



Together, Building
a Better California

DRAFT

Energy Efficiency Business Plan

**Cross-Cutting Segment Chapter:
Financing**

Draft – October 18, 2016

PG&E Cross Cutting – Finance Chapter *Draft*

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A. PG&E's Energy Efficiency Finance Vision

PG&E uses a variety of financing options, or “transaction services”, to enable customers across PG&E’s portfolio to overcome barriers related to making demand side energy investments. Offerings like On-Bill Financing (OBF) have, for the past few years, provided an initial path for customers to better access financing options. Over the next decade, PG&E aims to support the availability of new financing structures that can spur greater investment in energy efficiency and ease customers’ decision-making process. Further, PG&E aims to support an expanded supply of affordable funding by making investments in energy efficiency attractive for investors.

PG&E has identified two primary goals:

- Overcome customer transaction barriers to Investment.
- Increase the supply and access to affordable capital.

Greater detail on the intervention strategies supporting these goals can be found in *Section F: PG&E's Approach to Achieving Goals*.

Over the forthcoming eight-year period, PG&E is proposing to spend X dollars to achieve these goals. Annual budgets are provided in *Section C*.

B. PG&E's Energy Efficiency Finance Proposal Compared to Past Program Cycles

PG&E will build on the success of current offerings, such as OBF, while also looking to develop new offerings in the future. Strategies to realize the vision include:

Build customer interest and confidence in energy efficiency investment: While offerings like OBF have attracted customers in the past, OBF has been narrow in its focus with limits to loan amounts and the energy efficiency measures available for investment. PG&E plans to employ new tactics to spur customer investment including third-party certification of OBF-Alternative Pathway loans, and financing options at the point of sale.

Test new financing structures: Traditional financing structures can present challenges to energy efficiency financing.¹ Split incentives for landlords and tenants, commercial loan structures that require approval to add new debt, and the complex and lengthy process involved in obtaining a loan all act as deterrents.² On-Bill Repayment (OBR) through a central servicer is a new financing structure being tested by PG&E and the other California IOUs. PG&E aims to supplement OBR with Residential OBR for low value transactions. Additionally, PG&E plans to assess alternative financing structures such as metered energy efficiency, and tariffed financing.

Increase supply and access to affordable capital: Many customers lack access to affordable capital with which to finance energy efficiency measures.³ Small commercial enterprises often have difficulty securing loans through traditional lenders, and public agencies often face barriers raising sufficient capital to finance large scale measures.⁴ Tactics to expand the availability of affordable capital include:

- Credit enhancement pilots offers in partnerships with CAEATFA.
- Raising caps and other parameters for OBF loans.

¹ Freehling, Joel and Brian Stickles. Energy Efficiency Finance: A Market Reassessment. ACEEE White Paper. February 2016. p. 6 <http://aceee.org/sites/default/files/market-reassessment-0216.pdf>

² Freehling, Joel and Brian Stickles. Energy Efficiency Finance: A Market Reassessment. ACEEE White Paper. February 2016. p. 6 <http://aceee.org/sites/default/files/market-reassessment-0216.pdf>

³ Freehling, Joel and Brian Stickles. Energy Efficiency Finance: A Market Reassessment. ACEEE White Paper. February 2016. P. 10 <http://aceee.org/sites/default/files/market-reassessment-0216.pdf>

⁴ See Public Sector chapter for a more detailed explanation of public agencies’ financing hurdles, p. 19

- Replenishing the pool of OBF funds with third party capital facilitating larger transactions.

Key Learnings from Recent EM&V Reports of California’s Finance Programs

Over the last decade, governments, utilities, and other entities have begun to offer programs to finance energy efficiency energy efficiency projects. The popularity of these programs is growing because the up-front cost of energy efficiency improvements can present a barrier to their adoption.⁵ Financing programs present a way to overcome that barrier.

