
TO: HONORABLE MAYOR,
CITY COUNCIL AND CITY MANAGER

FROM: Dan Zazueta
Commission Chairman

SUBJECT: CECAC Recommendations concerning
SJCE mission and goals

DATE: ****DRAFT****

RECOMMENDATION

APPOINT COUNCIL MEMBERS, STAFF, AND OUTSIDE RESOURCES AS NEEDED TO: EVALUATE AND UPDATE SAN JOSE CLEAN ENERGY'S GOALS; INVESTIGATE WAYS TO GREATLY EXPAND ENERGY STORAGE; FURTHER INVESTIGATE FINANCIAL RISKS OF POWER PURCHASE CONTRACTS AND OTHER RELATED AREAS OF CONCERN

OUTCOME

Clarifying and/or revising the mission and goals as recommended will help align San Jose Clean Energy (SJCE) with changes in San Jose's needs, the industry and the environment, including the imperatives of climate change, while remaining consistent with the direction of Climate Smart and the State of California. It will help SJCE operations become more efficient and effective.

EXECUTIVE SUMMARY

According to its responsibilities as outlined in San Jose Municipal Code 2.08 which include advising the City Council and City Manager on matters of SJCE operating principles, opportunities for reducing carbon emissions, prioritization of energy program strategy, and best practices, the Clean Energy Community Advisory Commission (CECAC) recommends a thorough review of the purpose, mission and goals of the SJCE, including the following:

1. **Clarify and/or revise SJCE mission.** Much has changed in the few years since establishing SJCE. The mission, priorities, and goals of SJCE should be reviewed and revised as needed to meet the City's needs and expectations. Progress toward these goals should be easily accessible for residents to review.
2. **Establish carbon-free goals.** In light of the recent 2021 IPCC report and escalating climate crisis, we encourage San Jose and SJCE to pursue reduction of greenhouse gas

(GHG) emissions as aggressively as practical and affordable. SJCE has set higher goals for renewable energy than is mandated by the State. Consistent with San Jose's resolution Nov. 8, 2021 to be carbon neutral by 2030, SJCE should now be provided with achievable goals and methods specifically for greenhouse gas reduction.

3. **Re-evaluate energy programs.** A cost/benefit analysis that measures programs based upon carbon-dioxide (CO2) removed per program dollar is suggested. Energy efficiency and decarbonization programs can require significant funds and human resources. These programs are relatively new and have so far affected a modest number of residents. If it would significantly help SJCE efficiency and effectiveness in the near term, consider minimizing or temporarily suspending SJCE's goals for these programs pending improvement of its financial situation.
4. **Consider expanding beyond current plans for electrical storage.** It is understood that given the variability of solar and wind, and our current heavy reliance on natural gas, future emissions improvement will likely require dramatic increases in grid storage. Given the importance of this grid transformation, we suggest considering Li-Ion batteries, other pure storage technologies, and also hybrid systems. Assessments should include benefits, risks, costs, scalability, practicality, and timing. Investment is strongly encouraged here to stimulate the storage market, achieve pragmatic progress, and advance toward our clean energy goals.
5. **Investigate the feasibility of a joint powers agreement,** effectively combining with other Community Choice Aggregators (CCAs) to achieve scale and efficiency. This may offer an attractive alternative to the need, risk, and cost of maintaining a separate City department when compared to near or long term tangible benefits to the citizens and rate payers.
6. **Market/financial risks** associated with the purchase of solar energy are an area of concern and should be investigated further. CCAs that go long on solar photovoltaic (PV) contracts to achieve carbon neutrality take on both buy-side and sell-side market risk. Excess solar that cannot be stored must be sold in the market, often at a loss, because most CCAs and municipal utilities are using the same carbon-neutral strategy

The purpose of this memo is highlight certain issues for City Council's consideration. Further investigation and analysis are required to fully develop these, and other, issues, as well as possible solutions.

These recommendations were approved by the CECAC with a vote of ___ayes, ___nays, and ___abstentions.

