

From: [Tyson Siegele](#)
To: [ESD Sustainability](#); [Hooven, Cody](#); [joyce.lane](#); [ryanfoconnor11@gmail.com](#)
Subject: Comments on City of San Diego CCE Feasibility Study
Date: Wednesday, August 02, 2017 2:01:22 PM
Attachments: [2017-08-02 Feas Study Questions.pdf](#)

Cody,

Thank you for your continuing work on Community Choice Energy.

The attached document from SanDiego350 highlights our top concern regarding the City of San Diego's Feasibility Study.

We feel the city's consultant substantially over estimated the cost of renewable energy available today. The cost of renewable energy assumed by the city's consultant is at least double the current market prices according research performed by the following:

Lawrence Berkeley National Laboratory
Bloomberg New Energy Finance
Solar Energy Industries Association
Los Angeles County's CCE Business Plan

Additional information and links are provided in the attached document.

Best,

Tyson Siegele

Founder, Editor

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August 1, 2017

**Ms. Cody Hooven,
Chief Sustainability Officer, City of San Diego**

RE: Community Choice Energy Feasibility Study Questions/Comments

Dear Ms. Hooven:

We are pleased that the feasibility study for Community Choice Energy has been released and that the city is moving forward with the goal of achieving 100% clean electricity in the City of San Diego. Thank you for your work in this endeavor. We do have concerns, however, about some of the information in the study.

The price that the feasibility study assumed for renewable energy procurement is significantly above market prices and does not appear to acknowledge the continued pricing reductions being realized within the renewable energy sector. Additionally, SDG&E disclosures state that its Renewable Portfolio Standard energy procurement is less expensive than its other electricity procurement on a per kilowatt basis. Those disclosures support the conclusion of the following pages, that the renewable energy pricing assumed in the feasibility study is above current market pricing. Pages 2-4 of this document provide a short summary of the feasibility study assumptions, followed by a selection of real world prices and noted research on the subject of current pricing, and wraps up with research on future pricing projections.

SanDiego350 urges the City to require the feasibility study consultant to do the following:

1. Update renewable energy pricing to conform to current market prices
2. Update battery pricing to conform to current market prices (not a 2015 blog post)
3. Show that renewable energy is already less expensive than fossil fuel energy as noted by SDG&E disclosures ([as per 2017 Padilla Report page 7](#))

We believe that these updates will provide a more accurate picture of the viability of Community Choice Energy in San Diego. Further, we believe that these revisions will substantially reduce the overall assumed cost of the program leading to an even stronger business case for CCE in the City of San Diego.

Sincerely,

A handwritten signature in black ink that reads "Tyson P. Siegele".

Tyson Siegele
SanDiego350 - Public Policy Team

Feasibility Study Energy Price Conclusions:

Solar PV:

Feasibility Study Page 33: Methodology and Assumptions

“...the installed cost of US Solar PV Systems (excluding subsidies) is now in the \$1.00 per Watt-Direct Current to \$1.39 per Watt-Direct Current for fixed tilt ground mounted systems larger than 2MW, equating to \$0.04/kWh to \$0.06/kWh.”

\$0.04-\$0.06/kWh = average price of \$0.05/kWh

Feasibility Study Page 36: Methodology and Assumptions

Figure 24: This figure illustrates CCA renewable energy forecast price:

2015 price = \$83/MWh = \$0.083/kWh

2030 price = \$81/MWh = \$0.081/kWh

Battery Storage:

Feasibility Study Page 43: Methodology and Assumptions, Fig. 31

\$0.18/kWh in 2020

Natural Gas:

Feasibility Study Page 40: Methodology and Assumptions, Fig. 28

2016 = \$0.046/kWh

2022 = \$0.035/kWh (projected)

(Natural gas price assumptions used in the study appear to be inline with current natural gas prices. The natural gas pricing is listed here for reference purposes only.)

Real World Pricing and Current Research:

Solar PV:

GTM Research and SEIA found utility scale solar's [average pricing for Q1 2017 to be \\$0.99/W](#). Using the Willdan Group's conversion to \$/kWh, the current average pricing for solar is \$0.04/kWh - 20% less than the average price listed on page 33 of the Study, and approximately 50% less than the average pricing assumed in Figure 24 of the Study. Current pricing of solar is also lower than that of natural gas. These GTM research numbers are before subsidies are taken into account.

