City and County of San Francisco

Office of the Controller – Office of Economic Analysis

Contract with Shell Energy for the CleanPowerSF Program: Economic Impact Report

Item #111340

Office of Economic Analysis

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Introduction

- The proposed legislation would authorize the San Francisco Public Utilities Commission (SFPUC) to contract with Shell Energy to procure 100% renewable electricity, for a set of households in the city, for 4.5 years.
- In 2004, the City established a Community Choice Aggregation (CCA) program. The implementation plan for the program, called CleanPowerSF, was filed with the California PUC in March, 2010.
- Community Choice Aggregation is a State law that allows local governments in California to directly contract for electricity on behalf of residents and businesses.
- If the legislation is adopted, the SFPUC will complete the contract with Shell Energy, and CleanPowerSF will use the purchased energy to initially serve residential electricity customers in San Francisco.

How CleanPowerSF Would Work

- When a CCA such as CleanPowerSF is established, current customers of the incumbent electricity provider (PG&E, in this case) will be enrolled into the CCA program automatically, unless they opt-out of the program.
- As provided by State law, customers have multiple opportunities to opt-out of a CCA, at no cost. State law requires two opt-out notices to be sent within 60 days prior to enrollment, and two sent within 60 days after enrollment.
- The SFPUC may establish an opt-out fee for customers wishing to opt-out at a later time. Any such fee is not part of this proposed legislation, but will be set as part of normal rate setting in the future, per the City Charter.
- A CCA, such as CleanPowerSF, may only provide electricity generation services. PG&E would continue to provide electricity transmission and distribution services to all San Francisco residents and businesses, and would continue to handle billing.
- Rates for electricity transmission and distribution will continue to be established by other regulatory agencies, as at present.

CleanPowerSF and Long Term Energy Policy

- Community Choice Aggregation (CCA) has been part of the City's energy and environmental policy for several years.
- By establishing a CCA, the City has created a mechanism to control the sources of electricity used by residential customers in San Francisco. CCA is one tool available to the City to meet its climate policy goals.
- In the future, CleanPowerSF could acquire its own renewable generation facilities. This could provide customers with stable, competitive rates at some point in the future.
- Without an operating CCA, it would be impossible for the city to build and operate its own renewable facilities for households and businesses.
- Nevertheless, at program launch, the electricity to be provided to customers by CleanPowerSF will come entirely from Shell Energy, and not from facilities owned by the City.
- For this reason, this report does not consider the economic or environmental implications of any potential future acquisition of renewable generation facilities by the City.

Renewable Energy to be Provided by CleanPowerSF

- The SFPUC is planning a Phase I roll-out of CleanPowerSF to approximately 50-90,000 households in San Francisco. Commercial and industrial customers will be offered the service, on an opt-in basis, at this stage.
- SFPUC and Shell Energy, not PG&E or the California SFPUC, would decide on the renewable component of the power.
- The proposed legislation and accompanying contract specify that CleanPowerSF's energy will be 100% Renewable. In practice, this means a to-be-determined combination of:
  - Bundled power: renewable power that is used as it is generated.
  - Firmed and Shaped renewable resources: power that comes from renewable assets paired with other resources.
  - Transferrable renewable energy credits alone

Consumer Costs

- While the contract does not commit the SFPUC to specific rates, it does include current price premiums for various types of renewable power. It is anticipated that final rates will closely align with these current prices.
- According to the SFPUC's most recent market research and modeling, a targeted opt-out strategy focused on portions of the city would likely achieve a participation rate of slightly more than 50% to achieve a 30 MW target size associated, with approximately 90,000 households. This model would minimize the SFPUC's risk of purchasing power it cannot sell to customers.
- A 77% premium over PG&E's electricity generation rates would be required for CleanPowerSF to break even in Phase I. This corresponds to approximately a $18 per month for an average customer, or a 23% increase to a typical combined gas and electricity bill.
- The economic impact assessment in this report is based on the assumption that the SFPUC will adopt rates at this level.
- In addition, consumers that do not opt-out will remain CleanPowerSF customers at the conclusion of the 4.5 year contract with Shell. These consumers face a risk that future rates could be significantly different than those associated with the present contract.
- This report also does not attempt to quantify the risk of rate changes that consumers could face at the conclusion of the contract.

