

# Clean Energy & Jobs Oakland



## **Lower Electricity Bills Possible With Community Choice**

A Community Choice program needs to be competitive with PG&E to be economically viable, that is, so that customers do not opt out of the Community Choice program for cheaper PG&E electricity bills. This document shows how development of local renewable energy assets is key not only to economic health and clean energy jobs in a community, but also to providing electricity bills lower than PG&E's.

Here are some of the main points:

- It's very hard to compete with PG&E by purchasing renewable energy on the market
- Building local renewable electricity sources results in predictable, stable costs
- Energy efficiency and demand reduction are much cheaper than generating electricity
- Reducing energy demand reduces electricity bills
- Cutting peaks in demand cuts the cost of electricity

### **Economics of Market Purchased Electricity**

A Community Choice program would have an extremely difficult time competing with PG&E on the basis of buying renewable energy on the open market. In this case, the Community Choice program is generally trying to purchase a richer renewable portfolio of energy than that supplied by PG&E. California certified renewable energy is significantly more expensive than the electricity sourced by PG&E from large hydro facilities, (heavily-subsidized) nuclear power plants, and aging gas-fired power plants.

If the Community Choice program is using a third-party broker to purchase renewable energy, the brokerage fee adds to the difficulty of matching PG&E rates.

Hence, it is very difficult for a Community Choice program to purchase electricity at rates that can meet or beat PG&E's. This is true even if PG&E might be paying a higher price for the renewable 20% of its portfolio than what the Community Choice program might be able to negotiate for its renewable energy.

For example, the San Francisco Public Utilities Commission estimated that in 2012 the average rate of a 20% renewable portfolio purchased through Shell Energy North America for its CleanPowerSF program would be \$0.097/kWh compared to PG&E's estimated rate of \$0.07/kWh. (Nevertheless, for the last two years, Marin Energy Authority has had rates through Shell Energy roughly at parity with PG&E's, according to recent presentations. It's not clear how this parity has been achieved.)



For more information on the Clean Energy & Jobs Oakland campaign, see <http://www.localcleanenergy.org/policy-platform/campaign2012>.

The competitive position of a Community Choice program is challenged by a charge called the Power Charge Indifference Adjustment (PCIA) that Community Choice customers have to pay to reimburse PG&E for stranded assets. Stranded assets are investments PG&E made on behalf of customers that it has lost to a Community Choice program. The PCIA rates are set by the California Public Utilities Commission. The rates decrease to zero over a period of about seven years, but have a significant impact on Community Choice utility bills in the early years of a Community Choice program.

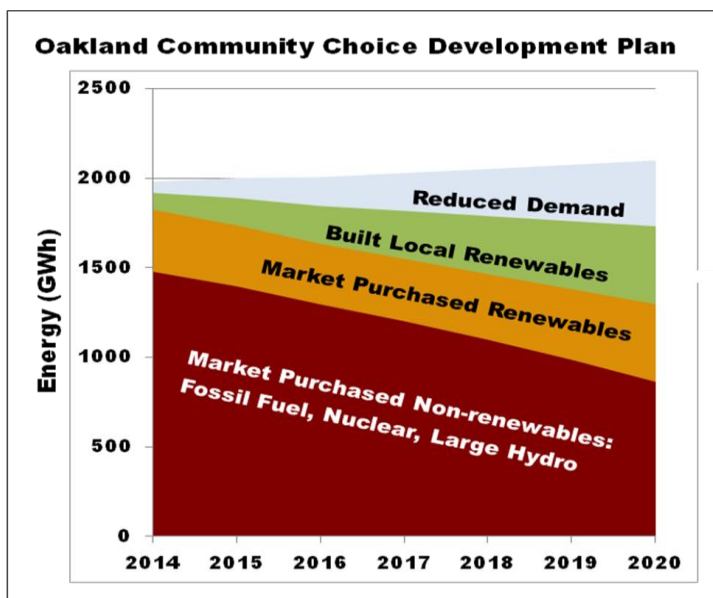
### Economics of Locally-Built Energy Resources

