

# Community Choice Aggregation Technical Feasibility Study

Prepared for:  
The Cities of Chula Vista, La Mesa, and Santee

**DRAFT**

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# Executive Summary

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## Introduction

To meet clean energy and sustainability objectives, the cities of Chula Vista, La Mesa, and Santee approved funding for a technical feasibility study (Study) evaluating Community Choice Aggregation (CCA). Under the CCA model, local governments purchase and manage their community's electric power supply by sourcing power from a preferred mix of traditional and renewable energy sources, while the incumbent investor owned utility (IOU) continues to provide distribution and billing service.

California Assembly Bill 117 allows local governments to form CCAs that offer an alternative electric power option to constituents currently served by investor owned utilities (IOUs). CCAs face the same requirements for renewable energy purchases as the incumbent IOUs and public utilities; however, many CCA programs can offer power content that has a greater share of renewable energy compared with the incumbent utility and at lower retail rates.

There are currently 19 operational CCAs in the State, representing 109 different cities and counties and nearly 20% of the state's energy load. Cities with CCA programs cite benefits of local control, customized energy programs, customer choice, higher renewable energy to support climate action plan goals, and competitive rates.

## Study Goals

The goal of the Study is to determine whether a CCA program(s) could be established to meet the greenhouse gas (GHG) emissions reduction goals of the Partner cities while keeping electricity rates comparable to or lower than those of the incumbent utility. To do this, the Study will:

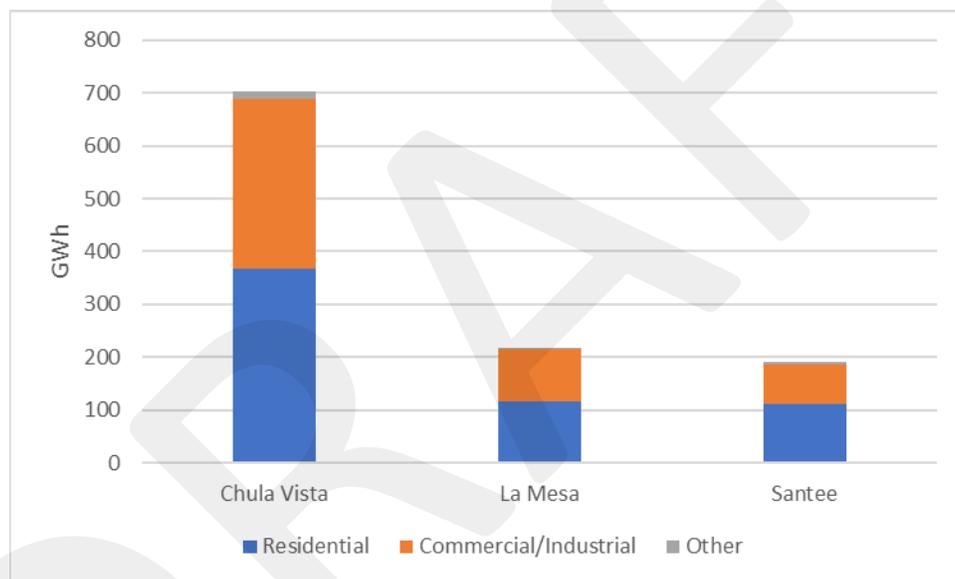
- Evaluate the financial feasibility of a potential CCA for the cities of Chula Vista, La Mesa, and Santee (Partners). Financial feasibility for both a larger Partner CCA and individual CCAs for each city were also evaluated.
- Assess whether a CCA program can help the cities achieve climate action plan goals, including 100% renewable electricity by 2035.
- Evaluate governance options for CCA, including:
  - Enterprise – Each city operates its own CCA
  - Partner CCA – A 3-city CCA program with Chula Vista, La Mesa, and Santee
  - Enterprise JPA – Cities each have their own CCA but join with other jurisdictions to form a JPA of CCAs. Administration costs are shared but power supply procurement is unique to each CCA member.