Program Commitments

- The SFPUC proposes a contract and program totaling $19.5 million, of which $13.5 million would be used for reserves, and $6 million for environmental programs.
- The contract calls for the City to set-aside $13.5 million of reserves for the program:
  - $7 million for collateral to compensate Shell in the event the City terminates the program, and Shell must sell the power it purchased at a loss.
  - $4.5 million in a cash account to ensure Shell's monthly expenses are met.
  - $1.5 million in operating reserves for operating contingencies and customer services collateral.
  - $0.5 million for start-up costs and potentially fund termination payment for Noble Americas third-party customer services contract.
- To fulfill the program's long term commitment to the City's goals of promoting job creation and enhancing the environment, the SFPUC will allocate $6 million over FYE 13 and FYE 14 towards various programs for the benefit of CleanPowerSF program participants over the first four and a half years of the program. These programs include:
  - $2 million for energy efficiency programs, available to CleanPowerSF customers only.
  - $2 million for GoSolarSF incentives set-asides, available to CleanPowerSF customers only.
  - $2 million for studies to fast-track development of new in-city generation resources for the use of CleanPowerSF.

Potential Fiscal Impact to the General Fund and the City

- Ordinance # 111371 would appropriate the $19.5 million from the Hetch Hetchy Power Enterprise fund balance.
- As a condition of approval of the contract, the SFPUC has required that the Hetchy Enterprise fund balance be maintained at at least 15% of annual revenues or expenditures, or result in debt service coverage of 1.25 times annual debt service.
- This is unlikely to be possible without a rate increase to the General Fund departments that use Hetchy power. Currently, General Fund departments pay a rate for electricity that is below the cost of production.
- While the contract amounts are refundable, if not used, these funds are still lost to the City for at least the 4.5 years of the contract. They also involve the City absorbing some financial risk for the success of the program.
- The City's risk could exceed $13.5 million only if it chose to terminate the program while it was operating smoothly, and energy prices had fallen significantly.

Economic Impact Factors

- The proposed legislation, and associated contract, would affect the San Francisco economy in three primary ways:

1. By changing electricity prices for residential customers who remain in the program, the legislation affects how much of the disposable income of residents will be spent within the city.
   - Higher prices will encourage these consumers to reduce their energy consumption.
   - Nevertheless, it is highly unlikely that the price increases will stimulate so much conservation that aggregate electricity payments will fall.
   - Thus, the program will increase the amount consumers, in aggregate, spend on electricity. This will necessarily reduce the amount they have to spend on other things, including consumer purchases within San Francisco.
   - Because Shell Energy does not produce electricity within San Francisco, increased electricity payments flowing to Shell effectively leave the San Francisco economy, reducing the overall local economic impact of resident spending.
2. The investment in energy efficiency and alternative energy programs will promote green jobs and long term reductions in electricity payments, creating economic benefits.
3. Because the program commitments require funds from the Hetchy Enterprise and, indirectly, the General Fund, local government spending will be reduced over the course of the contract.

Economic Impact Assessment: Reduction in Local Consumer Spending

- Based on the market research the SFPUC has conducted, opt-out rates for neighborhoods targeted in the first phase are expected to range from 45-60%, depending on customer tier. The average opt-out rate, across all tiers, would be slightly less than 50% (see Appendix).
- If the opt-out is significantly less than what the SFPUC has anticipated, CleanPowerSF would have to purchase additional power on the open market, at an unknown price, to make up the deficit.
- At the lower anticipated opt-out rates, and assuming CleanPowerSF is able to meet any additional power requirements by acquiring power on the market at the same price Shell is providing it, customers remaining with CleanPowerSF during Phase I would spend an additional $13 million per year on electricity.
- As this money would be exiting the city's economy, it would represent a decline in consumer spending in San Francisco, with a direct effect on businesses that are supported by consumer spending.