Key points of discussion:

Viewpoints of the Commissioners vary, and include the following:

- SJCE mission should be clarified and simplified. Hard choices may need to be made to optimize between the race to clean, renewable energy and the desire for low cost energy. Achieving more aggressive clean energy goals may require additional investment in SJCE.
- San Jose can make a critical difference in the environment for our community and our children, as well as gain more control over its energy. To do so may require a bold move, such as expanding SJCE to a municipal utility, or effectively combining with another CCA to form a joint powers authority (JPA) to gain scale and ideally reduce the City's financial risk.
- Is the original value proposition for SJCE still valid? Is there a significant enough benefit when compared to PG&E to justify the risk?
- SJCE is providing cleaner energy at competitive costs. They, and the CCA movement in general, are very important to our goals of decreasing carbon emissions and fighting climate change
- While outside of SJCE's current scope, we need to prioritize development of programs and actions that allow us to adapt to (inevitable) climate change and transition to new electric power sources through market-based incentives. The Federal and State governments are better suited to this goal with greater resources and policy directives.
- San Jose should not bear any additional costs in the effort to reduce emissions. California's current clean energy aspirations may not be practical or achievable. Excluding nuclear power, for example, ignores an important technology that is carbon-free, and could be low-cost while adding needed, 24-hour system reliability. San Jose should work toward the lowest power rates for reliable, low-carbon power.

BACKGROUND

Things have changed since the establishment of SJCE in 2019:

- The recent IPCC report, as well as environmental changes, including extreme weather and related incidents, are causing elevated concern about an increasing rate of climate change
- Financial stability of SJCE is being questioned by the Council due to its 2021 operating losses and possible impact on the City's general fund
- SJCE's 100% CO₂-free goal for 2021 for a base product has not been met (GreenSource is currently at 90%)
- SJCE may be unable to provide lower pricing: current SJCE service options cost the same or more than PG&E (this is significantly affected by PCIA charges, and in 2019 and 2020 SJCE rates were less than PG&E's)

What impact should this have on the mission and goals of SJCE? The CECAC authorized an ad hoc committee consisting of Commissioners Glen Garfunkel, Gerald Gottheil, Desiree Grahn, and Richard Zahner, to review and provide analysis. They considered the following five areas:

1. What were the original clean energy goals of SJCE and what are they now?
2. Is SJCE meeting these expectations?
3. What should the goals be going forward?
4. Are the plans and technologies for storage adequate to meet our needs?
5. Should market risk due to current and planned purchases of solar be more fully investigated?

The CECAC ad hoc committee focused on energy, reduction of greenhouse gas emissions, and energy programs.

ANALYSIS

We believe SJCE is operating in an extremely complex, difficult, and changing environment. We find that some of SJCE's clean energy goals have not been achieved, and others may be outdated or unsustainable, or may be restricting it from certain changes in operational strategy that might increase effectiveness and efficiency. Its goals should be reviewed and updated so that they are clear, consistent, and achievable.

Mission and goals

It was more difficult than we expected to find documentation containing SJCE's initial and current mission and goals. We found general and specific goals in the *2017 Community Choice Aggregation Implementation Plan and Statement of Intent*, the *2017 City Auditor's Preliminary Review of SJCE, Title 26*, and updates in a variety of other documents. Having an easy and clear way to find its mission, goals, and benefits to the City increases the likelihood that residents, City officials, and staff share a consistent vision for SJCE. We recommend that the mission, the goals, and progress toward the goals (through a tool such as an online dashboard) be made easily available and understandable to residents and staff.

According to the *SJCE Community Choice Aggregation Implementation Plan and Statement of Intent*, adopted August 29, 2017:

The City of San Jose's primary objectives in implementing SJCE are to **provide cost competitive electric services; reduce electric sector greenhouse gas emissions** ("GHGs") within the City; **stimulate renewable energy development; promote energy efficiency and demand reduction programs**; and **sustain long-term rate stability** for residents and businesses through local control. The prospective benefits to consumers include increased renewable and other low-GHG emitting energy supplies, stable and

competitive electric rates, and the opportunity for public participation in determining which technologies are utilized to meet local electricity needs.

Anecdotally, people seem to expect that SJCE, in essence, will provide **cleaner energy** at a **lower cost** when compared to PG&E.