- Regional CCA – Join the City of San Diego-led efforts to form a SDG&E regional CCA through JPA agreements between each jurisdiction
- Other JPA Option – Partner with operational CCA, Solana Energy Alliance
- Evaluate risks and benefits of a CCA

## Study Assumptions and Scenarios

Load data from the Partners was provided by SDG&E. Exhibit ES-1 shows the amount of energy consumed in each of the Partner cities in 2018. Residential and commercial customers make up the majority of energy use across all cities. The Other category includes street lighting and agriculture.<sup>1</sup>

**Exhibit ES-1**  
**2018 Load by City**



At this time, SDG&E's resource mix is 44%<sup>2</sup> GHG-free due to power supply from renewable resources. SB100, adopted in 2018, accelerates the state-mandated Renewable Portfolio Standard (RPS) obligations as follows:

- 44% renewable by 2024;
- 52% renewable by 2027;
- 60% renewable by 2030; and
- 100% GHG free by 2045

<sup>1</sup> The Commercial category includes all commercial customers plus industrial customers. Agriculture is primarily irrigation pumping.

<sup>2</sup> [https://ww2.energy.ca.gov/pcl/labels/2017\\_labels/SDG\\_and\\_E\\_2017\\_PCL.pdf](https://ww2.energy.ca.gov/pcl/labels/2017_labels/SDG_and_E_2017_PCL.pdf)

While a high-level analysis of other governance options is evaluated in the Study, the Study calculations assume the Partners will proceed with the Partner CCA operating model as this approach will offer greater economies of scale and financial efficiencies when compared to individual CCAs. The Study also assumes that the Partner CCA would purchase power supply that meets SB100 and SB350 requirements for renewable energy, long-term contracts, and complies with all other related CPUC regulations. The Study evaluated power supply for a potential Partner CCA program, operating costs, and compared those expenses to forecasted SDG&E rates. All rate discounts or bill savings referenced throughout the Study are the savings off the bundled SDG&E rates which includes energy supply, transmission, distribution, and other charges.

To provide information about the cost difference between renewable resource portfolios, this Study analyzes the 4 scenarios detailed in Exhibit ES-2.

<b>Exhibit ES-2</b>			
<b>Partner CCA Resource Portfolios Evaluated</b>			
	<b>% Renewable<sup>1</sup> at Launch (2021)</b>	<b>% Renewable in 2030</b>	<b>Meets 100% Renewable by 2035</b>
<b>Scenario 1:</b> SDG&E Equivalent Renewable Portfolio	46%	60%	No
<b>Scenario 2:</b> 50% Renewable at Launch, with 100% by 2035 Portfolio	50%	90%	Yes
<b>Scenario 3:</b> 75% Renewable at Launch, with 100% by 2030 Portfolio	75%	100%	Yes
<b>Scenario 4:</b> 100% Renewables Portfolio at Launch	100%	100%	Yes

<sup>1</sup>Renewable includes only RPS eligible resources. All eligible renewable resources are greenhouse gas free in this study.

## Key Findings

The Study results show that a Partner CCA is financially feasible and can provide the following benefits:

- CCA customer bills are predicted to be at least 2% lower than forecast SDG&E total bills. Put another way, a hypothetical customer with a \$100 SDG&E electric bill could expect a \$98 bill under the CCA. These calculations include conservative modeling parameters and assume participation rates for residential customers of 95% and non-residential customers participation rates of 85%. Recently-launched CCAs throughout the state have experienced participation rates near 98%.
- Electricity cost savings are estimated to average about \$7.1 million per year for residents and businesses located within the three cities.

- CCA start-up and working capital costs (estimated at \$12 million, and assumed to be financed) could be fully recovered within the first five years of CCA operations while still achieving a 2% rate discount compared to SDG&E's forecast rates.
- The Study analyzed CCA rate results under scenarios with high and low participation rates, high and low market power costs, and high and low stranded costs. The findings identify key risks with regard to stranded cost recovery (via SDG&E) and power supply. The Study's section on Risks and Sensitivity Analysis describes the magnitude of those risks and measures for mitigating risks.
- The CCA will have an average, annual \$8.5 million surplus revenue stream that can be used for customer-related programs such as:
  - Funding for customer energy efficiency programs.
  - Local renewable energy resource programs, such as renewable energy net-metering.
  - Customer rate savings beyond the 2% target.
- The rate savings to customers under the Partner's CCA would drive additional local economic development benefits, such as 86 new jobs and a total of \$10.3 million in annual economic output.
- If the CCA program purchased power supply that required 100% renewable energy use by 2035, the CCA program would help the Partners meet renewable energy Climate Action Plan goals. Under this scenario, the CCA could still offer a 2% bill discount off forecast SDG&E bills in 2035.
- While all governance models are viable and offer some savings, a high-level analysis for joining the San Diego CCA illustrate the economies of scale, ease of implementation, and other considerations for partnering with the City of San Diego's CCA efforts.