PG&E began offering OBF to nonresidential customers in 2010,⁶ following direction from the CPUC⁷. In subsequent years, funding for financing programs has grown, offerings have expanded, and the IOUs plan to initiate pilots that will target a range of specific types of customers (e.g., multifamily housing).⁸

1. Key learnings: importance of marketing, education, and outreach

- Many customers—residential and nonresidential—are not familiar with energy efficiency financing programs.^{9 10 11}
- **Vendors/contractors play an important role in financing programs, but training and oversight are important.** Because they have face-to-face contact with customers, contractors play an important role in “selling” energy efficiency financing programs¹². Likewise, many vendors say OBF is important in enabling them to sell energy efficiency projects to customers who otherwise would not be able to afford them¹³. However, some contractors who are aware of energy efficiency financing options fail to promote them to customers, either because they do not see it as a dimension of their business or because they do not think customers need it.¹⁴
- **Quality assurance and quality control are important in the IOU-contractor relationship.** Customers may hesitate to trust contractors as information sources about loan products,¹⁵ however, they may more readily accept financing options once they know they are associated with a utility.¹⁶ Other California OBF programs have faced issues with vendors who misled customers that OBF is “free” and not a loan or installing low quality projects that did not produce energy savings benefits for them.¹⁷

2. Key Learnings: potential for financing programs to expand uptake of energy efficiency measures

- **Financing programs address a clear need.** Residential customers report that high up-front costs present a significant barrier to the uptake of residential energy efficiency measures, and homeowners say that

⁵ Mulholland, Carol, Linda Dethman, Allie Marshall, and Cynthia Kan. Energy-Efficiency Financing Customer Research Focus Group Findings. Boston, MA: The Cadmus Group, June 2013. p. 3

⁶ Sempra began their program in 2006, SCE in 2009.

⁷ D.09-09-047 p.285

⁸ <http://www.treasurer.ca.gov/caeatfa/cheef/>

⁹ California Energy Commission, 2015. “California Existing Buildings Energy Efficiency Action Plan.”

¹⁰ Opinion Dynamics 2016

¹¹ Opinion Dynamics and Dunskey Energy Consulting. *PY 2014 Finance Residential Market Baseline Study Report*. Oakland, CA, March 2016.

¹² James et al. 2014, p. 5.

¹³ Horkitz et al. 2016, p. 2.

¹⁴ Opinion Dynamics and Dunskey Energy Consulting. *PY 2014 Finance Residential Market Baseline Study Report*. Oakland, CA, March 2016. p. 38

¹⁵ Mulholland et al. 2013

¹⁶ Kan et al. 2012, p. 36

¹⁷ Kan et al. 2012, p. 50.

energy efficiency financing could help overcome this barrier.¹⁸ A strong majority of nonresidential OBF customers (three-quarters of 76 customers surveyed in 2011-12) reported that they would not have implemented their energy efficiency projects without OBF.¹⁹

- **Default rates for OBF programs are low.**²⁰ This implies that the risk to ratepayers from offering these programs is low.
- **Loan Loss reserves (LLRs) and other credit enhancement measures may be effective market transformation tools.** Credit enhancement attracts lenders to energy efficiency financing programs, but program administrators may be able to reduce or eliminate credit enhancement over time, once lenders are engaged.²¹

3. Key learnings related to program design and operations

- **Streamlining the process of applying for and obtaining financing is important,** for customers²² and contractors.²³ HERO’s simple application process and flexibility on the measures it can pay for have been key factors in its growth.²⁴
- **IOU program managers believe there will be increased energy efficiency adoption** resulting from offering both financing and rebates together than either alone.²⁵
- **Reaching mid- to low-income customers may be difficult.** Many residential customers with low income or credit scores feel it would be difficult to obtain a loan.²⁶
- **Customers report that interest rates are an important decision-making criteria** for single family homeowners.²⁷ However, studies suggest that for participants in PACE programs, which have seen by far the most significant volume in the residential sector, convenience, transferability and the access to funding were the most important factors, with the interest rate only important to a minority of customers.²⁸

C. Sector Level Budget

Over the 10 year period, PG&E is proposing to spend X dollars on finance offerings.

Table 1. Annual Finance Sector Budgets

Year	Budget	% of Portfolio
2018-2024	TBD	TBD

¹⁸ Opinion Dynamics and Dunsky Energy Consulting. *PY 2014 Finance Residential Market Baseline Study Report*. Oakland, CA, March 2016.

¹⁹ Kan et al. 2012, p. 50.

²⁰ James et al. 2014, p. 5; CPUC 2015, p. 117

²¹ James et al. 2014, p. 4

²² James, Laura, Pat McGuckin, Althea Koburger, and Carol Mulholland. *California Joint Utilities Financing Research: Existing Programs Review*. Boston, MA: The Cadmus Group, April 2014.