Cleaner energy. With respect to *renewable energy*, SJCE uses a much higher percentage of renewable energy, as defined by California's Renewable Portfolio Standard, than does PG&E. SJCE is exceeding its goal to have one service with at least 10% more renewable content than PG&E's. SJCE's current renewable energy goals are more aggressive than required by the State.

But the clean energy advantage is less clear with respect to *greenhouse gas emissions* – which are what are causing climate change. Customers can opt for products between 80% and 100% carbon-free, at different rates, from SJCE, or they can choose either 85% or 100% carbon-free from PG&E.

This year, SJCE expects GreenSource (used by most of its customers) to be [up to 90% carbon-free](#). Its lower-cost GreenValue is only 80% carbon-free, and the higher-cost TotalGreen is 100% carbon-free. PG&E indicates their base plan electricity to be [85% carbon-free](#), but also offers Solar Choice which is 100% carbon-free.

Year-to-year carbon content varies. In their Power Content Label for 2020, PG&E reports that their base rate electricity was 84% carbon-free. But in 2019, PG&E reported that their base rate electricity was 100% carbon free – cleaner than SJCE for that year, although 2019 may have been an anomalous year for both PG&E and SJCE. If SJCE and PG&E each continue to use more renewables and cleaner energy, the difference may narrow or disappear.

Concerning lower costs, SJCE has been tasked to provide *competitive* pricing. In what range is pricing considered to be competitive? Some interpret this to mean *lower* pricing. SJCE currently offers one of its three products at a lower price than PG&E (although the difference is only a fraction of one percent). PG&E's Power Charge Indifference Adjustment (PCIA) charges which have increased greatly over the past few years are a significant portion of electricity costs for SJCE customers. If PCIA charges are reduced over the next few years, as some predict, it may be possible for SJCE to deliver larger savings to ratepayers.

The CECAC recommends that the mission be clarified with respect to the removal of GHGs and competitive pricing, goals that could conflict with each other. Due to the urgency and general public concern about climate change, reduction of GHGs should be a high priority. A pragmatic approach and the use of technology, including interim hybrid technologies and the consideration of non-renewables on an interim basis could accelerate the reduction of GHGs while controlling costs.

Clean Energy Goals

The ad hoc committee reviewed and commented on the following clean energy goals.

Goal	GreenValue	GreenSource	TotalGreen	PG&E	Goal achieved?
100% carbon-free by 2021	80%	up to 90%	100%	85%	Not achieved. Was this too optimistic? Can SJCE have significantly cleaner energy than PG&E, going forward?
CA RPS 60% renewable by 2030 SJCE IRP plans 70% renewable by 2030	36%	55%	100%	39%	Current renewable levels. Is the goal achievable and affordable?
CA mandate SB100: 100% carbon-free by 2045					N/A
Title 26.40.010 At least one rate equal or lower to PG&E					Achieved: GreenValue is less by a fraction of 1%
Competitive cost (with PG&E) for typ home*	\$132.35	\$134.74	\$139.39	\$132.35	What is meant by "competitive"? Lower cost? Near cost?
Implementation Plan - offer one option 10% or more renewable than PG&E					Yes: Will SJCE set 70% for 2030? Is 10%+ sustainable long term?
Implementation Plan - establish renewable and energy efficiency programs					4 years later, programs hindered by resources, impact is modest. Should this be suspended as a goal?
San Jose resolution Nov 8, 2021: carbon neutral by 2030					What will this mean for SJCE?

* Rate comparisons for typ house with 456 kWh/mo, E-TOU-C rate, as of May 15, 2021 for SJCE; [SJCE residential rate page](#); [PG&E rate comparison](#) as of Mar. 15, 2021

Reduction in GHG emissions

The goal to achieve 100% carbon-free energy by 2021, which was announced, and included in SJCE's 2018 IRP, was not achieved. Perhaps the goal was optimistic. To reach the goals of the 2030 carbon neutrality resolution will require detailed steps and methods.