Key Operating Figures for a Partner CCA as modeled against SDG&E's projected power portfolio are shown in Exhibit ES-3 below. The analysis assumes SDG&E will meet future RPS requirements; however, SDG&E might choose a more renewable power content. Without additional information on SDG&E's plans, the RPS power content assumption is the next best estimate.

Exhibit ES-3 Partner CCA Key Operating Figures				
Power Supply Portfolio Scenario:	Scenario 1: SDG&E Equivalent Renewable	Scenario 2: 50% Renewable at Launch 100% Renewable by 2035	Scenario 3: 75% Renewable at Launch 100% Renewable by 2030	Scenario 4: 100% Renewable
2022 Operating Budget, \$ million	\$74.3	\$75.9	\$80.4	\$86.9
2022 Revenues, \$ million	\$79.5	\$79.5	\$79.5	\$82.7
2022 Load Served, GWh	1,031	1,031	1,031	1,031
Average Operating Budget, \$ million	\$81.1	\$84.8	\$89.0	\$92.3
Average Revenues, \$ million	\$91.5	\$91.5	\$91.5	\$95.0
Average Net Revenues, \$ million	\$10.5	\$6.7	\$2.5	\$2.7
Average Load Served, GWh	1,035	1,035	1,035	1,035
Startup Loan (Including Pre-Startup Costs and Working Capital), \$ million	\$10	\$12	\$12	\$21
Startup Loan Term, years	5	5	5	5
Average Rate Discount, %	2%	2%	2%	1%
Economic Impacts: San Diego County	86 Jobs/year	86 Jobs/year	86 Jobs/year	44 Jobs/year
	\$10.3 million in output/year	\$10.3 million in output/year	\$10.3 million in output/year	\$5.2 million in output/year
Greenhouse Gas Reductions, tons CO2/year	0	55,261	127,832	173,106

## Governance

Should the Partners choose to implement a CCA, the cities will need to decide on an appropriate governance structure and fund some of the related upfront costs of implementing the CCA program. The Study evaluated five governance options, which include:

- **Enterprise** – Each city operates its own CCA
- **Partner CCA** – A 3-city CCA program with Chula Vista, La Mesa, and Santee
- **Enterprise JPA** – Cities each have their own CCA but join with other jurisdictions or form a JPA of CCAs. Administration costs are shared but power supply procurement is unique to each CCA member.
- **Regional CCA** – Join the City of San Diego-led efforts to form a SDG&E regional CCA through JPA agreements between each jurisdiction
- **Other JPA Option** – Partner with operational CCA, Solana Energy Alliance (SEA)

A summary of the findings is provided in Exhibit ES-4 and a description of each is outlined below.

**Exhibit ES-4**  
**Summary of Estimated Costs to Establish CCA by Governance**

	<b>Enterprise</b>	<b>Partner CCA</b>	<b>Regional CCA</b>	<b>JPA with SEA</b>	<b>Enterprise JPA</b>
Pre-Launch Costs	\$600,000-800,000 (each)	\$600,000-800,000	\$0	Not Determined	\$600,000-800,000
Start-Up and Working Capital (Financed)	Chula Vista: \$5 million	\$10-\$12 million	\$0	Some fee may be required	Chula Vista: \$5 million
	La Mesa: \$4 million				La Mesa: \$4 million
	Santee: \$3 million				Santee: \$3 million
Estimated Bundled Rate Discount	Chula Vista: 2%	2%	At least 2%	Undetermined	2%
	La Mesa: 1%				
	Santee: 1%				
Probable Launch Date	2022	2022	2021	2022	2022
Power Supply Cost Allocation	Power supply obtained individually	Power supply obtained at the same time	Shared power costs	Power supply obtained incrementally	Power supply obtained individually