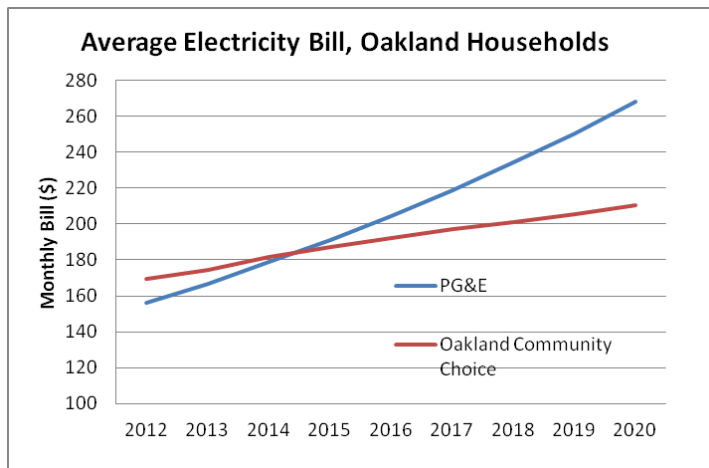
*The key to being competitive with PG&E rests with renewable energy assets that are built by the Community Choice program over time.*

For example renewable electricity generating assets have constant costs over their lifetime (20 to 30 years) compared to the historical 7% per year price increases of PG&E, which are expected to increase in the near future. For a Community Choice program as a whole, the installation of electricity generation capacity is similar to installing renewables on a single rooftop: it provides electricity at a levelized cost per kWh (the cost of design, equipment, labor, financing, and so forth amortized over the lifetime of the equipment) that is constant over time, and which therefore is soon cheaper than PG&E power, even if it is not cheaper on day one.

Even more significant are energy efficiency assets that reduce electrical energy consumption. Energy demand reduction has a levelized cost of about one-fourth to one-half that of new renewable energy generation. This means that investments in energy efficiency have big payoffs that reduce the size of utility bills. Demand reduction is a therefore key aspect of a Community Choice program, while of little importance to an energy supplier (like PG&E).

Let’s look at the impact on electricity bills of the Oakland [Community Choice 2020 Development Plan](#). The plan calls for electricity demand reduction reaching 18% by 2020. It also calls for a 50% renewable portfolio by 2020, half of which is supplied local renewable assets. The following two graphs show the projected energy mix of the 2020 Development Plan and its effect on electricity bills.





The second graph compares two scenarios: the monthly electricity bill for an average 600 kWh PG&E customer as it would change over time to 2020 and the monthly electricity bill for an average 600 kWh Community Choice customer as demand reduction and new local renewables are implemented according to the Oakland Community Choice 2020 Development Plan out to the year 2020.

The graph shows that even if on day one of a Community Choice program (before any local energy resources have been built) the electricity bills are higher than PG&E's, that over time, as demand reduction and local generation assets are built, Community Choice bills will become increasingly competitive with PG&E's.

The calculation for this graph starts with a typical Marin Energy Authority Community Choice ratepayer's bill for a 600 kWh per month household. The bill demonstrates the breakdown of charges on a Community Choice bill: in this case, generation charges (\$61), distribution charges (\$96), and the PCIA charge (\$12). Because Marin Energy Authority generation rates are currently at parity with PG&E rates (an average of \$0.10/kWh in this rate class), a PG&E customer would pay \$156 and an MEA customer would pay \$169 (due mostly to the PCIA charge).

These numbers are the starting point for projecting electricity bills to the year 2020 assuming two scenarios: the PG&E scenario (which would be the same in Oakland as in Marin) and the Oakland Community Choice 2020 Development Plan scenario. The calculation is shown in the Appendix.

