

Technical Study for Community Choice Aggregation Program in Alameda County

Addendum:

Greater Local Renewable Development Scenario

Prepared by:



MRW & Associates, LLC
1814 Franklin Street, Ste 720
Oakland, CA 94612

With



Tierra Resource
Consultants
Walnut Creek, CA



Economic Development
Research Group
Boston, MA

July 2016

Addendum: Scenario 4 – Greater Local Renewable Development Scenario

Based on feedback from the Steering Committee, the MRW Team developed a fourth scenario. This scenario is based on Scenario 2: 50% of its load through renewable power starting from 2017, while 50% of its non-renewable load is met through hydro-electricity (i.e., overall 50% qualifying renewable. 25% hydro, 25% fossil or market), but with an increased emphasis on in-county renewable development. For this case, we assumed that one-half of the CCA's total renewable requirement would be met by in-county resources by the year 2030.

This constitutes a very aggressive scenario. The amounts of new in-county renewables assumed are unprecedented, and without a detailed study as to the technical, economic and achievable penetration of local solar, it should be seen as speculative. As such, the results are more uncertain than the prior three scenarios. Nonetheless, it points to the possibility that even greater local economic development benefits and employment if indeed greater local renewable development can be achieved.

Supply Resources

Figure 1 shows the assumed build-out of new renewable resources under Scenario 4. The local renewable generation starts in 2017, linearly ramping (80 MW per year) up to 50% of the CCA's renewable total by 2030 (900 MW). Consistent with the other scenarios, we considered in-county renewable generation to consist of small- and utility-scale solar.

At the June 1 Steering Committee meeting, a preliminary version of this scenario was presented. This final version differs from that preliminary one in two ways. First, the preliminary version did not assume any phase-in. I.e., 50% local renewables was available at the same rate as CCE participants phased-in. The final version phases in the new local renewables such that 50% is ultimately achieved in 2030. Second, the preliminary version assumed that 50% of the TOTAL load was being met by local renewables, not simply 50% of the renewable component. Thus, the final Scenario 4 contains less renewables and thus lower costs than the preliminary version presented at the Steering Committee Meeting.