Economic Impact Assessment: Calculation of Consumer Spending Impact

CleanPowerSF Load After Opt-Out (MWh)[1]	269,472
PG&E rate per kwh[2]	$0.0723
CleanPowerSF rate per kwh[3]	$0.1281
CleanPowerSF rate premium per kwh[4]	$0.0558
Rate Premium as % of Average Electrical Bill[5]	37%
Elasticity of Demand[6]	-0.322
% Reduction in Consumption from Higher Rate[7]	-12%
Load After Opt-Out and Consumption Reduction[8]	237,367
Additional Electricity Expenditure by CleanPowerSF Customers[9]	$13,245,073

1. See Appendix.
2. PG&E's 2011 generation rate is $0.06691/kWh. In its financial model, the SFPUC anticipated an 8% escalation in PG&E rates for 2012, leading to $0.0723/kWh.
3. CleanPowerSF's 2012 rate assuming, as the SFPUC's model does, a 77% premium above PG&E's rate.
4. CleanPowerSF's rate minus PG&E's 2012 rate.
5. The rate premium expressed as a percentage of a typical customer's total electrical bill. This is the price effect that will influence consumption behavior
6. The elasticity of demand is based on statistical studies of how electricity consumption responds to price changes in California. See M.A. Bernstein and J. Griffin, "Regional Differences in the Price Elasticity of Demand for Energy", Rand Corporation, 2005.
7. The change in consumption given the price increase and the elasticity of demand. It equals the price change times the elasticity.
8. The final expected demand for electricity from Phase I CleanPowerSF consumers, after the expected opt-out and reduction in consumption from the higher rate.
9. Consumers' additional payment equals CleanPowerSF electricity sales multiplied by its rate premium.

Economic Impact Assessments: Program Costs

- The $19.5 million in City security payments on behalf of Shell Energy that are called for in the contract work, and additional program costs, total $4.3 million a year over 4.5 years.
- As stated earlier, the Hetch Hetchy fund balance is the planned source for these funds. The SFPUC has explicitly tied the adoption of the contract to maintaining the fund balance at at least 15% of annual revenues, expenditures, or result in debt service coverage at 125% annual debt service.
- Given that the Hetchy fund balance is legally required to be maintained, it is reasonable to assume that restoring the $19.5 million to Hetchy will reduce local government spending in one way or another.
- The $6 million appropriation for energy efficiency, GoSolarSF, and local build-out studies represent both a reduction in government spending and an equivalent increase in construction and professional services spending.
- In addition, to the extent the GoSolarSF subsidy is utilized by property owners who are CCA customers, it will stimulate further private investment in construction. $2 million in GoSolarSF funding could lead to an estimated 100 new installations, involving $3 million in new investment and $100,000 a year in electricity savings for CCA customers.

Economic Impact Assessment: REMI Model Results

- The OEA's REMI model of the San Francisco economy was used to simulate:
  - $13 million annual reduction in local consumer spending (higher CleanPowerSF rates)
  - $4.3 million reduction in local government spending (security and program costs)
  - $2 million increase in professional services spending (local build-out study)
  - $2 million increase in construction and retail spending (energy efficiency)
  - $2 million provision for GoSolarSF spending, stimulating a $3 million increase in private construction investment, a decline of $3 million in offsetting consumer spending, and $0.1 million annual additional consumer spending from electricity savings. (GoSolarSF)
  - Longer-term (post 4.5 years) benefits of the energy efficiency and GoSolarSF funding were not included in the model.
- The net effect of these impacts is a loss of approximately 95 jobs and a reduction of the size of the city's economy of approximately $8 million per year.
- The job losses would be spread across sectors of the city's economy that are sensitive to consumer spending, such as retail trade and personal services, as well as in the public sector.
- To put these figures into context, they represent a net loss of 0.01% of the city's economy and total employment.