²³ James et al. 2014

²⁴ James et al. 2014

²⁵ James, Laura, Pat McGuckin, Althea Koburger, and Carol Mulholland. *California Joint Utilities Financing Research: Existing Programs Review*. Boston, MA: The Cadmus Group, April 2014.

²⁶ Opinion Dynamics and Dunsky Energy Consulting. *PY 2014 Finance Residential Market Baseline Study Report*. Oakland, CA, March 2016.

²⁷ California Energy Commission, 2015. “California Existing Buildings Energy Efficiency Action Plan.”

²⁸ James et al. 2014, p. 50

D. Market Overview

All market sectors can enjoy a diverse array of financing opportunities to stimulate energy efficiency investments.

Residential Sector

The need for financing energy-related projects in the near future is significant. Four in ten homeowners said that they are likely to make an energy-related upgrade in the next two years, and 27% are at least somewhat likely to use financing. Over half of homeowners surveyed (54%) agreed that high upfront cost is why they might not make an energy-related upgrade, and a third of homeowners stated that a loan could help overcome the costs. High up-front project costs present a significant barrier to the uptake of residential energy efficiency measures, and homeowners say that energy efficiency financing could help overcome this barrier.²⁹

The market for energy efficiency financing in the residential sector has undergone significant change in recent year with over \$1.2bn of PACE loans being funded since 2014³⁰. PACE's popularity appears to be reaching those customers who previously found difficulty obtaining finance. Many residential customers with low income or credit scores feel it would be difficult to obtain a loan.³¹

Multi-family buildings offer great energy efficiency potential.³² However, split incentives present a barrier to both owners and tenants from investing in energy efficiency measures.

Commercial, Industrial and Agricultural Sectors

Large commercial, industrial and agricultural customers are not necessarily constrained by lack of financing, but rather by the lack of a compelling value proposition for energy efficiency measures. Energy costs typically represent only 2-4% of an operating budget and commercial enterprises generally prefer to reserve the use of debt (access to which is limited by the strength of the balance sheet) to initiatives that support the core business (e.g., manufacturing widgets, providing a service, etc.).³³

The size of an operation generally has a much bigger impact on financing opportunities available to it than the sector in which it falls. Small customers often face high levels of debt, repayment concerns among lenders, elevated transaction costs, and risk-averse owners when considering financing options for energy efficiency upgrades.³⁴

²⁹ CEC, 2016. "Existing Buildings Energy Efficiency Action Plan Draft 2016 Plan Update." p. 62

³⁰ CEC, 2016. "Existing Buildings Energy Efficiency Action Plan Draft 2016 Plan Update." p. 62.

³¹ Opinion Dynamics and Dunsky Energy Consulting. *PY 2014 Finance Residential Market Baseline Study Report*. Oakland, CA, March 2016.

³² Hynek, Don et al. "Follow the Money": Overcoming the Split Incentive for Effective Energy Efficiency Program Design in Multi-family Buildings. ACEEE Summer Study 2012. p. 3
<http://aceee.org/files/proceedings/2012/data/papers/0193-000192.pdf>

³³ Energy Efficiency Financing in California Needs and Gaps Preliminary Assessment and Recommendations Presented to The California Public Utilities Commission, Energy Division p. 41 http://www.harcourtbrown.com/wp-content/uploads/CPUC_FinancingReport_HBC_Jul8v2.pdf

³⁴ Freehling, Joel and Brian Stickle. Energy Efficiency Finance: A Market Reassessment. ACEEE White Paper. February 2016.
<http://aceee.org/sites/default/files/market-reassessment-0216.pdf>

Public Sector

Public sector customers face different incentives in the budgeting process than those in the commercial and residential sectors, creating unique challenges. During the budgeting process, it is often easier to acquire funds to pay higher bills than seek capital expenditures for major improvements.³⁵ Once a public sector property owner has received approval to acquire capital improvements, complex procurement procedures create a disincentive to develop projects.³⁶

E. Trends and Challenges

For some customers, while interest in energy efficiency and other distributed energy resources (DERs) investments exists financial barriers exist, restricting their ability to proceed with the project. Barriers include, but are not limited to:

- **Lenders and customers lack confidence in energy efficiency savings:** While potential lenders are willing to invest in energy efficiency in principle, lenders generally identified “energy savings not materializing” as their greatest risk and welcomed more data to consider during underwriting.³⁷
- **Customers lack interest in financing offerings:** Many energy efficiency financing programs have failed to generate significant customer project volume, often because the primary barrier to energy efficiency adoption is low customer demand, not access to attractive capital.³⁸
- **Capital allocation procedures in non-residential and multifamily sector are difficult.** This can manifest itself in the public sector with restrictions on processes for taking new debt, and in the commercial sector where competing priorities often mean that obtaining internal sources of funding is challenging.
- **Building capital structures are complicated across multiple sectors:** Many lending agreements require consent of the existing lenders before new debt can be taken on. Primary lenders will rarely allow new financing since they cannot be certain that the new debt will not undermine payment of their loans. Even if lenders are open to additional financing, it can be time consuming and costly to obtain the agreements. Additionally, while lenders may be open to projects, small equity holders may not be. Securing agreements from numerous parties drives up costs of transactions and makes deals unprofitable and unpopular for all involved.³⁹
- **Split incentives in tenanted properties (Commercial/Residential Multifamily):** The split incentive manifests itself when tenants pay the utility bills (directly or indirectly), but have no control over capital investments that affect energy consumption. Those few investments that a tenant might make that could impact their utility bill tend not to be completed, as the tenant will be unable to take the improvement with them when they move.⁴⁰

³⁵ Energy Efficiency Financing in California Needs and Gaps Preliminary Assessment and Recommendations Presented to The California Public Utilities Commission, Energy Division http://www.harcourtbrown.com/wp-content/uploads/CPUC_FinancingReport_HBC_Jul8v2.pdf

³⁶ Energy Efficiency Financing in California Needs and Gaps Preliminary Assessment and Recommendations Presented to The California Public Utilities Commission, Energy Division http://www.harcourtbrown.com/wp-content/uploads/CPUC_FinancingReport_HBC_Jul8v2.pdf

³⁷ Kolstad, Leonard. Institute for Market Transformation March 2016 p. 5 <http://www.imt.org/resources/detail/energy-efficiency-finance-for-commercial-buildings-insights-from-lenders>

³⁸ “Energy Efficiency Financing Program Implementation Primer” Lawrence Berkeley National Laboratory. January 2014. p.11 https://www4.eere.energy.gov/seeaction/system/files/documents/financing_primer_0.pdf

³⁹ Freehling, Joel and Brian Stickle. Energy Efficiency Finance: A Market Reassessment. ACEEE White Paper. February 2016. p. 7 <http://aceee.org/sites/default/files/market-reassessment-0216.pdf>

⁴⁰ Hynek, Don et al. “Follow the Money”: Overcoming the Split Incentive for Effective Energy

- **Lack of funding available for low value projects:** Lending for low cost projects is challenging as lenders need to cover the underwriting and administration of loans, resulting in relatively high financing costs. As such, market solutions have focused on larger cost projects.⁴¹
- **Small business credit:** The small commercial market faces high levels of debt, repayment concerns among lenders, elevated transaction costs, and risk-averse owners.⁴²

PG&E describes financial barriers specific to each market sector (Residential, Commercial, Agricultural, Industrial and Public) in each of the market sector chapters.

F. PG&E's Approach to Achieving Goals

In order to achieve the two goals identified in PG&E's energy efficiency financing vision, PG&E has identified three primary strategies.

- Build customer and investor interest and confidence in energy efficiency investment
- Implement new financing structures
- Increase supply and access to affordable capital for demand side energy resources

The next section provides further detail on the selected intervention strategies and exploratory tactics.

Intervention 1 – Build customer and investor interest and confidence in energy efficiency investment

Many energy efficiency financing programs have failed to generate significant customer project volume, often because the primary barrier to energy efficiency adoption is low customer demand, not access to attractive capital.⁴³ Exacerbating this problem is the lack of confidence in whether energy savings will materialize once an investment has been made on the part of both customers and potential lenders.⁴⁴ PG&E has adopted a variety of tactics to build both customer and investor interest and confidence in energy efficiency investments.