Figure 1. Senario 4 CCA Build-Out

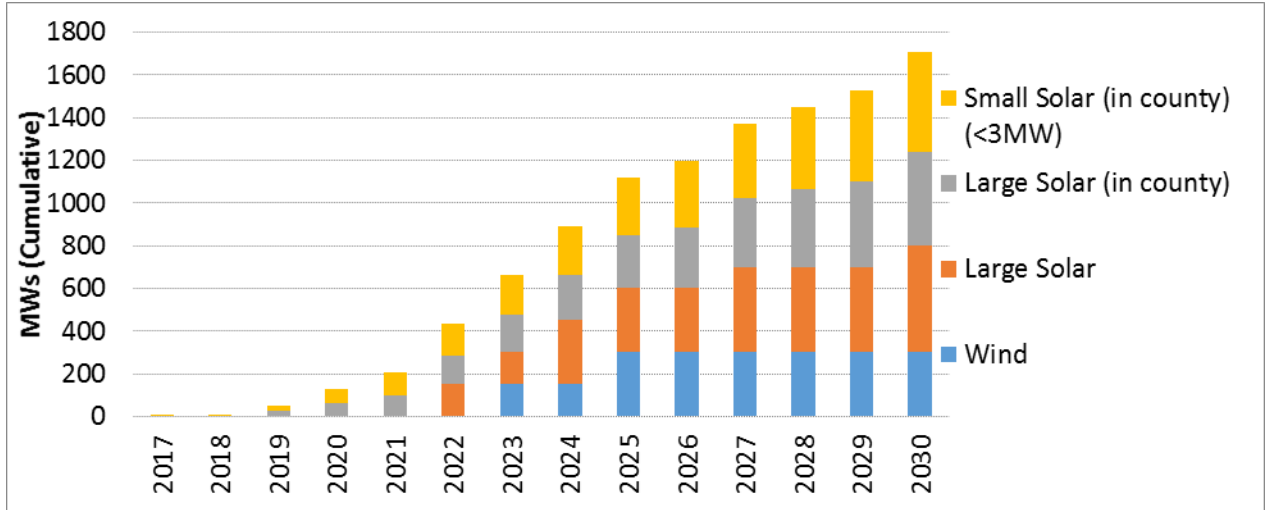
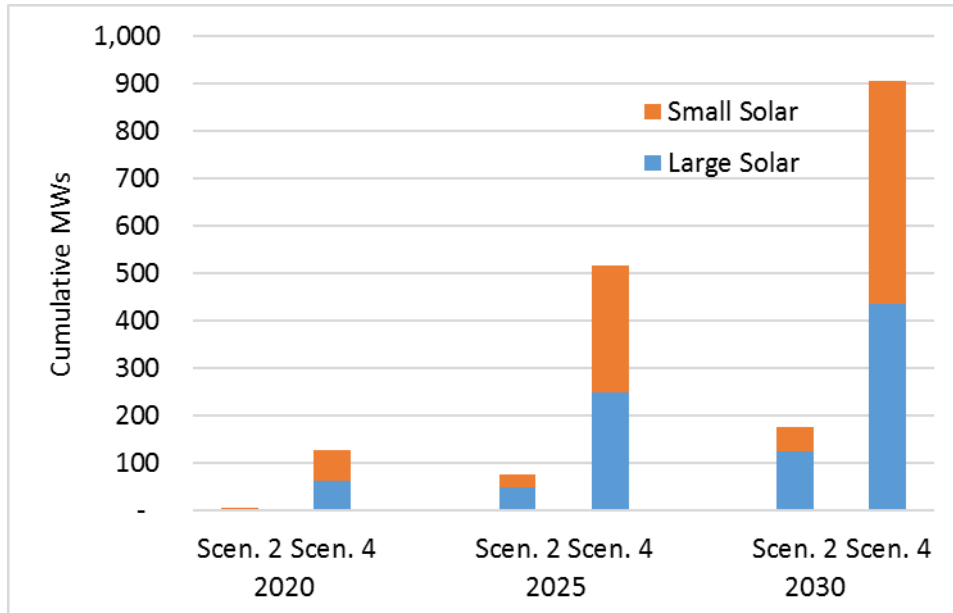


Figure 2 shows the difference on the deployment of the in-county solar generation under Scenarios 2 and 4. Under Scenario 2 the capacity installed increases on average of 15 MW per year up to 180 MW, one-fifth the rate of capacity addition under Scenario 4. Furthermore, under Scenario 4 we assumed a higher fraction of the in-county renewable was met using the small-scale solar. Under Scenario 2, the ratio of small local solar and large local solar is 2:5, while under Scenario 4 the ratio is 1:1.

Figure 2. Local Capacity Installed for Scenario 2 and Scenario 4



Rate Results

Figure 3 summarizes the results for Scenario 4, with the vertical bars representing the Alameda CCA customer rate and the counterpart PG&E generation rate shown as a line. As with the other cases, under the renewable prices assumed in the analysis, the Alameda CCA costs are consistently less than the PG&E rate.

In Scenario 4, the renewable cost is the largest single element of the CCA rate, reflecting the high renewable content of this scenario (50% RPS) and, in special, the important share of in-county renewable generation. Non-renewable generation is the next largest cost component of the rate, followed by the PCIA exit fee.