With the *annual* method of accounting for carbon emissions that is currently used, it is possible to be 100% carbon free and *still emit significant amounts of carbon dioxide*. SJCE (or any other California load-serving entity) can purchase more solar energy than it needs, during the day. In this way it can purchase an amount equivalent to its annual use and get credit for carbon-free energy. However, because only a tiny fraction of that electricity is stored, and renewable energy is in short supply at night, San Jose electricity use at night and otherwise when solar is not available is actually generated partly or mostly from fossil fuels, thereby still creating carbon emissions. The current annual method of accounting can be very confusing. Proposed [Senate Bill 67: the 24/7 Clean Energy Bill](#) would require utility providers to match their energy procurements to the timing of their energy load, and provide a clearer, more easily understood path to 100% carbon-free.

The CECAC recommends that San Jose set goals for SJCE to provide residents with cleaner energy than they would get with PG&E, which San Jose's resolution to be carbon neutral by 2030 would seem to provide. On the other hand, the City may have no advantage over PG&E or the CPUC in this objective and may incur significant expense and risk.

Renewable energy

Renewable energy goals are not necessarily congruent with goals to reduce GHGs. Geothermal and biomass, for example, are categorized as renewable but emit some CO₂. Nuclear and large hydro, which are categorized as non-renewable generate electricity carbon-free. Renewable energy does meet other environmental and sustainability goals. We recommend that San Jose consider the higher priority of fighting global climate change with a focus on reducing GHGs as compared with the priority of the other benefits of renewable energy.

SJCE has a goal to provide at least 10% more renewable energy in its electricity generation than does PG&E. Having a greater renewable content than PG&E was not a goal that was specifically articulated in the original implementation documents for SJCE.

The current IRP draft includes plans for 70% renewable by 2030 (California RPS goal, and PG&E's stated goal is 60% renewable by 2030). San Jose should look carefully at whether this goal is achievable and at what cost. Over time, as PG&E increases its renewable content, it may become costly or simply impossible to maintain a 10% or more differential.

The current environmental situation, electric generation mix, demand profile and growth, future plant retirements, and lack of investment in new dispatchable generation place an even higher importance on electricity storage as a source during periods when non-renewable sources cannot meet demand.

Energy efficiency and carbon emission reduction programs

According to the 2017 Implementation Plan, SJCE's guiding framework includes: "establish San Jose-specific renewable energy and energy efficiency programs." These programs are also mentioned in [Title 26.40.010](#). These specifically designed programs would further reduce carbon emissions, increase use of renewable energy for the benefit of the residents of San Jose.

However the start of these programs were delayed for the first few years, as they require significant funding and staffing. Examples of programs include rebates for electric vehicles, voluntary load demand programs, rebates for switching from methane gas to heat pump water heaters. The programs have operated for a short period and the total number of residents involved has been modest. The amount of carbon emissions reduced has also been modest, and the programs have been expensive for the amount MTCO₂ emission avoided.

We do not doubt that some of these programs could be effective after gaining enough traction. Meanwhile, there are county, state and federal agencies that offer programs that provide similar benefits for our residents. Due to the resource demands and dilution of SJCE efforts, we recommend that it be considered to suspend the goals for these programs, at least temporarily.

Long Duration Dispatchable Storage

We may purchase enough renewable energy to be equal to the total energy used by San Jose. But carbon-free, renewable energy is scarce at night. Electricity use at night currently requires fossil fuel generation sources many of which are low efficiency gas fired peaking units such as the three Calpine LM 6000 generators at Gilroy. Other more efficient gas fired units include the 650 MW Metcalf and 320 MW Los Esteros combined cycle power plants. Gas fired generation is the majority power source in all hours after sunset and may continue to be so for decades. Transition to all battery storage could take many years.

Efforts to shift loads to off-peak hours, including nighttime hours exacerbate the problem. Conversion from gas to electric heat pumps for water and space heating may help but certainly do not eliminate the need for (primarily) gas power plants. Without electricity storage, and until some other power sources can be used, we cannot be carbon-free for power usage at night.

SJCE is committed to electricity storage at a modest scale and short duration. The recent RFO evaluation eliminated the hybrid (gas and renewable) storage option and will likely result in only modest, if any, creation of affordable long duration, low carbon, dispatchable energy storage. Failure to develop storage capacity may result in increased natural gas generation and unreliable service.

