

RENEWABLE ENERGY VS GREENHOUSE GAS FREE ENERGY

Here in California we are fortunate to enjoy a relatively “clean” energy supply. What many people do not realize is that there are some differences between renewable energy and GHG free energy. All renewable energy contains no (or very little) GHG emissions. There are also some types of energy which are GHG free, but are not considered “renewable” by the State.

CA QUALIFIED RE SOURCES INCLUDE:	GHG FREE RESOURCES THAT ARE NOT CONSIDERED RENEWABLE:
Solar	Nuclear
Wind	Large
Hydroelectric (30MW+)	
Geothermal	
Biomass	
Small Hydroelectric	

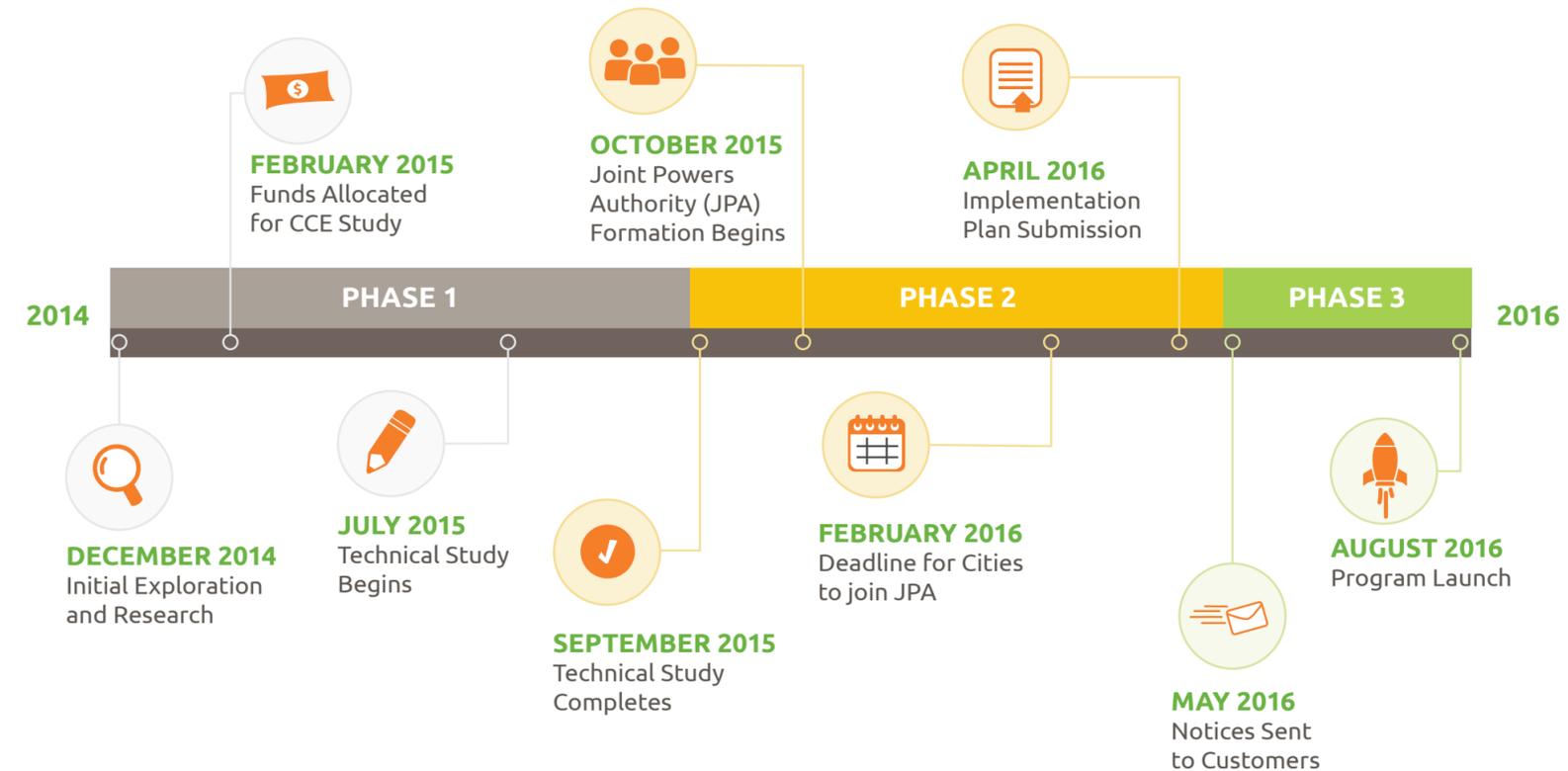
Pacific Gas and Electric (PG&E), your current energy provider, provides electricity that is 27% renewable and 54% greenhouse gas free. Please note that PG&E sources electricity from additional GHG free (but not “renewable”) sources, such as nuclear and large hydroelectric.³