To calculate the PG&E case, the bill simply increases by 7% each year. This is the average rate of increase per year for PG&E electricity rates over at least the last 10 years

To calculate the Oakland case, the following assumptions are made:

- That we reach 18% energy demand reduction by 2020 (per the 2020 plan)
- That the levelized cost of energy efficiency is about \$0.04 per kWh
- That the levelized cost of renewable electricity (both locally developed and purchased) will remain constant over the next 8 years at about 10% higher than PG&E's average 2012 rate of \$0.10 per kWh (probably a high estimate because renewable electricity costs have been steadily dropping over the last decade)
- That the cost of non-renewable electricity on the market will increase at 7% per year, the same as PG&E's historical rate increase of 7% per year

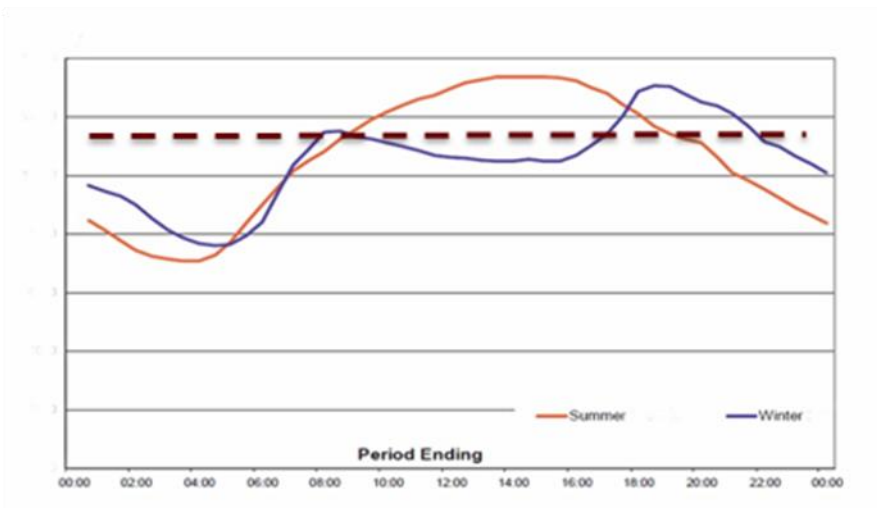
- That electricity distribution charges for all ratepayers would increase by PG&E's 7% per year
- That the PCIA charge diminishes to zero in seven years (a conservative estimate, it might decrease quicker)

Under the very minimal Oakland Community Choice 2020 Development Plan, the average utility bill starts out a bit higher than PG&E before the start of the program in 2012 (about 3%), *but very soon becomes lower than PG&E and becomes increasingly less expensive as time goes on.* This graph shows the power of energy efficiency savings and fixed cost renewable generation to lower electricity bills even without any more sophisticated optimizations.

### Additional System Optimizations

The previous section shows how reducing energy use through energy efficiency and building local renewable energy generation can lead to reduced utility bills compared to PG&E. However, a Community Choice program, when properly designed, can go yet farther to optimize the energy system, and reduce costs.

For example, demand reduction technologies can be used to reduce peak loads, as illustrated in the following illustration.



The illustration shows how electricity demand varies throughout the day in a typical Northern California city. In summertime the peak load occurs in mid afternoon when air conditioners are in heavy use. In wintertime the peak shifts into the early evening when people are typically turning on the lights.

To meet peak load conditions requires generating capacity that might sit idle during other parts of the day. This unused capacity increases the overall cost of electricity. Matching generating technology to load and reducing peak loads means we can more efficiently use less generating capacity. For example, shaving off the peak demand, as shown by the dotted line, means we need less generating capacity to serve the community.

Energy efficiency, energy storage, demand response (modifying demand to match supply conditions), and other demand reduction assets can be used to shape and reduce peak load. In this way, an integrated and optimized Community Choice energy program (as opposed to a simple market purchase program) can lower the overall price of electricity. These savings can, in turn, be passed on to ratepayers through lower electricity rates and lower bills.

## Appendices

The graph of comparative energy bills in this document is based on the following sources.