Building confidence in projected energy savings is critical when customers are asked to consider paying for an energy efficiency investment over time through a financing mechanism. It requires providing the customer with trusted tools and resources that enables them to clearly understand their investment decision. For example, the Environmental Defense Fund's (EDF) Investor Confidence Project (ICP)⁴⁵, certifies energy efficiency projects by examining a project's baseline, savings calculations and EM&V plan. PG&E is adapting the ICP Commercial Protocol as one pathway to loans under OBF – Alternative Pathway.⁴⁶ For other new financing tools and programs that leverage third party capital, PG&E intends to use the framework developed under the OBF-Alternative Pathway.

Efficiency Program Design in Multi-family Buildings. ACEEE Summer Study 2012. p. 2

<http://aceee.org/files/proceedings/2012/data/papers/0193-000192.pdf>

⁴¹ Horkitz, Karen, Pat McGuckin, Laura James, Christopher Frye, and Hugh Ratcliffe. *HERO Program Profile: Draft Final Report*. Boston, MA: The Cadmus Group, August 2016.

http://www.energydataweb.com/cpucFiles/pdaDocs/1625/HERO%20Program%20Profile_DRAFT%20Final%20Report.pdf

⁴² Freehling, Joel and Brian Stickle. *Energy Efficiency Finance: A Market Reassessment*. ACEEE White Paper. February 2016. p.7 <http://aceee.org/sites/default/files/market-reassessment-0216.pdf>

⁴³ "Energy Efficiency Financing Program Implementation Primer" Lawrence Berkeley National Laboratory. January 2014. p. 11 https://www4.eere.energy.gov/seeaction/system/files/documents/financing_primer_0.pdf

⁴⁴ Kolstad, Leonard. Institute for Market Transformation March 2016 p.5 <http://www.imt.org/resources/detail/energy-efficiency-finance-for-commercial-buildings-insights-from-lenders>

⁴⁵ Investor Confidence Project. Accessed October 13, 2016. <http://www.eepformance.org/>

⁴⁶ Advice Letter 3697-G /4812-E, 3697-G-A/4812-E-A, PG&E's On Bill Financing Alternative Pathway Program p. 2 http://www.pge.com/notes/rates/tariffs/tm2/pdf/GAS_3697-G.pdf

Customers are interested in energy efficiency measures, not taking a loan. Building customer interest is dependent on connecting customers to appropriate financing opportunities at the point of sale/rebate. PG&E will support the statewide financing pilots marketing and outreach plan to recruit and inform project developers and contractors about options for customer energy efficiency financing.⁴⁷ Further, PG&E will continue providing developers and contractors with tools that can help the customer with their investment decision.

Intervention Strategy	Barriers	Example Tactics	Existing, Modified or New	Short, Mid, Long-term
<p>Build customer and investor interest and confidence in energy efficiency investment</p>	<p>Overcome Transaction Barriers to Investment</p> <ul style="list-style-type: none"> Customers and lenders lack confidence in energy savings. Customers lack interest in financing offerings 	<p>Connect customers to financing options at point of sale.</p>	<p>E</p>	<p>S</p>
		<p>Outreach strategy for financing programs focused on contractors to inform them of financing opportunities.</p>	<p>N</p>	<p>S</p>
		<p>Certify offerings from an investor perspective through ICP based protocols (e.g., OBF Alternative Pathway loans)</p>	<p>N</p>	<p>S</p>
		<p>Provide alternative, trusted tools and resources to clearly understand investment decision.</p>	<p>N</p>	<p>S</p>
<p>Partners: CAEATFA, IOUs, Financial Institutions (FI), EDF ICP</p>				

A 2015 survey of approximately 1,300 California homeowners found that about one-third of homeowners were aware of some form of energy efficiency financing.⁴⁸ Focus groups conducted in 2013 with medium-to-large business customers, small business customers, and residential customers in PG&E’s service territory also found that all three groups had limited awareness and knowledge of energy efficiency financing.⁴⁹

Contractors, project developers and PG&E representatives are critical to connecting customers to energy efficiency financing they might otherwise be unaware of. A 2014 assessment of 15 energy efficiency financing programs across the U.S. and in several other countries found that program managers believed contractors were a critical sales channel.⁵⁰ Despite this, a 2015 survey of 156 residential retrofit contractors in California found

⁴⁷ California Hub for Energy Efficiency Financing (CHEEF) Pilot Programs. Accessed 10/13/2016 <http://www.treasurer.ca.gov/caeatfa/cheef/>

⁴⁸ Opinion Dynamics and Dunsky Energy Consulting. PY 2014 Finance Residential Market Baseline Study Report. Oakland, CA, March 2016.