Figure 3. Scenario 4 Rate Savings, 2017-2030

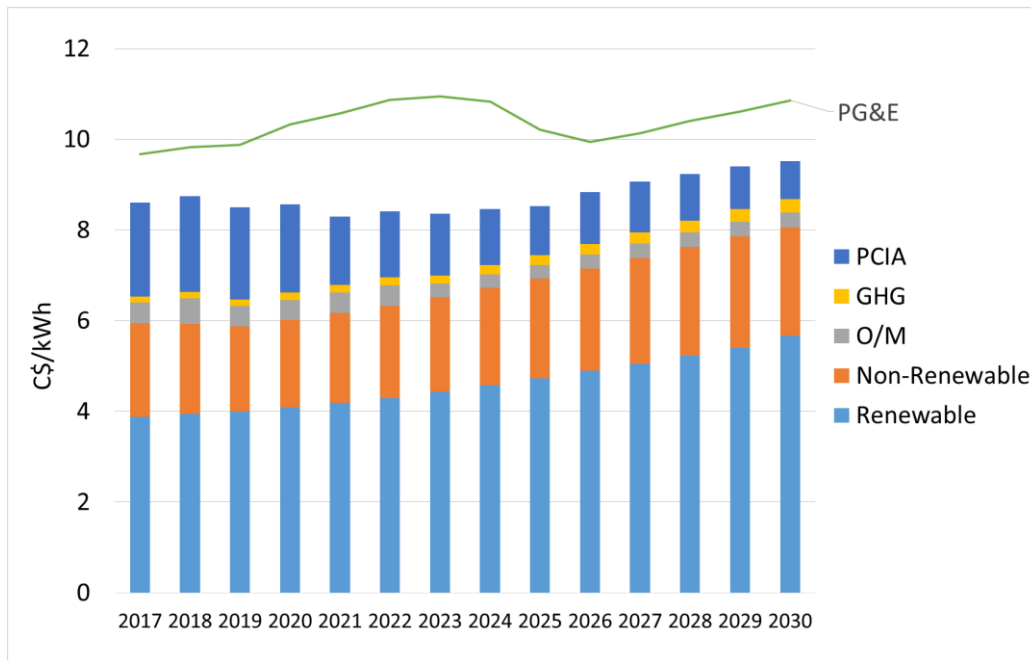


Figure 4 shows the Alameda CCA customer average generation rate for Scenarios 2 and 4. As seen in this figure, the difference on the generation rate between the two scenarios is minimal during the first years of Alameda CCA operations (when local renewable content is still low), but it grows rapidly, ultimately resulting in 6% difference by 2030 (rates for Scenario 4 higher than Scenario 2). This increase is due to the assumed premium for in-county renewable generation, (\$20/MWh on average).

Figure 4. Scenarios 2 and 4 CCA Rates, 2017-2030

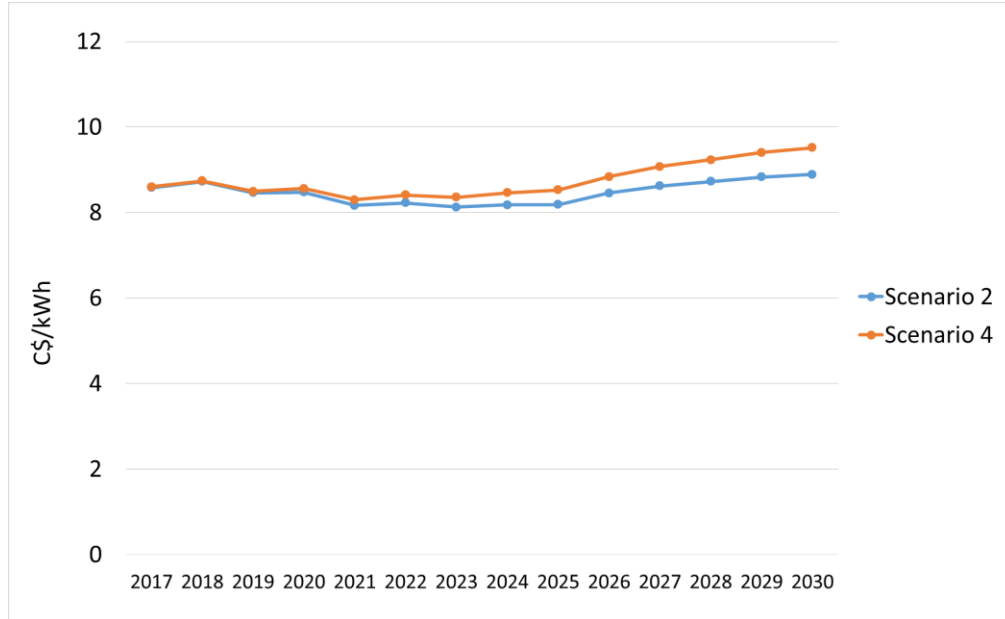


Table 1 below shows the average annual savings for residential customers under Scenario 4. The annual bill for a residential customer on the Alameda CCA program will be for the period 2017-2030 on average 5.7% lower than the same bill on PG&E rates. This is lower than, but close to, bill savings under Scenario 1.