**Enterprise** – As an enterprise, a city-only CCA retains the greatest amount of local control for program organization and power supply. Discretionary revenues above what is needed to run the CCA program stay within each jurisdiction. Power supply choice and rate discounts are unique to each CCA; however, the enterprise fund would not benefit from sharing administration costs. Duplicate efforts would be made to implement each city CCA and the resulting rate discounts offered might be lower compared to a joint powers authority (JPA) option. Also due to the cost duplication in the enterprise option, the city CCAs may not be able to offer power supply with a greater share of RPS-qualifying resources compared with a JPA option. An enterprise option is well suited for jurisdictions who do not have partners with similar goals and culture. The City of Solana Beach set up an enterprise CCA but are now looking for partners to join them (discussed below in Other JPA Options). This willingness to partner suggests value in JPA governance structures.

**Partner CCA** – A Partner CCA is explored in this Study to demonstrate the financial feasibility of a CCA program. Under this option each city council would pass an ordinance form a CCA and to join a negotiated JPA. The JPA operates as its own entity and typically is governed by a board consisting of one elected official from each partner city. The pre-launch costs (estimated in ES-4) would be shared among the JPA members. Under a Partner JPA, the CCA would have a larger customer base, and could possibly offer higher rate discounts and/or additional flexibility in program choice or power supply portfolio. A high level of local control is maintained; however, the Partners might expect to be more involved in day-to-day operations of the CCA compared with joining a larger, Regional JPA (discussed below).

**Enterprise JPA** – Partnering with any of the other cities or the county could also take the form of an Enterprise JPA where each member is its own CCA and is responsible for its own power supply. In this model administration costs are shared. This option might be a good option for smaller jurisdictions to obtain economies of scale for administration cost sharing, but each member retains flexibility and local control in power supply including rate programs and discounts. The Enterprise JPA model is made up of individual CCAs; therefore, contracts for power supply are entered into by each city and may not afford the same protections of general fund liability as the JPA model. This governance option has not been used in SDG&E service territory yet. An example of an Enterprise JPA is CalChoice operating in Southern California Edison’s service area.

**Regional CCA** – The City of San Diego is requesting interested jurisdictions to join together to operate a regional CCA program under a JPA. The City of San Diego has been conducting work group meetings to discuss JPA governance terms and framework with interested jurisdictions. The City has further stated that it will provide the start-up costs and working capital needed for the program, which could be a significant benefit to the Partners. A Regional CCA is expected to provide economies of scale for administration costs resulting in an additional estimated 0.8% in rate savings. These administration cost savings could provide additional rate savings or programs depending on how the Regional CCA sets its internal goals. These savings could be offset if the Regional CCA introduces a power supply that is greener than what the Partners desire. Overall, a Regional CCA would likely be more cost-effective compared with a Partners Only JPA.

While participation in the Regional CCA would have additional economies of scale benefits, there would be a trade-off in the level of local control. Existing CCA JPA agreements do not generally have language guaranteeing new program funding for each JPA member and there is a possibility that the new program benefits of a Regional CCA would not be equally shared across all members. Finally, a Regional CCA program has the potential to grow to 18 or more members compared with a Partner JPA that could limit the number of partners in its agreement. While 18 members is not as large as some operating CCAs, there is some uncertainty in the amount of local control that would be retained for the Partners. Also, with large JPAs, quorums are more difficult to achieve and the decision-making often shifts to committees.

If the Partners wish to join the Regional CCA, the respective city councils likely need to vote by September 2019 to initiate the first round of JPA negotiations for a launch date as early as 2021. This option is attractive in terms of timing and the benefit of not having to come up with capital for pre-launch activities.

**Other JPA Options** – Other CCA technical feasibility studies in SDG&E service area include Encinitas, Oceanside, Del Mar, Carlsbad, and San Diego County. The Partners could join with any of these jurisdictions if they do not ultimately join the Regional CCA. This option would be further off in the future and would likely result in the earliest launch date of 2022.