- Breakdown of costs on a 600 kWh per month 2012 Community Choice energy bill from MEA
- Spreadsheet calculation of bill costs out to 2020.

### Breakdown of a Community Choice Electricity Bill

This chart, taken from a Marin Clean Energy presentation, June 2012, shows basic generation rate parity between MCE Light Green and PG&E

Residential Electric Fees	MCE Light Green	PG&E	Cost Difference
Generation	\$37.26	\$38.21	(\$0.95)
Transmission, Distribution & Other Charges	\$51.45	\$51.45	-
PG&E Exit Fees	\$4.80	-	\$4.80
<b>Total Cost</b>	<b>\$93.51</b> (50% Renewable)	<b>\$89.66</b> (20% Renewable)	<b>\$3.85</b>

This section of a 601 kWh electricity bill for MEA shows a PG&E distribution charge of \$96.85 and a PCIA charge of \$11.54. The average distribution rate across tiers is \$0.161/kWh (\$96.85/601).

ELECTRIC ACCOUNT DETAIL						
Service ID #:	1234567890					
Rate Schedule:	E-1					
Billing Days:	31 days					
<u>Serial</u>	<u>Meter #</u>	<u>Prior Meter Read</u>	<u>Current Meter Read</u>	<u>Difference</u>	<u>Meter Constant</u>	<u>Usage</u>
	123456	0	0	0	1	601 Kwh
<u>Charges</u>						
04/09/2011 - 05/09/2011						
Electric Charges					\$73.94	
Baseline Quantity		215.60000 Kwh				
Baseline Usage		215.60000 Kwh				
101-130% of Baseline		64.680000 Kwh				
131-200% of Baseline		150.92000 Kwh				
201-300% of Baseline		169.80000 Kwh				
CRS					22.71	
Franchise Fee Surcharge					.20	
Net Charges						\$96.85
The net charges shown above include the following component(s). Please see definitions on Page 2 of the bill.						
Transmission					\$9.76	
Distribution					54.60	
Public Purpose Programs					9.19	
Nuclear Decommissioning					.39	
DWR Bond Charge					3.03	
2011 Vintage Power Charge Indifference Adj.					11.54	
Ongoing CTC					5.30	
Energy Cost Recover Amount					2.84	
Franchise Fee Surcharge					.20	
<b>TOTAL CHARGES</b>						<b>\$96.85</b>

This section of the same 601 kWh electricity bill for MEA shows generation charges of \$62.52 plus an additional charge of \$6.01 for the “deep green” option, totaling \$68.53. The average generation rate across tiers is \$0.10/kWh (\$62.52/601 kWh).

Pacific Gas and Electric Company		WE DELIVER ENERGY.™		
THIRD PARTY ENERGY CHARGES FOR:		MARIN CLEAN ENERGY 781 LINCOLN AVE STE 320 SAN RAFAEL CA 94901 (888) 632-3674		
MARY GREEN 123 STREET AVENUE SAN RAFAEL CA 94901				
<b>THIRD PARTY ELECTRIC DETAIL</b>				
Service ID #:	1234567890			
ESP Customer Number:	1234			
Billing Days:	31 days			
	Prior Meter Read	Current Meter Read	Difference	Meter Constant
	0	0	0	1
				Usage 601 Kwh
<b>Charges</b>				
Rate Schedule: RES-1 04/09/2011 - 05/09/2011				
		601.00000 Kwh	@ \$0.010	6.01
DEEP GREEN - TOTAL		215.60000 Kwh	@ \$0.037	7.98
BASELINE - TOTAL		64.60000 Kwh	@ \$0.045	2.91
101-130% OF BASELINE -		150.92000 Kwh	@ \$0.134	20.22
TOTAL		169.80000 Kwh	@ \$0.165	31.41
201-300% OF BASELINE -				
TOTAL				
Net Charges				\$68.53
MCE charges for clean, renewable energy replace PGE electric generation charges. PG&E still charges for delivering electricity to you. There are no new or increased charges. Questions? Call 888-632-3674 or visit marincleanenergy.com				
<b>Taxes and Other</b>				
				\$0.17
Energy Surcharge				
TOTAL CHARGES: Marin Clean Energy				\$68.70