³ According to PG&E's 2013 Power Content Label, 22% of total electric energy supply was sourced from nuclear generating facilities; in 2014, a similar proportion of PG&E's total electric energy supply was sourced from nuclear generating facilities; 21%, as reflected in PG&E's Power Source Disclosure Report for the 2014 calendar year.

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GLOSSARY

- **Community Choice Energy (CCE):** Also commonly known as “Community Choice Aggregation,” CCE allows local government to pool the electricity demands of their communities to purchase, and possibly develop, power on their behalf.
- **Conventional Energy:** Nonrenewable energy derived from sources such as coal, oil, and natural gas.
- **GHG-Free Energy:** Energy from sources that do not emit greenhouse gases but are not considered renewable under California law. This includes energy from nuclear facilities and hydroelectricity from large dams (>30 MW).
- **Renewable Energy:** Energy from sources which are naturally replenished on a human timescale, such as solar, wind, hydroelectric, and geothermal.
- **Greenhouse Gas (GHG):** Gases that contribute to the “greenhouse effect” of the atmosphere by trapping in heat. Well known GHGs include carbon dioxide (CO2) and methane (CH4).
- **Opt-out Rate:** The percentage of customers in a CCE's service territory that choose to leave the program (“opt-out”) and return to the incumbent utility (e.g. PG&E) as their energy provider.
- **Feed-In Tariff:** A program that pays customers a fixed price for power that is fed into the local electricity grid.
- **Renewable Portfolio Standard (RPS):** State requirements for the amount of renewable energy that must be provided by utilities and CCE programs. The current RPS is 50% renewable energy by 2030.



Feasibility Study Guide



CHOICE



COMMUNITY



SUSTAINABILITY



ECONOMICS

BACKGROUND

In 2014, San Mateo County began to explore the feasibility of starting a Community Choice Energy (also known as “Community Choice Aggregation”) program in the County and interested cities. A CCE program allows cities to aggregate their energy demand and purchase power separately from PG&E. PG&E will still deliver the power, maintain the lines, and bill customers, but the power will be purchased by the CCE program (branded “Peninsula Clean Energy” in San Mateo County). The County recently hired the consulting firm Pacific Energy Advisors to study the environmental, economic, and technical potential for a CCE program in San Mateo County. All twenty cities and the County unincorporated areas participated in the study. The “Draft Peninsula Clean Energy CCA Technical Study” (Technical Study) was completed in September 2015 and is summarized here.



Peninsula Clean Energy purchases electricity from renewable sources.



Utility companies deliver energy, maintain lines and bill customers.



Customers benefit from affordable rates, local control, and clean energy!

ABOUT

The Technical Study analyzes the environmental and economic impacts of three different electricity supply scenarios that PCE could provide to its residential and commercial customers:

SCENARIO 1: Lower cost than PG&E, launch with a 35% renewable portfolio (slightly higher than the current State requirements for renewable energy); no greenhouse gas (GHG) reductions.

SCENARIO 2: Remain cost-competitive with PG&E; launch with a 50% renewable portfolio (exceeds the current State requirements for renewable energy); substantial reduction in GHGs

SCENARIO 3: 100% renewable energy with dramatic reduction in GHGs; offered at a cost premium

These scenarios were developed by County staff and consultants for the purposes of the Technical Study only. The final energy options offered by PCE will be decided after the PCE Board of Directors has been established. The full Technical Study can be downloaded on the County Office of Sustainability website at: green.smcgov.org

SUPPLY SCENARIOS

In order to reduce County-wide GHG emissions from electricity generation, the goal of PCE is to provide energy that contains both more renewable energy content and fewer GHG emissions than PG&E¹. In addition, study participants were interested in how the projected electricity rates would compare to PG&E in each scenario, to ensure that PCE can be cost competitive.