Risk Mitigation:
Fiscal Risks to the City

- The proposed legislation would impose both fiscal risks and economic costs on the city, as detailed earlier.
- As mentioned earlier, the SFPUC's model assumes a 23% increase over the average PG&E power bill would lead to financial break-even for CleanPowerSF.
- If opt-out rates were significantly lower than the SFPUC has anticipated, the program would need to purchase additional energy products to cover the additional consumption. In this event, rates would require adjustment to bring expenses in line with revenues.
- In the event the program were generating revenue, the City could reduce its fiscal risk by requiring any CleanPowerSF profit to be restored to the General Fund and the Hetchy Enterprise, up to $19.5 million.
- Alternatively, the City could require CleanPowerSF set its residential rates to cover the required security payments and restore the Hetchy fund balance, without any burden on the General Fund. This would increase the CleanPowerSF rate premium, however, and possibly lead to higher opt-out rates.

Risk Mitigation: Reducing the Economic Cost

- Opt out systems are imperfect measures of consumer preference; inevitably some consumers who do not wish to be enrolled will find themselves paying higher rates.
- The State law governing CCA does not allow a locality to change the opt-out process into an opt-in process. In addition, the law requires that all residential customers are offered service on an opt-out basis.
- However, localities are not required to offer the program to all residents at the same time.
- The City could reduce the economic problems associated with an opt-out program, and the overall economic costs of the program, by initiating the program with a small group of customers that are likely to favor it, and allow other non-targeted customers to voluntarily opt-in.
- In this way, the program would rely more on voluntarily opting-in during its initial phase.

Risk Mitigation:
Balancing the Economic Burden of Environmental Policy

- One benefit of using CCA to provide 100% renewable power is environmental: it will reduce the city's carbon footprint by increasing the use of electricity from renewable sources. In addition, the higher rates paid by CleanPowerSF customers will encourage conservation, and such customers are eligible for energy efficiency grants from the SFPUC.
- However, the opt-out feature of CCA creates a situation in which only some residents bear the cost of reducing the city's carbon footprint.
- San Francisco is the only major city in California that does not have a residential utility user tax (UUT). Such a tax, imposed only on consumers that do not choose a 100% renewable option, could spur conservation among all residents, while reducing the effective price premium associated with renewable energy.
- A residential electricity tax, combined with program structure that relies more on voluntary opting-in, could reduce customer costs, improve consumer choice, better balance the cost burden of climate policies, and still lead to significant reductions in the city's carbon footprint.
- The economic harm of a higher UUT could be mitigated with an offsetting reduction in other taxes or fees paid by city residents.

Conclusions

- The OEA projects that the proposed legislation would lead to approximately 95 fewer jobs than the city would otherwise experience over the 4.5 year life of the contract.
- These economic costs are small, however, in the context of San Francisco's $100 billion economy, i.e. 0.01% of the city's employment base and GDP.
- The City could reduce its own risk by either requiring CleanPowerSF to return excess fund balances to offset the City's set-aside reserves, or by simply setting rates to ensure ratepayers, and not the City, cover the required security payments.
- The negative economic impacts associated with the program could be reduced by structuring it in a way relies more on voluntary opting-in.
- Finally, combining a greater reliance on opting-in with a residential UUT, applicable only to consumers who do not opt-in, could reduce the economic cost, better balance the burden of the city's environmental policy, and still offer significant environmental benefits.

Appendix: Impact of Expected Opt-Out Rates

Tier	Phase I Load[1]	Expected Opt-Out[2]	Load After Opt-Out[3]
Tier 1	109,579	45%	60,784
Tier 2	45,870	43%	25,955
Tier 3	84,109	45%	46,676
Tier 4	62,242	55%	27,951
Tier 5	49,087	62%	18,658
CARE 1	16,805	57%	7,161
CARE 2	6,986	57%	3,020
CARE 3	24,683	60%	9,826
All-Electric customers	125,187	45%	69,441
Total	524,548		269,472
		-49%	<--Average opt-out rate

1. PG&E's current electricity load, or demand for electricity in Megawatt-hours, by customer tier, estimated by the SFPUC for the areas within the city where it expected to roll out CleanPowerSF during Phase I.
2. The opt-out rate that is expected for each tier, based on the SFPUC's market research in June 2012. The average opt-out rate is expected to be 49% across all tiers.
3. The remaining CleanPowerSF load to be served after the opt-out.

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