⁴⁹ Mulholland, Carol, Linda Dethman, Allie Marshall, and Cynthia Kan. Energy-Efficiency Financing Customer Research Focus Group Findings. Boston, MA: The Cadmus Group, June 2013.

⁵⁰ James, Laura, Pat McGuckin, Althea Koburger, and Carol Mulholland. California Joint Utilities Financing Research: Existing Programs Review. Boston, MA: The Cadmus Group, April 2014.

that the vast majority (85%) did not promote financing programs to their customers, most often because they did not think their customers needed them or did not think they had capacity to promote them.⁵¹ Most contractors who did promote financing programs were larger companies with developed sales capacities⁵², and even when contractors were aware of multiple financing programs, they often presented only one option at a time to individual customers.⁵³

Intervention 2 – Implement New Financing Structures

Energy efficiency investment opportunities can be difficult for building owners and operators to fund simply due to the complexity and lengthy processes to acquire capital. The funding terms of many commercial properties require approval to add additional debt, and property owners may not qualify for the additional loans necessary to complete an energy efficiency project.⁵⁴ Split incentives, in which landlords may not be inclined to make energy efficiency upgrades to building services when the benefits associated with the resulting energy savings accrue to the tenant, are another potential barrier to energy efficiency investment.

New financing structures may offer an opportunity for customers to access financing, navigate or avoid their own capital investment decision making processes, and solve barriers such as the split incentive. OBR, in which loans provided by non-utility lenders are repaid through a customer's energy bill, has the potential to overcome some of these barriers, providing investors with a secure cash flow stream collected by the utility, and the customer the convenience of repaying the loan as part of their utility bill. Under the statewide financing pilots, the IOUs will test OBR's ability to overcome barriers to energy efficiency investments from both lenders and customers utilizing a consistent statewide process and a single entity as the intermediary between the IOUs and financial institutions.

Additionally, New alternative financing structures exist that could provide a benefit in specific sectors where energy investments have historically been difficult to make, such as tenanted properties. Financing energy efficiency investments by billing utility owners for the metered efficiency yield of an installed measure (e.g., Metered Energy Efficiency Transaction Structure (MEETS)) is one example.⁵⁵ Tariffed financing opportunities, in which investments in distributed energy resources are repaid through a tariff on the customer's bill (differentiated from OBF as the tariff is a service linked to a meter rather than a customer, allowing the obligation to transfer to subsequent owners or renters), offers a solution to split incentives between owners and renters.⁵⁶ PG&E will study the feasibility and opportunity that these structures offer, and whether PG&E can play a role in facilitating their adoption.

PG&E is also working with national partners to help attract lower cost funds to energy efficiency investments from capital markets. These include work on a pilot to stimulate the market for Green Bonds and evaluating

⁵¹ Opinion Dynamics and Dunsky Energy Consulting. *PY 2014 Finance Residential Market Baseline Study Report*. Oakland, CA, March 2016.

⁵² Opinion Dynamics and Dunsky Energy Consulting. *PY 2014 Finance Residential Market Baseline Study Report*. Oakland, CA, March 2016.

⁵³ Horkitz et al. 2016

⁵⁴ Energy Efficiency Financing in California Needs and Gaps Preliminary Assessment and Recommendations Presented to The California Public Utilities Commission, Energy Division http://www.harcourtbrown.com/wp-content/uploads/CPUC_FinancingReport_HBC_Jul8v2.pdf

⁵⁵ Berkeley Law, Center for Law, Energy & the Environment and the Emmett Institute on Climate Change and the Environment, UCLA, 2016. "Powering the Savings: How California Can Tap the Energy Efficiency Potential in Existing Commercial Buildings." p.11

⁵⁶ CEC, 2016. "Existing Buildings Energy Efficiency Action Plan Draft 2016 Plan Update." p. 64

opportunities to work with government-sponsored entities to consider updates to better encourage energy efficiency investments in home mortgages.⁵⁷