Table 1. Scenario 4 Savings for Residential CCA Customers

Residential	Monthly Consumption (kWh)	Bill with PG&E (\$)	Bill with Alameda CCA (\$)	Savings (\$)	Savings (%)
2017	650	147	146	1	1%
2020	650	160	148	12	8%
2030	650	201	192	9	4%

Because the net generating composition of Scenario 4 is the same as Scenario 2, the greenhouse gas emissions would be approximately the same.

Macroeconomic Impacts

As Table 2 shows, Scenario 4 would have a 1.7-fold CCA renewable capacity investment compared to Scenario 3, with almost 5-fold local project investment (\$3.2 billion of county-sited projects versus \$0.67 billion).

Table 2. Initial Comparison of Proposed CCA Scenarios

2017 to 2030	Million\$ nominal	Million \$ nominal DEMAND					
Scenario	Bill Savings*	CCA Renewable Investment		PG&E offset RE invest. Rest ofCA	CCA Renewable O&M		PG&E Offset Renew. O&M
		Alameda	Rest of CA		Alameda	Rest of CA	Alameda
1	\$1,574	\$623	\$1,676	-\$1,946	\$47	\$133	-\$153
2	\$1,513	\$623	\$2,217	-\$2,446	\$47	\$190	-\$206
3	\$522	\$674	\$2,514	-\$2,785	\$51	\$200	-\$219
4	\$521	\$3,222	\$2,217	-3,325	\$252	\$190	-\$278

*Bill savings are net of PCIA and customer out-of-pocket for renewable and energy efficient improvements.

As can be seen from Table 3, the initial local investment that would result from building and operating additional renewable projects in Alameda County between the years 2017 to 2030 represents a very small portion of the County’s total expected economic activity,¹ even assuming all of the project costs are directed locally (usually 56% of the project costs would be funneled outside the county due to procurement of equipment from outside the county). By contrast bill savings for Scenarios 1 and 2 provide over three fold the benefits of initial local investment. These bill savings indirectly stimulate the economy and ultimately create jobs.

¹ Forecast to be \$3,500 billion (nominal). Source REMI Policy Insight model, Alameda County forecast.

Table 3

	2017 to 2030			
CCA Scenario	Local Capture on RE investments (billion\$)	As % of County's Total RE investment	As % of County's Expected Economic Activity	Net Bill Savings (billion\$)
1	\$0.42	44%	0.01%	\$1.57
2	\$0.42	44%	0.01%	\$1.51
3	\$0.45	45%	0.01%	\$0.52
4	\$1.86	49%	0.04%	\$0.52

Table 4 shows high-level results expressed as average annual job changes for the four CCA scenarios. While Scenarios 1 and 2 create nearly identical direct jobs (due to comparable investment in local renewable projects), scenario 1 creates far more TOTAL jobs. This is due to the higher bill savings under scenario 1. Scenario 3 creates a few more direct jobs, but far fewer total jobs, due to decreased bill savings as compared to Scenario 3. The average annual *total* job impact when compared to Scenario 3 increases by a 2.2-fold factor as a result of CCA customers facing the same level of net rate savings despite the amplified level of renewable investment demand associated with the CCA, particularly for local projects.

Table 4: Average Annual Jobs created in Alameda County by the CCA – Direct and Total Impacts

	2017 – to – 2030		County Impacts	
CCA Scenario	Local Capture on RE investments (billion\$)	Bill Savings (billion\$)	Average Annual <u>DIRECT</u> Jobs	Average Annual <u>TOTAL</u> Jobs
1	\$0.42	\$1.57	165	1322
2	\$0.42	\$1.51	166	1286
3	\$0.45	\$0.52	174	731
4	\$1.84	\$0.52	579	1617

Job impacts from building and operating renewable capacity investments in the county account for near 70 percent of annual job creation (compared to the 20 percent in Scenario 1 which had the smallest amount of CCA renewable investments both for the county and elsewhere in the state. It did however have the greatest rate savings to CCA customers). The peak year of impact remains 2023 with the county adding approximately 2,430 jobs.