Battery solutions have limitations of durations (most are only 4 hours) and scale. The worldwide demand for batteries, including raw materials as well as manufacturing, risks shortages. There is significant risk to a) raw material resources b) manufacturing capacity c) plan site and storage, and d) length of time required to bring projects on line.

Long duration, utility-scale, renewable power storage may be achieved in the near term using hybrid power storage technology. One option is the Liquid Salt Combined Cycle (LSCC) technology. In this approach a new or existing gas-fired, combined-cycle power plant is matched to a thermal energy storage component such as a molten salt storage tank. During the day renewable energy heats the salt to high temperature. After sunset the hot salt heats steam which turns a steam turbine generator in combination with a gas turbine. The net result is renewable energy delivered after sunset. The combined systems deliver power at about half the carbon content of a peaking unit. The liquid salt storage can be sized to store enough energy for 18 hours of continuous delivery. The benefits of this approach include: storing excess solar energy, reducing carbon emissions, dispatchable renewable power, and short time to construction.

Consider the use of natural gas as an interim renewable energy storage program. An option may be to encourage the Northern California CCAs to form a JPA to finance and build a significant, 100 MW, hybrid storage facility at an existing power plant. The Calpine Gilroy facility is an excellent site. Hybrid storage can hedge market risk—by using the excess solar power during the day to cut market exposure and reduce carbon emissions at night.

There are other large scale storage options such as compressed air, pumped storage, and gravity systems, but there are few adequate sites and there are other effectiveness issues.

Market Risk

CCAs that go long on solar PV to achieve carbon neutrality take on both buy-side and sell-side market risk. Excess solar that cannot be stored must be sold in the market, often at a loss, because most CCAs and municipal utilities are using the same carbon-neutral strategy. This approach subsidizes non-SJCE customers, while the CCA maintains its payment obligation under PPA.

When the sun sets, the CCA must procure energy in the market, typically from fossil resources, which exposes the CCA to buy-side risk (including higher fuel cost and scarcity) as well as GHG emissions from the market. Renewable Energy Certificates from the PPA are used to counter the GHG emissions from the market power—an accounting transaction that may not be consistent with customer expectations that their night-time energy use is carbon-free.

Another area of concern is the tenor of the resources agreements. Solar PPAs are locked in for long terms at prices above the likely future cost, while the dispatchable power, which has risk of escalation due to higher fuel costs, carbon taxes, or retirements, are procured on a relatively shorter-term. There might be ways to balance the resource procurements to reduce the costs and risks.

Black swan events are another area that need to be considered as severe financial risks can also be exacerbated by external conditions: fire, weather, and transmission outages due to earthquake or malefactors. Recent examples include the February freeze in ERCOT, which resulted in a \$2.1 billion bankruptcy filing by Brazos Electric Cooperative. Utility scale long duration storage should help us mitigate these risks.

Are SJCE's actions to mitigate these risks sufficient?

CONCLUSION

In the few years since SJCE was conceived, much has changed, including a worsening climate and environmental situation, and changes in the industry economics which have hindered SJCE's ability to provide clean energy at low and stable prices. San Jose must decide how it wishes to optimize between reduced greenhouse gas emission, renewable energy, and cost. We recommend that City Council appoint Council members, staff and external resources as needed to study this issue, review San Jose's mission for SJCE and propose revisions to its goals accordingly.

(Name) CHAIR

RESOURCES

2020 IRP <https://www.sanjoseca.gov/home/showdocument?id=63921>

May 16, 2017 memo to establish SJCE

https://sanjose.granicus.com/MediaPlayer.php?view_id=52&clip_id=9735&meta_id=635385

100% carbon free in base rate by 2021:

<https://www.sanjoseca.gov/home/showdocument?id=66591>

Climate Smart <https://www.sanjoseca.gov/your-government/environment/climate-smart-san-jos>

[Title 26 Community Energy](#)

[SB-67 Clean Energy: California 24/7 Clean Energy Standard](#)

[Intergovernmental Panel on Climate Change: Climate Change 2021 The Physical Science Basis Summary for Policy Makers](#)

Attach.

SJCE Community Choice Aggregation Implementation Plan and Statement of Intent, adopted August 29, 2017