Intervention Strategy	Barriers	Example Tactics	Existing, Modified or New	Short, Mid, Long-term
New Financing structures	<ul style="list-style-type: none"> Capital allocation procedures are difficult Building capital structures are complicated 	Implement OBR	M	S
		Evaluate new transaction structures offerings focused on billing utility owners for the metered efficiency yield of an installed measure (e.g. MEETs), and tariffed financing options in specific sectors.	N	M
		Transform capital markets through Green Bonds pilot and mortgage work with Freddie Mac/Fannie Mae.	N	L
Partners: OBR lenders, Fannie Mac/Freddie Mae				

Financing energy efficiency improvements in rental properties and extending an attractive financial product to individuals that do not plan to stay in their homes very long is difficult. Tariffed offerings link the investment and its repayment to the unit’s meter, and offer a resolution to this problem.⁵⁸

Intervention 3 – Increase Supply and Access to Affordable Capital for Demand-Side Energy Resources

Many customers who otherwise might be positioned to implement energy efficiency measures are unable to access financing on terms they find attractive. This might be due to a lack of credit for many small businesses,⁵⁹ or to the high cost of energy efficiency measures for a given customer’s measures, For example, many k-12 and higher education customers face high costs when managing projects in a multiple buildings, campus setting.

As a primary lender, PG&E offers OBF to non-residential customers to increase access to affordable capital for energy efficiency investments. OBF is a popular resource for PG&E customers, with more than \$171 million loaned out since program implementation.

⁵⁷ KPMG International, 2015. “Sustainable Insight: Gearing Up for Green Bonds.”

⁵⁸ Nadel, Steve et al. On-Bill Financing for Energy Efficiency Improvements: A Review of Current Program Challenges, Opportunities and Best Practices. ACEEE Report Number E118. December 2011. http://www.puc.state.pa.us/Electric/pdf/Act129/OBF-ACEEE_OBF_EE_Improvements.pdf

⁵⁹ Freehling, Joel and Brian Stickles. Energy Efficiency Finance: A Market Reassessment. ACEEE White Paper. February 2016. <http://aceee.org/sites/default/files/market-reassessment-0216.pdf>

PG&E will continue to evaluate opportunities to improve OBF to align with customer needs and California’s energy efficiency goals. Changes could include expanding loan parameters in customer segments which are identified as underserved, and expanding the available pool of funds by replenishing it with third party capital. According to the CEC, “With the SB 350 mandate to set targets to double statewide efficiency savings, financing needs will be larger yet.”⁶⁰

In addition to areas in which PG&E can act as the primary lender, new financing structures that can attract new capital are another potential area where the supply of capital can be expanded. PG&E is currently working with the California Alternative Energy and Advanced Transportation Authority (CAEATFA) to test a suite of new financing pilots across all customer classes. These programs aim to offer credit enhancements in the form of loan loss reserves, and offer on-bill repayment of third party loans through a central servicer, in order to attract new lenders and new financing products to the market. OBR may be a particularly valuable opportunity to fund low value loans as some of the administrative costs of lending can be removed.

Intervention Strategy	Barriers	Example Tactics	Existing, Modified or New	Short, Mid, Long-term
Increase supply and access to affordable capital	<ul style="list-style-type: none"> • High administrative cost of low-value lending • Lack of credit for small business and agricultural customers • Difficulty in accessing capital 	Expand parameters for OBF loans	M	S
		Evaluate replenishing OBF funds with third party capital.	M	M
		Tariffed financing option targeted at customers in need of access to additional sources of capital	N	M
		Implement financing pilots to offer credit enhancements in partnership with CAEFTA. (e.g. Residential Energy Efficiency Loan (REEL))	N	S
		OBR for low-value loans	N	M
Partners: CAEFTA, OBR lenders, third-party investors				

A strong majority of nonresidential OBF customers (three-quarters of 76 customers surveyed in 2011-12) reported that they would not have implemented their energy efficiency projects without OBF.⁶¹

15 US and international programs surveyed in 2014 were consistently reported as being around 1% or less.⁶² Among California IOUs, San Diego Gas & Electric has the largest and longest-running OBF program. Its default rate between 2006 and 2012 was less than 1 percent.⁶³

⁶⁰ CEC, 2016. “Existing Buildings Energy Efficiency Action Plan Draft 2016 Plan Update.” p. 61

⁶¹ Kan et al. 2012

⁶² James et al. 2014

Evaluation of energy efficiency financing programs has indicated that a key element for continued growth is ensuring that efficiency is better integrated into capitalization allocation processes (e.g., during initial construction or at recapitalization).⁶⁴ Strategies to increase the supply of capital to these customers make the process of integrating capitalization easier.