Figure 5. County's annual Total Job Impact by source (thousands)

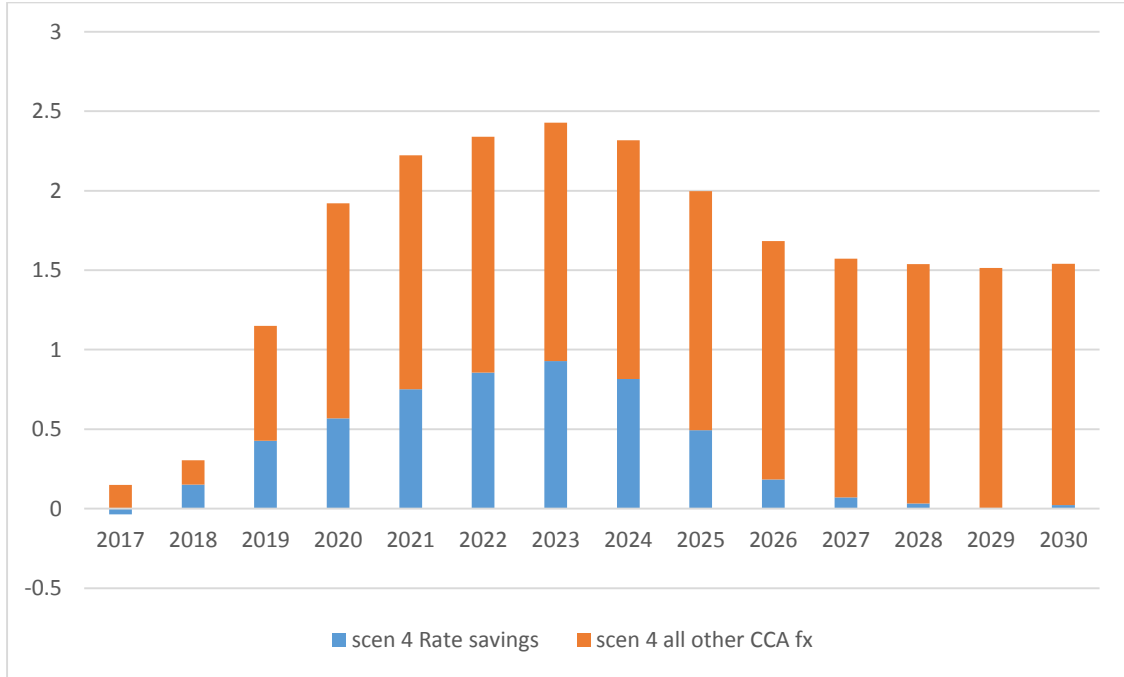


Table 5 addresses the Scenario 4 job impacts occurring (as average annual for 2017 through 2030 and for the 2023 peak year) in the *Construction* sector related to both the direct and total impact stages, juxtaposed against results for the initial scenarios. It also provides an estimate of *Construction* sector job changes on “covered” work contracts, using the same approach as done for the three initial scenarios.

Table 5: Scenario 4 Job Impacts

CCA Scenario	Avg. Annual Direct Jobs-all sectors	Avg. Annual Direct Jobs-Construction sector	...that are associated with CBA	Peak Year Direct Jobs-Construction sector	...that are associated with CBA
1	165	80	16	136	27
2	166	81	16	137	27
3	174	86	17	154	31
4	574	318	64	359	72
CCA Scenario	Avg. Annual Total Jobs-all sectors	Avg. Annual Total Jobs-Construction sector	...that are associated with CBA	Peak Year Total Jobs-Construction sector	...that are associated with CBA
1	1343	235	47	440	88
2	1308	231	46	432	86
3	752	160	32	326	65
4	1617	455	91	634	127

