become their electric generation provider.

Community Choice Energy: A City, County or Joint Powers Agency procuring wholesale power to supply to retail customers.

Community Choice Partners: A private company providing services to CCEs in California.

Congestion Revenue Rights (CRRs): Financial rights that are allocated to Load Serving Entities to offset differences between the prices where their generation is located and the price that they pay to serve their load. These rights may also be bought and sold through an auction process. CRRs are part of the CAISO market design.

Demand Response (DR): Electric customers who have a contract to modify their electricity usage in response to requests from a utility or other electric entity. Typically will be used to lower demand during peak energy periods, but may be used to raise demand during periods of excess supply.

Direct Access: Large power consumers which have opted to procure their wholesale supply independently of the IOUs through an Electricity Service Provider.

EEI (Edison Electric Institute) Agreement: A commonly used enabling agreement for transacting in wholesale power markets.

Electric Service Providers (ESP): An alternative to traditional utilities. They provide electric services to retail customers in electricity markets that have opened their retail electricity markets to competition. In California the Direct Access program allows large electricity customers to opt out of utility-supplied power in favor of ESP-provided power. However, there is a cap on the amount of Direct Access load permitted in the state.

Electric Tariffs: The rates and terms applied to customers by electric utilities. Typically have different tariffs for different classes of customers and possibly for different supply mixes.

Enterprise Model: When a City or County establish a CCE by themselves as an enterprise within the municipal government.

Federal Tax Incentives: There are two Federal tax incentive programs. The Investment Tax Credit (ITC) provides payments to solar generators. The Production Tax Credit (PTC) provides payments to wind generators.

Feed-in Tariff: A tariff that specifies what generators who are connected to the distribution system are paid.

Forward Prices: Prices for contracts that specify a future delivery date for a commodity or other security. There are active, liquid forward markets for electricity to be delivered at a number of Western electricity trading hubs, including NP15 which corresponds closely to the price location which the City of Davis will pay to supply its load.

Integrated Resource Plan: A utility's plan for future generation supply needs.

Inter-continental Exchange (ICE): The main electronic trading platform for trading wholesale electricity and gas contracts in the United States. (Also handles trading in other commodities and securities.)

Investor-Owned Utility: For profit regulated utilities. Within California there are three IOUs - Pacific Gas and Electric, Southern California Edison and San Diego Gas and Electric.

ISDA (International Swaps and Derivatives Association): Popular form of bilateral contract to facilitate wholesale electricity trading.

Joint Powers Agency (JPA): A legal entity comprising two or more public entities. The JPA provides a separation of financial and legal responsibility from its member entities.

Lancaster Choice Energy (LCE): The most recent California CCE to go-live, exclusively serving the City of Lancaster in Southern California.

LEAN Energy (Local Energy Aggregation Network): A not-for-profit organization dedicated to expanding Community Choice Aggregation nationwide.

Load Forecast: A forecast of expected load over some future time horizon. Short-term load forecasts are used to determine what supply sources are needed. Longer-term load forecasts are used for budgeting and long-term resource planning.

MCE: Formerly Marin Clean Energy - the first CCE in California serving cities within and the counties of Marin and Napa.

MRTU: CAISO's Market Redesign and Technology Upgrade. The redesigned, nodal (as opposed to zonal) market that went live in April of 2009.

Net Energy Metering: The program and rates that pertain to electricity customers who also generate electricity, typically from rooftop solar panels.

NP15: Refers to a wholesale electricty pricing hub - North of Path 15 - which roughly corresponds to PG&E's service territory. Forward and Day-Ahead power contracts for Northern California typically provide for delivery at NP15. It is not a single location, but an aggregate based on the locations of all the generators in the region.

On-Bill Repayment (OBR): Allows electric customers to pay for financed improvements such as energy efficiency measures through monthly payments on their electricity bills.

Opt-Out: Community Choice Aggregation is, by law, an opt-out program. Customers within the borders of a CCE are automatically enrolled within the CCE unless they proactively opt-out of the program.

Power Cost Indifference Adjustment (PCIA): A charge applied to customers who leave IOU service to become Direct Access or CCE customers. The charge is meant to compensate the IOU for costs that it has previously incurred to serve those customers.

PPA (Power Purchase Agreement): The standard term for bilateral supply contracts in the electricity industry.

Renewable Energy Credits (RECs): The renewable attributes from RPS-qualified resources which must be registered and retired to comply with RPS standards.

Resource Adequacy (RA): The requirement that a Load-Serving Entity own or procure sufficient generating capacity to meet its peak load plus a contingency amount (15% in California) for each month.

RPS (Renewable Portfolio Standards): The state-based requirement to procure a certain percentage of load from RPS-certified renewable resources.

Scheduling Coordinator: An entity that is approved to interact directly with CAISO to schedule load and generation. All CAISO participants must be or have an SC.

Sonoma Clean Power (SCP): A CCE serving Sonoma County and Sonoma County cities.

Supply Stack: Refers to the generators within a region, stacked up according to their marginal cost to supply energy. Renewables are on the bottom of the stack and peaking gas generators

on the top. Used to provide insights into how the price of electricity is likely to change as the load changes.

The Energy Authority (TEA): A not-for-profit provider of wholesale electricity services to municipal and state agencies throughout the United States.

Western Electric Coordinating Council (WECC): The organization responsible for coordinating planning and operation on the Western electric grid.

Wholesale Power: Large amounts of electricity that are bought and sold by utilities and other electric companies in bulk at specific trading hubs. Quantities are measured in MWs, and a standard wholesale contract is for 25 MW for a month during heavy-load or peak hours (7am to 10 pm, Mon-Sat), or light-load or off-peak hours (all the other hours).

WSPP (Western States Power Pool) Agreement: Common, standardized enabling agreement to transact in the wholesale power markets.