### Projected Electricity Bills to 2020

The following spreadsheet shows the calculation of electricity bills yearly to the year 2020, starting with PG&E prices and rates for distribution charges in 2012 on a 600 KWh monthly bill, as well as the PCIA charge for such a bill. Assumptions of the calculation are discussed in the document.

<b>Electric Utility Bills Comparison*</b>									
Note: The percentages for different parts of the bill are taken from the Oakland Community Choice 2020 Development Plan									
<b>Year</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>
Projected Demand (KWh)	600	600	600	600	600	600	600	600	600
% CCA Demand Reduction	0.0%	2.5%	3.3%	5.7%	8.2%	10.5%	12.9%	15.3%	17.6%
CCA Demand Reduction	0	15	20	34	49	63	77	92	106
% CCA Local Renewables	0.0%	4.7%	4.8%	7.7%	10.5%	13.2%	15.8%	18.3%	20.7%
CCA Local Renewables	0	28	29	46	63	79	95	110	124
% CCA Non-local Renewables	20.0%	14.8%	17.3%	16.8%	16.7%	17.0%	17.7%	18.9%	20.5%
CCA Non-local Renewables	120	89	104	101	100	102	106	113	123
% CCA Non-renewables	80.0%	78.0%	74.7%	69.8%	64.6%	59.3%	53.5%	47.5%	41.1%
CCA Non-renewables	480	468	448	419	388	356	321	285	247
CCA Resulting Demand	600	585	580	566	551	537	523	508	494
Price of CCA Demand Reduction	\$0.00	\$0.60	\$0.79	\$1.37	\$1.97	\$2.52	\$3.10	\$3.67	\$4.22
Price of CCA Local Renewables	\$0.00	\$3.10	\$3.17	\$5.08	\$6.93	\$8.71	\$10.43	\$12.08	\$13.66
Price of CCA Non-local Renewables	\$13.20	\$9.77	\$11.42	\$11.09	\$11.02	\$11.22	\$11.68	\$12.47	\$13.53
Non-renewables Rates with yrly escalator (/kWh)	\$0.10	\$0.11	\$0.11	\$0.12	\$0.13	\$0.14	\$0.15	\$0.16	\$0.17
Distribution Rates with yrly escalator (/kWh)	\$0.16	\$0.17	\$0.18	\$0.20	\$0.21	\$0.23	\$0.24	\$0.26	\$0.28
Price of CCA Non-renewables	\$48.00	\$50.08	\$51.31	\$51.30	\$50.81	\$49.90	\$48.17	\$45.76	\$42.37
Price of CCA Distribution	\$96.60	\$100.78	\$106.95	\$111.59	\$116.24	\$121.26	\$126.27	\$131.39	\$136.76
PCIA Charge on CCA bill	\$11.54	\$9.89	\$8.24	\$6.59	\$4.94	\$3.29	\$1.64	\$0.00	\$0.00
Residential Electric Load							600 kWh		
Price of Energy Efficiency							\$0.04 /kWh		
Avg. Price of Renewable Electrical Energy (Generation Rate) in 2012							\$0.11 /kWh		
Avg. Price of Non-renewable Electrical Energy (Generation Rate) in 2012							\$0.10 /kWh		
Avg. Price of Distribution in 2012							\$0.16 /kWh		
PG&E Yearly Rate Increase (for Generation and Distribution)							7%		
<b>Year</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>
PG&E	156	167	179	191	204	219	234	251	268
Oakland Community Choice	\$169	\$174	\$182	\$187	\$192	\$197	\$201	\$205	\$211

\* Based on initial prices taken from a 600 MW Marin Residential Example