G. PG&E's Partners and Commitment to Coordination

PG&E's success in financing will rely on a broad range of program administrators, regulators, government agencies, financial institutions, non-profits, market actors, and stakeholders. Particularly important for the success of PG&E's transaction services are the relationships it builds with financial institutions. PG&E offers the below list of organizations and stakeholders who will help PG&E achieve its finance sector goals. This list is representative, and not intended to be all-inclusive.

- Financial institutions (FI)
- FI servicing organizations
- Non-profit organizations such as EDF, GBCI and NRDC
- EE Product Manufacturers
- Distributors
- Government agencies such as CAEATFA, CPUC, local governments
- 3rd Party Implementers
- Trade Professionals
- Other IOUs, POUs, and other PAs

H. Statewide Administration and Transition Timeline

TBD

I. Metrics and EM&V Considerations

The two primary goals of the finance effort are to:

- Overcome customer transaction barriers to investment
- Increase the supply and access to affordable capital

The measurement of these two goals occurs at the market level and cannot easily be tracked by output measurements reported by PG&E. The CPUC recently completed a baseline study for finance that documents transaction barriers and the supply and access to affordable capital. **At the business plan level, we are proposing market-level measurements to assess whether transaction barriers are being overcome.** These studies will measure changes from the CPUC's baseline as a result of all of the statewide efforts, and should be conducted in the mid- to long-term. [Market level table similar to other sectors to be added in the next draft]

- In the shorter-term, PG&E will collect feedback from market actors and program implementers to document where these changes are occurring. Since Finance will be a program, there will also be measurements at the implementation plan level such as tracking the number of projects, loans and customers supported by these efforts.

⁶³ California Energy Commission, 2015. "California Existing Buildings Energy Efficiency Action Plan."

⁶⁴ California Energy Commission, 2015. "California Existing Buildings Energy Efficiency Action Plan."

J. EM&V Needs

In the future, PG&E will begin claiming energy savings from transaction services programs. Thus, in the near term, EM&V efforts for the financing sector will focus in large part on collecting data and developing methods to claim savings for these programs.

PG&E's financing programs are also expanding—both in terms of the number of customers they reach and the range of offerings available. As these programs evolve, EM&V needs will focus on assessing the market potential for new programs, conducting process evaluations of programs as they are launched, and understanding how financing can drive energy efficiency savings in conjunction with incentive programs.

One EM&V challenge is the need to work with FIs and servicing organizations, which maintain a high degree of information security, to obtain data about loans. This factor can be particularly challenging for market studies, as it is difficult to estimate the availability or baseline uptake of loans on the supply side.

DRAFT

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L. Appendices

Appendix A. Finance Business Plan Checklist

Cross Cutting Sector		
BP Page Number	Business Plan Guidance	PG&E Notes
	A. Market Characterization	Per Cathy Fogel comments dated 9/28/2016, PG&E has renamed this section "Sector Overview"
Section D, pp. 6-7	a. Customer landscape (who they are, what are their needs)	
Section E, pp 7-8	b. Trends	
Section E, pp. 7-8	c. Gaps/Barriers	
	B. Value	In drafting the BP cross cutting chapter, PG&E determined this information would fit best woven throughout the chapter
Section F, pp. 9-14	a. Discussion of roles for cross-cutting sector	
Section D, pp. 6-7 Section F, pp. 9-14	b. How does it support portfolio	
Section F, pp. 9-14	c. How does it benefit customers	
Section F, pp. 9-14	d. External impacts and benefits (community/economic benefits)	
	C. Vision	
Section A, p. 3 Section B, pp. 3-5	a. Discussion of opportunities	
Section F, pp. 9-14	b. Whether items are near-, mid-, long-term strategic initiatives	
	D. Metrics	
Section I, pp. 14-15	a. One metric or more as appropriate for each intervention strategy	
TBD	E. Program/PA Coordination: Description of which and how strategies are coordinated regionally among PAs and/or other demand- side options.	TBD - PG&E will complete this section in the next draft iterations
Section J, p. 15	F. EM&V Considerations: Statement of evaluation needs "preparedness" (i.e., data collection strategies and internal performance analysis)	