Finally, the City of Solana Beach is currently operating the Solana Energy Alliance (SEA) and has responded to a recent Request for Information (RFI) indicating interest in partnering to form a JPA with other cities. In the case of SEA, a JPA would need to be negotiated including likely

changes in the structure and consultant contracts SEA currently maintains. SEA's current contracts may be limiting; however, these limitations might also be offset by the experience SEA brings to the CCA launch process. A final consideration for a possible partnership with SEA is that the Partner's loads are over ten times greater than SEA's load. Due to the size difference, the current SEA contracts and structures may not be a good fit. Specifically, the Partner's load is large enough to support a full CCA staff. SEA loads are relatively small for a CCA, and so staff is limited to a director with all other functions being completed by consultants. A JPA with SEA could take the form of an Enterprise JPA model or a JPA CCA model. Recall that the Enterprise JPA model is a JPA between individual CCAs while a JPA CCA is a CCA formed through JPA. The distinction is important when designing agreements that protect general fund liability.

## Risks

While the study shows that forming a CCA is financially feasible under a wide range of scenarios, doing so is not without risk. The feasibility of the CCA; that is maintaining customer rates competitive with SDG&E primarily depends on power supply costs (which make up over 90% of the overall CCA operating budget); and how those costs compare to SDG&E's power supply costs and ultimately their customer rates. Other factors impacting the financial viability of the CCA include: costs that SDG&E directly passes through to all customers (including the Power Charge Indifference Adjustment or PCIA), market supply of renewable power, availability and cost of financing CCA operations, and legislative and regulatory actions.

To assess the magnitude of the risks imposed on the CCA by these factors, the Study includes a Sensitivity and Risk Analysis section which established a range of high and low scenarios for: prices for CCA-procured market power, SDG&E's customer rates, CCA financing costs, and the level of SDG&E's PCIA. As a result of the impact on CCA rates of these risk scenarios, the Sensitivity and Risk Analysis section also assumed a worst case CCA customer retention level and its impact on CCA rates.

The results of the Sensitivity and Risk Analysis indicate under what scenarios the CCA's rates may exceed SDG&E's customer rates, and also suggest actions the CCA may take to manage those risks. The risk mitigation actions consist of industry standard best operating practices and strategies employed by other operating CCAs including: conservative power procurement strategies employing market risk management policies, developing a cash reserve fund from annual net revenues, and engaging in regulatory and legislative issues through the Statewide CCA group – the California Community Choice Association (CalCCA).

## Conclusions

The Study results suggest that CCA implementation is financially feasible for a Partner CCA or other JPA structure. The economies of scale realized within a Partner CCA are sufficient for stable operation under a wide range of financial assumptions and sensitivities. A Partner CCA can be established in 2019 with a launch date of 2021 if a JPA is put into place by October 2019 with an implementation plan filed at the California Public Utilities Commission (CPUC) in December 2019.

This schedule has a short time-frame, and if the decision is delayed by a month, the launch date would be shifted to 2022.

Additionally, the individual city analyses showed that each of the Partners could implement its own CCA program. Based on the study's conservative assumptions, the City of Chula Vista is large enough to offer a 2% bill discount while offering a power supply portfolio consistent the power supply content in Scenario 2 (50% renewable at launch and 100% by 2035). La Mesa and Santee are smaller cities but could potentially offer bill discounts as well, but with a lower projected discount of 1% as there are fewer customers over which to spread fixed administration costs. Both La Mesa and Santee are larger than the currently operating SEA which has provided a 3% total bill discount compared with SDG&E. The savings SEA has offered are greater than what is estimated in this study which might be attributed to the exit fee vintage as well as the conservative forecasts in this study which estimate higher power supply costs going forward. Savings offered by SEA may also change in the future.

The Partner's CAP goals for renewable energy are well aligned with the City of San Diego goals. If the Partners wish to be part of the Regional CCA, the CCA would launch in 2021 and the Partners would have the benefit of not having to put money in up front for pre-launch activities.