Each supply scenario was evaluated based on the parameters listed above which include impact on electrical rates, degree to which greenhouse gases can be reduced, and degree to which use of renewable energy can be increased. The study also projected customer opt-out rates for each scenario. The results of the study are listed below for Year 1 of PCE operations.

SCENARIO 1: LOW-COST

- 35% Renewable
- 35% GHG-Free (including renewable energy)
- Average 6% cost savings from PG&E (~\$5.40/month)²
- Annual increase in 211,000 metric tons of GHG emissions
- Assumed 15% opt-out rate

SCENARIO 2: BALANCED

- 50% Renewable
- 63% GHG-Free (including renewable energy)
- Average 4% cost savings from PG&E (~\$4.05/month)
- Annual reduction in 75,000 metric tons of GHG emissions
- Assumed 15% opt-out rate

SCENARIO 3: 100% RENEWABLE

- 100% Renewable
- 100% GHG-Free (including renewable energy)
- Average 2% cost increase from PG&E (~\$1.80/month)
- Annual reduction in 130,000 Metric tons of GHG emissions
- Assumed 25% opt-out rate

	PG&E	SCENARIO 1	SCENARIO 2	SCENARIO 3
Renewable Energy	27%	35%	50%	100%
GHG-Free Energy	60%	35%	63%	100%
Cost Difference from PG&E	N/A	-6%	-4%	+2%
Difference in GHG Emissions (MTCO_{2e})	N/A	+211,000	-75,000	-130,000
Projected Opt-Out Rate	N/A	15%	15%	25/50%

Scenarios 1 and 2 demonstrate the potential for customer rate savings in 2016, ranging from 2% to 6%, relative to PG&E projected 2016 rates. Scenario 1 shows the greatest opportunity for customer savings, but would lead to an overall increase in GHG emissions (despite a higher level of renewable energy). Scenario 2 still demonstrates modest customer savings, but surpasses PG&E both in terms of renewable energy content and GHG emissions reduction.

Scenario 3 demonstrates the greatest use of renewables and reduction in GHG emissions; however, it would result in a 1-2% increase in customer rates, relative to PG&E. The higher cost may also increase the opt-out rate of the program.

All three scenarios would meet or exceed current State requirements for renewable energy content in Year 1. In the ten-year study period, Scenarios 1 and 2 assumed an increase in renewable energy content to 50% and 75% respectively after 2020. Scenario 2 assumes an increase in GHG-free content. As a result, the GHG emissions of both Scenarios 1 and 2 are projected to decrease over time. The GHG emissions from PG&E’s energy content is also assumed to decrease over time, due to increasing State requirements for renewable energy and other factors.



ECONOMIC IMPACTS

A key potential benefit of a CCE program is its ability to promote local economic development through investment in energy programs and contracts with locally constructed renewable generating infrastructure. The table below illustrates the breakdown of projected jobs created and economic impacts that would occur.

Jobs are expressed in terms of full-time equivalent (FTE) throughout one year (1 FTE = 2080 hours). Jobs during construction will end following project completion. Operating and maintenance jobs are quantified separately. Estimates are based on a projected development of 330 MW of renewable generating capacity within the state and region from PCE.

Additionally, through a Feed-In-Tariff (FIT) program, the study projects the additional creation of 370 jobs during construction of 20 MW of locally situated renewable generating capacity (assumed over 5 years).

	JOBS	EARNINGS (\$ - MILLIONS)	OUTPUT (\$ - MILLIONS)
During construction	8000-10000	460-590	1150-1325
During operating years (annual)	80-130	5-10	10-20
Peninsula Clean Energy staff	10-30	1-3	3-9
	8090-10160	466-603	1163-1354

CONCLUSIONS

Based on the results of the Technical Study and Pacific Energy Advisor’s experience with other CCEs in California, it is projected that PCE would be operationally viable under a variety of electric supply options that are anticipated to yield both customer rate savings and environmental benefits. By investing in local renewable energy development, new energy programs and clean technology, PCE can also produce additional “green” jobs and contribute to the local economy.

¹ For the purposes of the study, potential purchases from coal-fired and nuclear generating resources were not included in the supply scenarios for PCE.

² For an average residential PCE customer. Average monthly usage for PCE residential customers is approx. 450 kWh.