Real World Solar Pricing (with subsidies):

- [2015 - Austin, TX - 4.0 cent/kWh PPA](#)
- [2015 - Las Vegas, NV - 3.9 cent/kWh PPA](#)
- [2016 - Palo Alto, CA - 3.7 cent/kWh PPA](#)
- [2017 - Tucson, AZ - 3.0 cent/kWh PPA](#)

Current solar prices are lower than those listed in the feasibility study and continue to drop. Between Q4 of 2015 and Q4 of 2016, solar pricing for utility fixed tilt solar [dropped by 20%](#). By the 2022 date assumed for the first full year of a San Diego CCA program, solar prices will likely to be even more cost effective and lower than natural gas prices as we have already seen in Palo Alto, CA. **Additionally, by getting a CCA up and running prior to 2020, the city could take advantage of signing PPAs with developers who would be able to take advantage of the 30% federal tax credit.**

A [study from the Lawrence Berkeley National Laboratory](#) (figs 18/19) shows the trend in solar pricing has been in the downward direction for many years. In figures 18 and 19 (p29/30) it breaks out California PPA prices. It shows actual prices far below the assumptions made in the feasibility study.

Noted Renewable Energy Future Price Projections:

According to [Bloomberg New Energy Finance](#), a leading company in energy analysis, solar is 75% less expensive now than it was in 2009 and projections for solar pricing in 2040 are 66% lower than today's pricing.

The Feasibility Study's MCSM "average" price for 100% renewable energy in 2035 shows a projected future pricing *higher* than the 2020 projection (fig. 33 page 45). That means the City's consultant assumes that 2035 renewable energy will be approximately 3 times more expensive than top energy analysts' projections for that time frame.

Another point for comparison: Deutsche Bank solar analysts project that solar prices will [decrease 30% by 2022](#).

SDG&E Disclosures on Energy Costs:

The feasibility study lists the 2016 Padilla Report as the source for figure 24 of the study. There is a more recent Padilla Report. The [2017 Padilla Report](#) published in May of 2017 shows that Renewable Portfolio Standard energy procurement (RPS) for SDG&E is actually less expensive on a per kilowatt basis than SDG&E's other energy. This is the quote from the report (page 7):

"Likewise, if the ratio is less than one, the IOU is paying a premium for RPS electricity relative to the value of the portfolio. Derived from Table 1, the ratio of RPS Generation to RPS Procurement Expenditures for each IOU in 2016 was:

- SDGE: 1.07"

SDG&E's ratio of 1.07 shows RPS procurement is cheaper than other energy. This would seem to contradict one of the main findings of the City's CCE Feasibility Study. The Study lists the conclusion that renewables are *more* expensive than other forms of energy not less expensive as noted in the 2017 Padilla Report for SDG&E.

Finding in the County of Los Angeles - CCE Business Plan:

The last reference on pricing of renewable energy comes from the [County of Los Angeles, CCE Business Plan](#) published in June of 2016. Even though that study was published a year ago, and solar prices have continued to fall over the course of the last year, the LA Plan found renewable energy to be approximately half the cost assumed by the City of SD Feasibility Study.

“Based on a survey of renewable resources currently in operation and new projects coming on-line, a base case renewable energy market price of \$42/MWh has been determined.” (p24)

\$42/MWh is lower than the \$46/MWh that the SD Feasibility Study notes as the cost of natural gas electricity generation. Thus, just as SDG&E's disclosures state, renewable energy is found to cost less than fossil fuel energy. Additionally, even with an assumption of 100% renewable energy, the pricing in the LA Plan only increased to \$52/MWh.

Storage:

On page 43, the feasibility study lists a [2015 blog post](#) as the source for their battery pricing. Since that blog post, prices of battery storage have dropped dramatically.

The feasibility study lists storage as 18.0 cents/kWh. The current price for battery storage when installed with solar is [approximately 1.5 cents/kWh](#). Thus the study assumes battery pricing that is 12 times higher than real world prices. Additionally the Study's projections for battery pricing in 2035 (fig 31) estimates that battery pricing would still be 4 times higher than today's installed prices.

The feasibility study does not spend much time on battery pricing. Perhaps that is due to assumptions that very little battery storage will be purchased. However, batteries are vital to integrating solar PV into the energy supply, they will be required in large quantities for renewable energy integration. The pricing listed in the study needs to include at least the current cost of batteries in a solar-plus-storage installation.

Solar + Storage:

The Tucson Electric PPA that was signed in May 2017 provided the latest numbers for solar plus battery storage pricing at [4.5 cents/kWh](#). Hours of sunlight in San Diego are

slightly lower than in Tucson, but this is in line with the price decreases seen across the industry over the past year. PPAs at that pricing level show the possibility of 100% renewable energy at or below current natural gas prices.

Questions:

Why are renewable energy prices in the Study assumed to be double the price of current market pricing even though solar prices are projected to continue to decline and the study assumes the CCA's full phase-in will not occur until mid 2021?

Why does the study assume future renewable energy prices will be so much higher than most, if not all, solar analysts' projections? (the study projects CCA renewable pricing will still be double the current market pricing as late as 2030 (figure 24)

Why does the study assume battery pricing to be 12 times higher than current pricing?