Suggested next steps for the Partners include: complete an internal review of this Study, conduct public outreach activities to share the results of the Study with constituents and other stakeholders and receive their input, adopt the Study results through City Council actions and determine whether to move forward with CCA implementation. Each Partner should continue to evaluate governance options and assess which are best aligned with City goals.

## Glossary

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**Ancillary Services:** Those services necessary to support the transmission of electric power from seller to purchaser given the obligations of control areas and transmitting utilities within those control areas to maintain reliable operations of the interconnected transmission system.

**aMW:** Average annual Megawatt. A unit of energy output over a year that is equal to the energy produced by the continuous operation of one megawatt of capacity over a period of time (8,760 megawatt-hours).

**Baseload Resources:** Base load power generation resources are resources such as coal, nuclear, hydropower, and geothermal heat that are cheapest to operate when they generate approximately the same output every hour.

**Basis Difference (Natural Gas):** The difference between the price of natural gas at the Henry Hub natural gas distribution point in Erath, Louisiana, which serves as a central pricing point for natural gas futures, and the natural gas price at another hub location (such as for Southern California).

**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.

**Bundled and Unbundled Renewable RECs:** Unbundled Renewable Energy Credits (RECs) are those that have been disassociated from the electricity production originally represented and are sold separately from energy. Bundled RECs are delivered with the associated energy.

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

**California Balancing Authority:** A balancing authority is responsible for operating a transmission control area. It matches generation with load and maintains consistent electric frequency of the grid, even during extreme weather conditions or natural disasters. California has 8 balancing authorities. SDG&E is in CAISO.

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

**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 (DA) and CCA entities.

**Capacity Factor:** The ratio of an electricity generating resource’s actual output over a period of time to its potential output if it were possible to operate at full nameplate capacity continuously over the same period. Intermittent renewable resources, like wind and solar, typically have lower capacity factors than traditional fossil fuel plants because the wind and sun do not blow or shine consistently.

**CleanPowerSF:** CCA program serving customers within the City of San Francisco. CleanPowerSF began service to 7,800 “Phase 1” customers in May 2016.

**Climate Zone:** A geographic area with distinct climate patterns necessitating varied energy demands for heating and cooling.

**Coincident Peak:** Demand for electricity among a group of customers that coincides with peak total demand on the system.

**Community Choice Aggregation (CCA):** 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 CCAs in California.

**Congestion Charges:** When there is transmission congestion, i.e. more users of the transmission path than capacity, the CAISO charges all users of the congested transmission path a “Usage Charge”.

**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 Side Resources:** Energy efficiency and load management programs that reduce the amount of energy that would otherwise be consumed by a customer of an electric utility.

**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 (DA):** Large power consumers which have opted to procure their wholesale supply independently of the IOUs through an Electricity Service Provider.

**EI (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 CCA 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 (FIT):** A tariff that specifies what generators who are connected to the distribution system are paid.

**Firming:** Firm capacity is the amount of energy available for production or transmission which can be (and in many cases must be) guaranteed to be available at a given time. Firm energy refers to the actual energy guaranteed to be available. Firming refers to the financial instrument to change non-firm power to form power.

**Flexible Resource Adequacy:** Flexible capacity need is defined as the quantity of economically dispatched resources needed by the California ISO to manage grid reliability during the greatest three-hour continuous ramp in each month.

**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 SP15 which corresponds closely to the price location which the City of Davis will pay to supply its load.

**Implied Heat Rate:** A calculation of the day-ahead electric price divided by the day-ahead natural gas price. Implied heat rate is also known as the 'break-even natural gas market heat rate,' because only a natural gas generator with an operating heat rate (measure of unit efficiency) below the implied heat rate value can make money by burning natural gas to generate power. Natural gas plants with a higher operating heat rate cannot make money at the prevailing electricity and natural gas prices.

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

**Investor-Owned Utility (IOU):** 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):** A single-jurisdiction CCA serving residents of the City of Lancaster in Southern California. LCE launched service in October 2015 and served 51,000 customers.

**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.

**Local Resource Adequacy:** Local requirements are determined based on an annual CAISO study using a 1-10 weather year and an N-1-1 contingency

**Marginal Unit:** An additional unit of power generation to what is currently being produced. At an electric power plant, the cost to produce a marginal unit is used to determine the cost of increasing power generation at that source.

**Marin Clean Energy (MCE):** The first CCA in California now serving residents and businesses in the Counties of Marin and Napa, and the cities of Richmond, Benicia, El Cerrito, San Pablo, Walnut Creek, and Lafayette.

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

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

**Non-bypassable Charges:** Charges applied to all customers receiving service from Investor-Owned Utilities in California, but which are separated into a separate charge for departing load customers, such as Community Choice Aggregation and Direct Access Customers. These charges include charges for the Public Purpose Programs (PPP), Nuclear Decommissioning (ND), California Department of Water Resources Bond (CDWR), Power Charge Indifference Adjustment (PCIA), Energy Cost Recovery Amount (ECRA), Competition Transition Charge (CTC), Cost Allocation Mechanism (CAM).

**Non-Coincident Peak:** Energy demand by a customer during periods that do not coincide with maximum total system load.

**Non-Renewable Power:** Electricity generated from non-renewable sources or a source that does not come with a Renewable Energy Credit (REC).

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

**Operate on the Margin:** Operation of a business or resource at the limit of where it is profitable.

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

**Peninsula Clean Energy (PCE):** Community Choice Aggregation program serving residents and businesses of San Mateo County. PCE launched in October of 2016.

**Pricing Nodes:** The ISO wholesale power market prices electricity based on the cost of generating and delivering it from particular grid locations called nodes.

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

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

**Portfolio Content Category:** California's RPS program defines all renewable procurement acquired from contracts executed after June 1, 2010 into three portfolio content categories, commonly referred to as "buckets."

**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.

**Renewable Portfolio Standard (RPS):** 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. A scheduling coordinator provides day-ahead and real-time power and transmission scheduling services.

**Scheduling Agent:** A person or service that forecasts and monitors short term system load requirements and meets these demands by scheduling power resource to meet that demand.

**Shaping:** Function that facilitate and support the delivery of energy generation to periods when it is needed most.

**Silicon Valley Clean Energy (SVCE):** CCA serving customers in twelve communities within Santa Clara County including the cities of Campbell, Cupertino, Gilroy, Los Altos, Los Altos Hills, Los Gatos, Monte Sereno, Morgan Hill, Mountain View, Saratoga, Sunnyvale, and the County of Santa Clara. As of the date of completion of this Study, SVCE had not yet launched service.

**Sonoma Clean Power (SCP):** A CCA serving Sonoma County and Sonoma County cities. On December 29<sup>th</sup>, SCP received approval of their implementation plan from the California Public Utilities Commission to extend service into Mendocino County.

**SP15:** Refers to a wholesale electricity pricing hub - South of Path 15 - which roughly corresponds to SCE and SDG&E's service territory. Forward and Day-Ahead power contracts for Northern California typically provide for delivery at SP15. It is not a single location, but an aggregate based on the locations of all the generators in the region.

**Spark Spread:** The theoretical gross margin of a gas-fired power plant from selling a unit of electricity, having bought the fuel required to produce this unit of electricity. All other costs (capital, operation and maintenance, etc.) must be covered from the spark spread.

**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.

**System Resource Adequacy:** System requirements are determined based on each LSEs CEC adjusted forecast plus a 15% planning reserve margin.

**Vintage:** The vintage of CRS applicable to a CCA customer is determined based on when the CCA commits to begin providing generation services to the customer. CCAs may formally commit to become the generation service provider for a group of customers

**Weather Adjusted:** Normalizing energy use data based on differences in the weather during the time of use. For instance, energy use is expected to be higher on extremely hot days when air conditioning is in higher demand than on days with comfortable temperature. Weather adjustment normalizes for this variation.

**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).

**WREGIS:** The Western Renewable Energy Generation Information System (WREGIS) is an independent, renewable energy tracking system for the region covered by WECC. WREGIS tracks renewable energy generation from units that register in the system by using verifiable data and creating renewable energy certificates (REC) for this generation.

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